

FINAL DRAFT REPORT

FOR

CLIMATE VULNERABILITY MAPPING IN LAMU COUNTY

SUBMITTED TO



© June 2025



SSN TOWARDS
CLIMATE
RESILIENCE

VCA VOICES
FOR JUST
CLIMATE ACTION

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This report is a testament to the power of collaborative, community-led climate research and the urgent need to amplify local voices in resilience planning and policy formulation.

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LIST OF ACRONYMS

CBO	Community-Based Organization
CSOs	Civil Society Organizations.
FGDs	Focused Group Discussions
GIS	Geographic Information Systems
GPS	Global Positioning System
KIIs	Key Informant Interviews
LAWA	Lamu Women Alliance
MEL	Monitoring, Evaluation & Learning
SOP	Standard Operating Procedure
SSN	South South North
TOR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change.

EXECUTIVE SUMMARY

The report presents the findings as part of the Building Climate Futures in Lamu County project, Lamu Women Alliance (LAWA), with support from SouthSouthNorth (SSN), undertook a participatory climate vulnerability mapping exercise across ten (10) selected wards (Hindi, Hongwe, Basuba, Faza, Kiunga, Mkunumbi, Witu, Shella/Manda, Bahari, and Mkomani). The objective was to generate localized, data-driven insights to inform targeted climate adaptation interventions and enhance inclusive, evidence-based planning at the county level.

Methodology

Using a participatory approach that centered community knowledge, particularly the voices of women, the exercise employed a combination of field visits, focus group discussions (FGDs), participatory mapping sessions, and GIS-based spatial analysis. Communities identified key climate risks they face, including flood-prone areas, eroded coastlines, degraded agricultural lands, and security-related displacement routes. The process also documented local mitigation efforts, especially those led by women, such as mangrove restoration, alternative livelihoods, and informal early warning systems.

Key Findings

The results of the assessment are based on the analysis of data obtained using the identified indicators and sub-indicators. The selection of the indicators influenced by this assessment's need to determine how climate change is affecting the productive sectors in the County and the resultant impacts on people's livelihoods.

Contributing Factors to Climate Change Vulnerability and Risk in Lamu County

Lamu County's climate vulnerability arises from its geographic exposure, with coastal areas like Faza and Kiunga Wards experiencing universal sea-level rise and inland regions such as Witu and Hindi facing severe droughts. These threats disproportionately impact communities heavily reliant on climate-sensitive livelihoods (53.7% in agriculture, 28.4% in fisheries). Structural inequalities magnify risks for women (63%), the elderly (42%), unemployed youth (75% in Kiunga), and persons with disabilities (26%), who face both greater exposure and systemic exclusion from support systems. Critical infrastructure gaps - including health facility shortages (78% in Basuba), unsafe water access (61.2%), and lack of cold storage - leave communities dangerously exposed. Weak institutional engagement (89% in Faza report, no government programs) and minimal training coverage (only 23% of vulnerable groups) further undermine resilience. These compounding pressures create vicious cycles where climate impacts like water scarcity trigger displacement and conflict, demanding urgent, inclusive interventions to break these patterns of vulnerability.

Climate Change Risks, Hazards and Vulnerabilities in Lamu County

Lamu County faces severe climate risks, with coastal areas like Kiunga and Faza Wards experiencing rising sea levels and erosion (reported by all respondents), while inland regions such as Witu and Hindi suffer from intensifying droughts. Frequent flooding (75–100% of households), coastal erosion (50% in Mkomani), and erratic rainfall disrupt livelihoods, particularly for the 53.7% reliant on agriculture and 28.4% dependent on fisheries. Structural inequalities worsen vulnerabilities, disproportionately affecting women (63%), the elderly (42%), unemployed youth (75% in Kiunga), and persons with disabilities (26%), compounded by limited adaptive resources and exclusion from relief programs. Weak infrastructure, including health facility shortages (78% in Basuba), unsafe water access (61.2%), and lack of cold storage, further heightens risks. Institutional support is inadequate, with 89% of Faza residents lacking government-led adaptation initiatives and only 23% of vulnerable groups receiving resilience training. These intersecting challenges demand urgent, targeted interventions to enhance community resilience.

Vulnerable Sectors in Lamu County and their Respective Adaptive Capacities

Lamu County reveals that 53.7% of households depend on climate-vulnerable agriculture, while 28.4% rely on fisheries and 61.2% face water shortages, with 39% reporting climate-related health issues. Adaptive capacities show 42% of farmers using climate-smart practices, 31% of fishers diversifying livelihoods, and 58% of communities implementing water conservation, though only 23% of vulnerable groups receive adaptation training. Intersectional data highlights disproportionate impacts on women-headed households (63%), youth (75% unprepared in high-risk areas), and persons with disabilities (86% facing access barriers), with geographic hotspots like Kiunga (89% vulnerable to sea-level rise), Witu (92% pastoralists affected by drought), and Basuba (78% lacking flood-health preparedness), underscoring urgent needs for targeted, inclusive resilience-building interventions.

Conclusion

Lamu County confronts a severe climate emergency, with coastal zones reporting universal exposure to sea-level rise (100% prevalence in Faza and Kiunga) while inland areas (Witu and Hindi) face total drought prevalence (100%). These dual threats endanger 80% of the population dependent on climate-sensitive livelihoods. Systemic inequalities exacerbate vulnerabilities, with women experiencing 63% greater climate impacts, youth facing 75% unemployment rates, and persons with disabilities confronting 86% exclusion from adaptation programs. Critical system failures compound the crisis: 78% deficiency in health infrastructure, 61% unsafe water access, and 89% lack of government-led climate programs.

Emerging solutions demonstrate local resilience potential: 42% adoption rates for climate-smart agriculture and 58% participation in community-led water conservation initiatives. Evidence-based interventions show promise: coastal seawalls, inland irrigation systems, and inclusive programs targeting marginalized groups could significantly reduce vulnerabilities when combined with strengthened governance (currently reaching only 23% of at-risk populations). This data-driven analysis presents a clear roadmap for transforming climate vulnerabilities into sustainable resilience through targeted, equitable interventions.

Recommendations

- Implement coastal protections (seawalls, mangroves) and inland drought measures (irrigation, resilient crops)
- Expand climate-smart agriculture and create alternative incomes for fishing communities
- Provide Inclusive programs targeting women (63% vulnerable), youth (75% unemployed), and PWDs (26% excluded) with tailored support
- Support critical infrastructure, upgrade healthcare (78% deficient) and water systems (61% unsafe sources)
- Support Governance strengthening, expand adaptation programs (missing in 89% Faza) and training (reaching only 23% at-risk groups)

SECTION ONE: INTRODUCTION AND BACKGROUND

1.1 About Lamu Women Alliance.

Lamu Women Alliance (LAWA) is a legally registered, women-led Community-Based Organization (CBO) operating in Lamu County, Kenya. Founded in 2021, LAWA advanced from a grassroots women's movement previously hosted under Save Lamu. Currently, LAWA represents a consortium of 11 local women's organizations working collaboratively to promote gender equality, women's rights, and climate justice through a rights-based approach in Lamu County.

LAWA's core thematic areas include climate justice, women's economic empowerment, education, elimination of violence against women and girls, and the promotion of human rights. LAWA is widely known as a key player in amplifying the voices of marginalized women and girls in Lamu County, particularly in the context of climate change and natural resource management.

Since 2021, LAWA has been implementing the Women for Climate Justice Project under the Voices for Just Climate Action (VCA) program, an initiative supported by Akina Mama WA Afrika (AMwA), a Pan-African Feminist Organization working to strengthen the individual and collective leadership of African women and girls to effectively influence policy and decision-making. The Project seeks to promote gender-responsive climate action by enhancing the capacity and agency of women and marginalized groups to meaningfully participate in climate governance and decision-making spaces.

1.2 Project Background

Lamu County, located along Kenya's northeastern coast, is a historically rich and culturally significant region comprising both mainland and over 65 islands, including the UNESCO-listed Lamu Old Town. With a population of around 144,000, the county's economy largely depends on fishing, small-scale farming, tourism, and livestock rearing. Despite its strategic importance due to the LAPSET corridor, Lamu faces numerous development challenges, including infrastructure deficits, historical marginalization, and limited access to basic services. Its diverse communities, including the Swahili, Bajuni, Orma, and Boni, live in a fragile ecosystem increasingly threatened by climate change impacts such as sea-level rise, coastal erosion, and drought, highlighting the need for targeted climate resilience and sustainable development efforts.

The Building Climate Futures in Lamu County project, supported by SOUTH SOUTH NORTH (SSN) and implemented by LAWA, aims to enhance climate resilience through community-centred planning and evidence-based interventions. A core activity under this project is the participatory climate vulnerability mapping to identify areas most at risk and inform policy and interventions.

1.3 Objectives of the Assignment

To lead and execute a comprehensive climate vulnerability mapping process across 10 wards in Lamu County using participatory methods and Geographic Information Systems (GIS), and to develop a detailed map and report book of findings.

1.4 Scope of the Work.

The expert to:

- Conduct field visits to ten (10) selected wards in Lamu County with the help of LAWA staff to gather data with community participation.
- Identify and document the most climate-vulnerable wards in terms of flooding, land degradation, rising sea levels, and insecurity.
- Identify opportunities around climate change spaces, such as the local mitigations that the women engage in Lamu County.
- Develop GIS-based maps visualizing climate risks in each of the 10 wards.
- Compile a comprehensive report/book capturing key findings, analysis, and recommendations.

1.5 Study Assessment Area

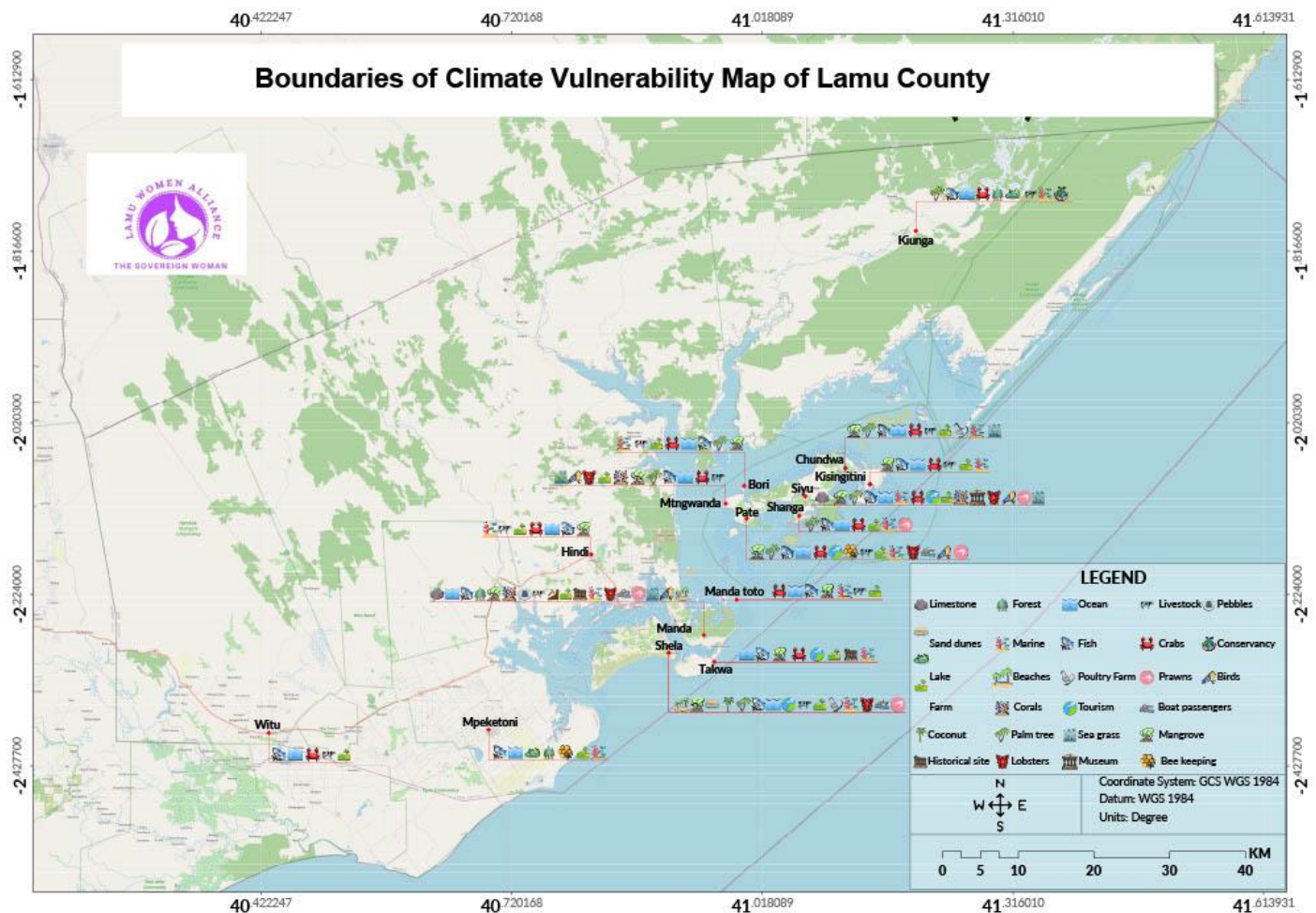


Figure 1- Geographical Study Boundaries of Lamu County Wards

SECTION TWO: STUDY METHODOLOGY

2.1 Evaluation Research and Design

The methodology for this climate vulnerability mapping exercise was designed to be participatory, inclusive, and evidence-driven, ensuring that the process not only generated technical data but also reflected the lived realities of the communities in Lamu County. The approach combined qualitative community engagement methods with spatial data collection and Geographic Information Systems (GIS) analysis to provide a comprehensive understanding of climate risks across the ten (10) selected wards.

A mixed-methods approach was adopted to enable triangulation between community knowledge, expert observations, and secondary data sources. Participatory techniques, including focus group discussions (FGDs), key informant interviews (KIIs), and participatory mapping sessions, were employed to actively involve community members, especially women's groups, in identifying climate risks, vulnerabilities, and local adaptation practices. The emphasis on women's participation was deliberate, recognizing their central role in managing local resources and coping with the impacts of climate change.

Spatial data was collected using GPS-enabled devices to document the locations of vulnerable areas such as flood zones, degraded lands, and insecure regions. The data was later uploaded using GIS software (QGIS) to create detailed maps illustrating the spatial distribution of climate risks in each ward.

The evaluation approach was grounded in the principles of community ownership, inclusivity, and action-oriented research, ensuring that the study's outcomes would not only inform policy but also empower local stakeholders to engage in climate adaptation planning actively.

2.2 Inception and Planning

An inception meeting was held with Lawa staff to outline the scope of the assessment and agree on the evaluation parameters, including tools, assessment design, methodology, respondents who were interviewed, locations covered, and timelines to be used during the study. The meeting also provided a platform to outline the resources and documents needed to deliver the task and to clarify the expectations. Alongside the review of the relevant existing literature and project documents, an inception report and data collection tool were developed and approved by the project staff (Lawa) before the data collection exercise.

2.3 Study Design and Approach

The study employed a participatory, mixed-methods design integrating qualitative community engagement approaches with spatial mapping using GIS tools. This participatory, data-driven approach not only identified climate-vulnerable wards but also amplifies community voices, especially women, aligning with local-led adaptation (LLA) principles. Integrated GIS with community knowledge strengthens advocacy for evidence-based climate policies. Additionally, Insecurity adds a complexity layer that requires both environmental and conflict-sensitive strategies.

Field site visits were conducted in collaboration with LAWA staff to the 10 selected wards, aiming to observe and document climate-related risks through transect walks, semi-structured interviews (with an emphasis on women's groups), and photo documentation of critical sites. Participatory Rural Appraisal (PRA) methods, including community-led mapping, were used to identify high-risk zones, local resources, and evacuation routes.

Throughout all phases of the climate vulnerability mapping, the consultant applied human rights and gender-responsive approaches in the design of the study.

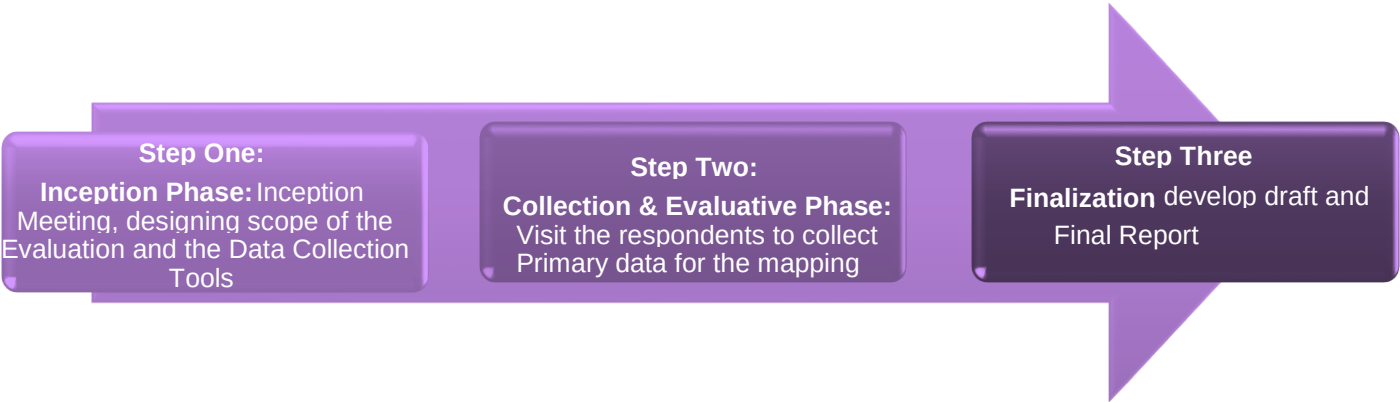


Figure 2: Study Design & Approach.

2.4 Sampling Methodology

Purposive Sampling Procedure: Purposive sampling was used to select participants for key informant interviews (KIIs) and focus group discussions (FGDs). Key informants included Representatives from line ministries at both national and county levels, and other stakeholders such as development partners and CSOs. FGDs involved community members from the respective wards, with participant identification and mobilization supported by LAWA. These discussions gathered in-depth insights from targeted local community groups and the stakeholders involved in the project.

2.5 Evaluation Methodological Approach

A mixed-methods approach was adopted to enable triangulation between community knowledge, expert observations, and secondary data sources. Participatory techniques include focus group discussions (FGDs), key informant interviews (KIIs), and participatory mapping sessions.

The approach combined qualitative community engagement methods with spatial data collection and Geographic Information Systems (GIS) analysis to provide a comprehensive understanding of climate risks across the ten (10) selected wards.

2.6. Data Collection Approaches

Data for this assessment was collected using structured household questionnaires, Key Informant Interviews (KIIs), Focus Group Discussion Guides (FGDs) and review of relevant literature that included reports, policies, legislations, articles and books. The questionnaires were administered in the sampled households by enumerators who were recruited for this assignment. The KIIs were administered to respondents from the Lamu Women Alliance staff, representatives from line ministries at both national and county levels, and other stakeholders such as development partners and CSOs, while the FGDs were community groups, women, and youth across the targeted wards: Mkomani, Hindi, Kiunga, Mkunumbi, Faza, Basuba, Bahari, Witu, Hongwe and Shella/Manda.

2.6.1 Survey Mapping Questionnaire Conducted

The vulnerability survey mapping exercise aimed to administer two questionnaires per ward across all ten (10) wards, resulting in a target of 20 surveys with members of the local communities. The consultant successfully achieved this target, completing all 20-survey questionnaires. The distribution of completed surveys across the wards is presented below.

Region	Surveys Targeted	Surveys Conducted	Response Rate
Shella	2	2	100%
Mkomani	2	2	100%
Hindi	2	2	100%
Mkunumbi	2	2	100%
Hongwe	2	2	100%
Bahari	2	2	100%
Witu	2	2	100%
Faza	2	2	100%
Basuba	2	2	100%
Kiunga	2	2	100%
Total	20	20	100%

Table 1: Number of respondents surveyed

Data collection was conducted across ten wards in Lamu County, involved a combination of participatory and technical methods. Transect walks were carried out to observe and document visible signs of environmental degradation, supported by photo evidence.

2.6.2 Key Informant Interviews

Key informant interviews were conducted via the Zoom platform, depending on the preference of the respondents. These interviews targeted Lamu Women Alliance staff, representatives from line ministries at both national and county levels, and other stakeholders such as development partners and CSOs. These interviews aimed to provide a deeper understanding of the most vulnerable wards in terms of flooding, land degradation, rising sea levels, and insecurity. Furthermore, the interviews helped to assess the existing local mitigations that women are engaging in.

KEY INFORMANT INTERVIEWS			
Location	Category	Designation	Total Respondents
Lamu County	Programme Staff	Programme manager/coordinator	1
	Stakeholders	CSOs	2
		National Environmental Officer	1
Total			04

Table 2: Respondent reached with Key Informant Interviews

2.6.3 Focus Group Discussions

The study conducted reached a total number 9 FGDs against the target of 10, reaching 145 total participants. Focus Group Discussions were conducted with community groups, women, and youth across the targeted regions. The respective LAWA teams facilitated the mobilization of these groups. Participants primarily drawn from community-based organizations engaged in promoting climate change programs. The FGDs provided a platform for participants to reflect on their involvement in addressing issues like flooding, land degradation, rising sea levels, and insecurity in their respective wards. The discussions offered valuable qualitative insights into the mapping of the affected areas at the community level and helped identify the most affected wards.

Vulnerability Mapping					
Ward	Categories	No of FGDs	Number of Participant Reached		
			Male	Female	Total
Hindi	Women/ Youth/Elderly	1	4	11	15
Basuba	Women/ Youth/Elderly	1	9	6	15
Faza	Women/ Youth/Elderly	1	6	9	15
Witu	Women/ Youth/Elderly	1	8	7	15
Bahari	Women/ Youth/Elderly	1	6	9	15
Mkomani	Women/ Youth/Elderly	1	6	9	15
Hongwe	Women/ Youth/Elderly	1	1	14	15
Shella/Manda	Women/ Youth/Elderly	1	1	9	10
Mkunumbi	Women/ Youth/Elderly	1	11	4	15
Kiunga	Women/ Youth/Elderly	1	2	13	15
Total		10	54	91	145

Table 3: Targeted Focus Group Discussion

2.6.4 Secondary Literature Review and Policy Analysis

Reviewed a wide range of documents, policies, and legal frameworks directly related to the project's objectives. This included a comprehensive review and analysis of the following materials:

1.	Document	Overview
2.	LAWA Project Proposal and Logical Framework	Review to understand project objectives, outcomes, KPIs, and theory of change. It will guide the formulation of mapping questions and data collection methods.
3.	National Climate Change Action Plan (NCCAP) – Kenya	Assess the project's alignment with Kenya's climate priorities and its contribution to national climate resilience and sustainability.
4.	Kenya Vision 2030 and Medium-Term Plans	Review Kenya's long-term development agenda to determine the project's alignment with national goals on sustainability, resilience, and policy advocacy.
5.	Kenya Forest Conservation and Management Act, 2016	Evaluate adherence to environmental conservation laws and the project's role in strengthening partnerships with agencies like the Kenya Forest Service (KFS).

6.	County Integrated Development Plans (CIDPs)	Review county-level development priorities to assess the project's alignment with local government strategies and environmental goals.
7.	International Environmental and Climate Agreements (e.g., Paris Agreement, UN SDGs, UNFCCC)	Analyze how the project aligns with global climate action agreements like the Paris Agreement, UN SDGs, and UNFCCC.

Table 4: Secondary Literature Review and Policy Analysis Documents

2.7 Data Analysis

Data from the various sources was cross analyzed to identify the climate change risks and vulnerabilities in Lamu County. Various data analysis tools and procedures were used and applied, including Statistical Package for Social Scientists (SPSS), excel spreadsheets, NVivo and matrices.

2.8 Data Management and Quality Assurance

Qualitative Data Analysis: Qualitative data were transcribed and translated based on the FGDs and Key informant interview recordings. Transcriptions from Kiswahili to English were done. Protocols for coding were established to ensure each transcript was topically categorized and content organized into themes that were informed by the evaluation objectives and purpose, interview guide content, and preliminary findings based on secondary data analysis.

Quantitative Data Analysis: Analysis of quantitative data was done using SPSS vs. 27. This involved several steps aimed at extracting meaningful insights from the dataset. Initially, the data were cleaned and organized to ensure accuracy and consistency. Descriptive statistics were then computed to summarize the main characteristics of the variables under investigation as per the two outcome areas. Measures such as mean and frequency were employed to provide a comprehensive overview of the data distribution.

Data Quality Assurance: The study observed data quality protocols to ensure that the information and data collected were accurate and reliable. These protocols included Training of the research team on child safeguarding protocols and data collection, as well as pretesting data collection tools to address any quality issues. The study, through the field supervisor and the lead consultant, conducted some Back Checks and Spot checks to verify the quality of the data that was collected.

2.9 Ethical and Safeguarding Principles

The study paid attention to the ethical issues highlighted in the TOR and discussed at inception. These principles were crucial to the evaluation to ensure respect, safety and dignity for all participants, particularly disability inclusivity. The following principles were adhered to:

- a) **"Do No Harm" Principle:** The research study prioritized participants' well-being by ensuring their involvement did not cause distress or re-traumatization. The research assistants were trained on how to report to the study team any cases of trauma, should they identify such cases during interview.
- b) **Informed Consent and Assent:** Participants received clear information about the study, with adults providing consent and children giving assent alongside parental or guardian approval. This ensured voluntary and informed participation, especially for vulnerable groups.
- c) **Confidentiality and Privacy:** All personal information was anonymized, securely stored, and accessed only by authorized personnel. Interviews were conducted in private settings to protect participants' identities and maintain data confidentiality.

- d) **Safeguarding Measures:** Data collectors received specialized training to recognize distress, handle disclosures of abuse, and follow safeguarding protocols to ensure participants' safety.
- e) **Voluntary Participation and Right to Withdraw:** Participants were informed that they could withdraw at any time without consequences, and there was no pressure to answer uncomfortable questions.
- f) **Clear and Fair Reporting:** Evaluators were committed to transparent, accurate, and evidence-based reporting, clearly outlining limitations, findings, conclusions, and recommendations with integrity.

2.10 Social Inclusion and Gender Considerations

To ensure gender sensitivity and social inclusion in the study, the following measures were implemented:

- a) **Experienced Gender-Sensitive Leadership:** The lead consultant, with expertise in gender-sensitive research, ensured that all aspects of the study adhered to key gender considerations.
- b) **Gender-Balanced Team Composition:** The study team strived for equal representation of males and females, aiming for a 50-50 gender balance at all levels of the study.
- c) **Disaggregated Data Collection:** All collected data were categorized by age and gender to ensure comprehensive analysis and inclusivity.
- d) **Integration of Organizational Gender Policies:** The consultant reviewed and incorporated existing LAWA policies and guidelines on gender inclusion into the study process.
- e) **Gender-Sensitive Analysis:** Both male and female perspectives were actively incorporated into the analysis, ensuring balanced representation of experiences and insights.
- f) **Inclusive Sampling Design:** The sampling approach prioritized gender diversity, striving for equitable representation of all genders in participant selection.

2.11 Limitation and Mitigation

- **Adverse weather conditions,** particularly heavy rainfall, hindered access to certain wards, notably Witu Ward. The research team's vehicle became stuck, causing a 30-minute delay despite community assistance. This disruption impacted the timely arrival at data collection sites. Some respondents expressed frustration over prolonged waiting, potentially affecting participation levels.
- **Long travel distances** posed logistical challenges during data collection, as several wards were widely dispersed and connected by rough, poorly maintained roads that worsened during rainy conditions. Accessing Basuba ward, in particular proved difficult due to impassable routes. To overcome this obstacle and maintain the schedule, the research team resorted to hiring boda boda riders to navigate sites.

SECTION THREE: STUDY FINDINGS

3.1 DEMOGRAPHIC ANALYSIS

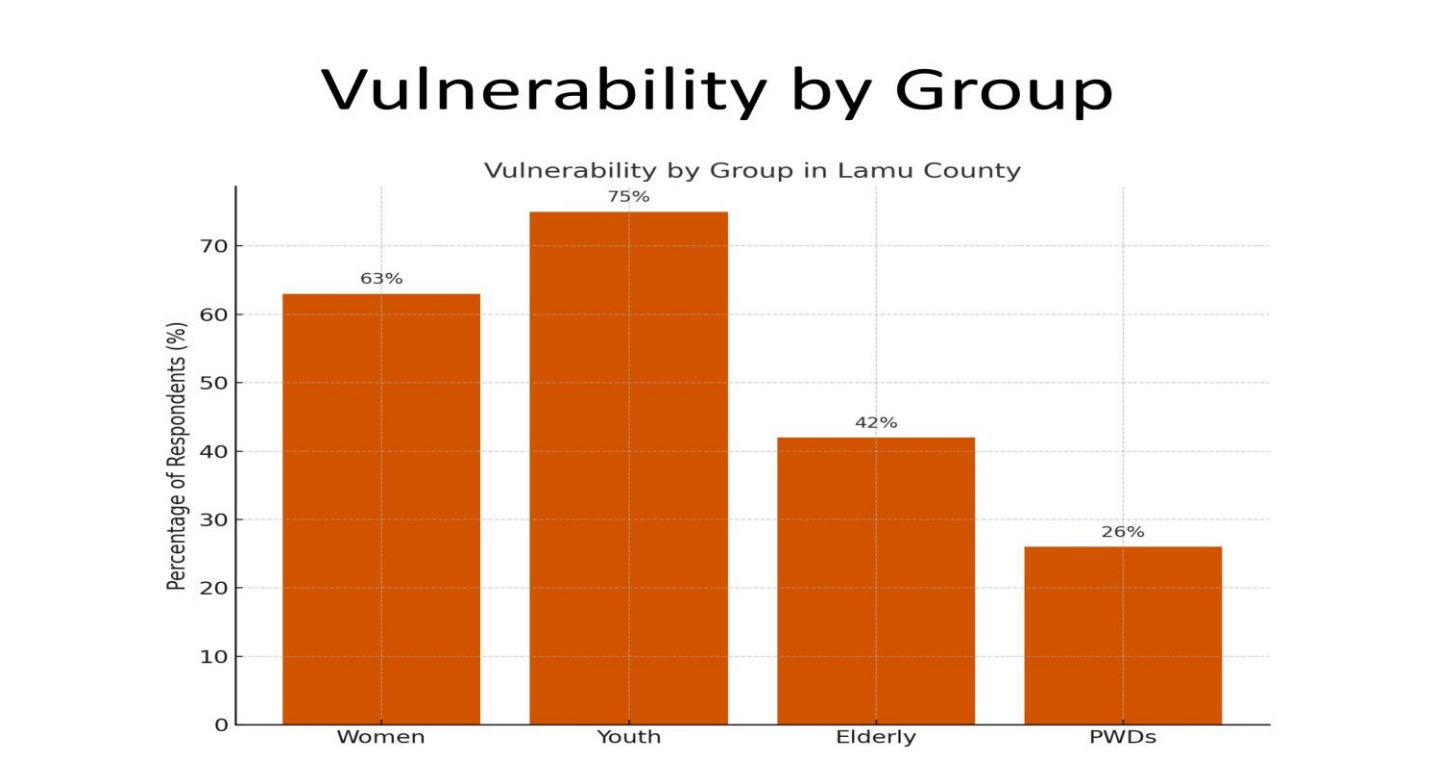


Figure 2-Respondent of vulnerability by group

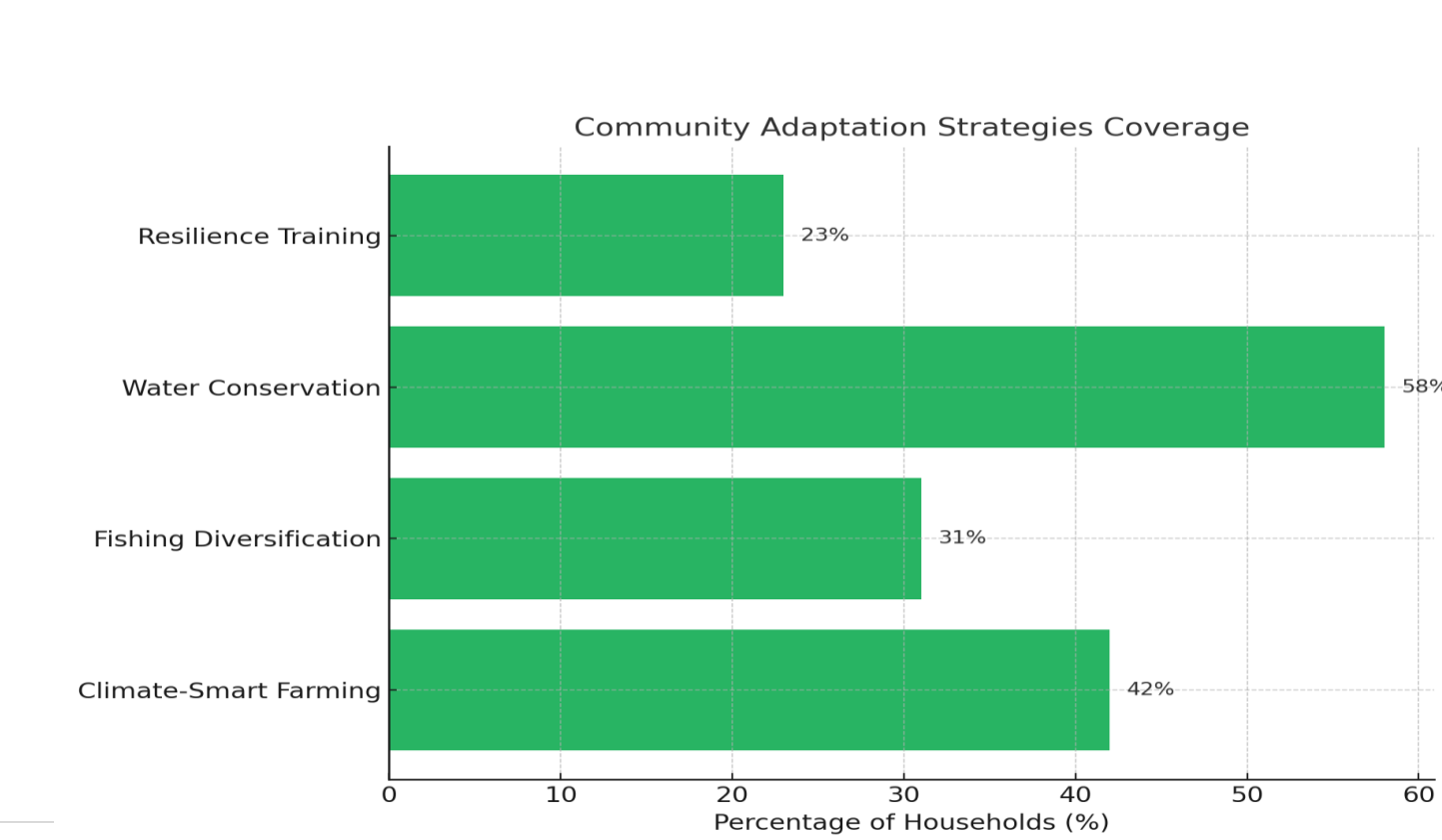


Figure 3- Community Adaptation Strategic Coverage Needs

Climate Hazard Impact Summary

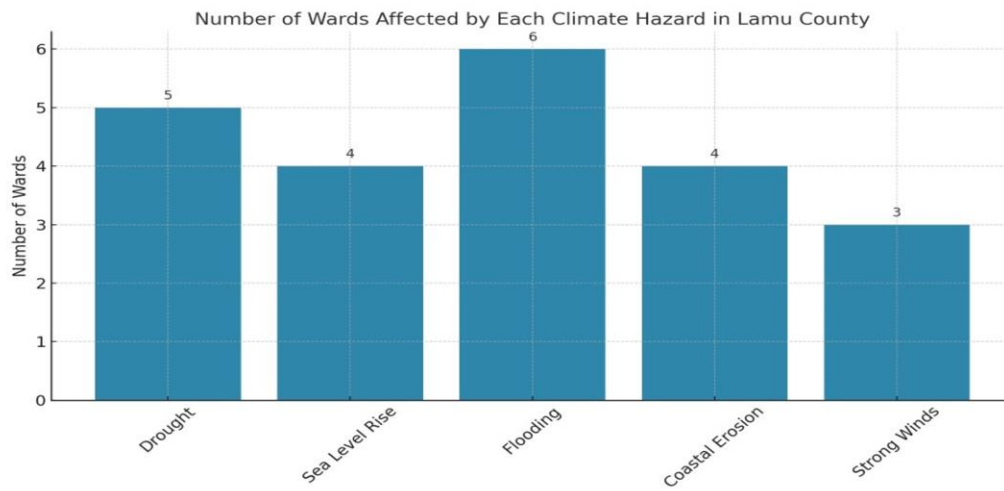


Figure 4-Climate Hazard Impact Summary

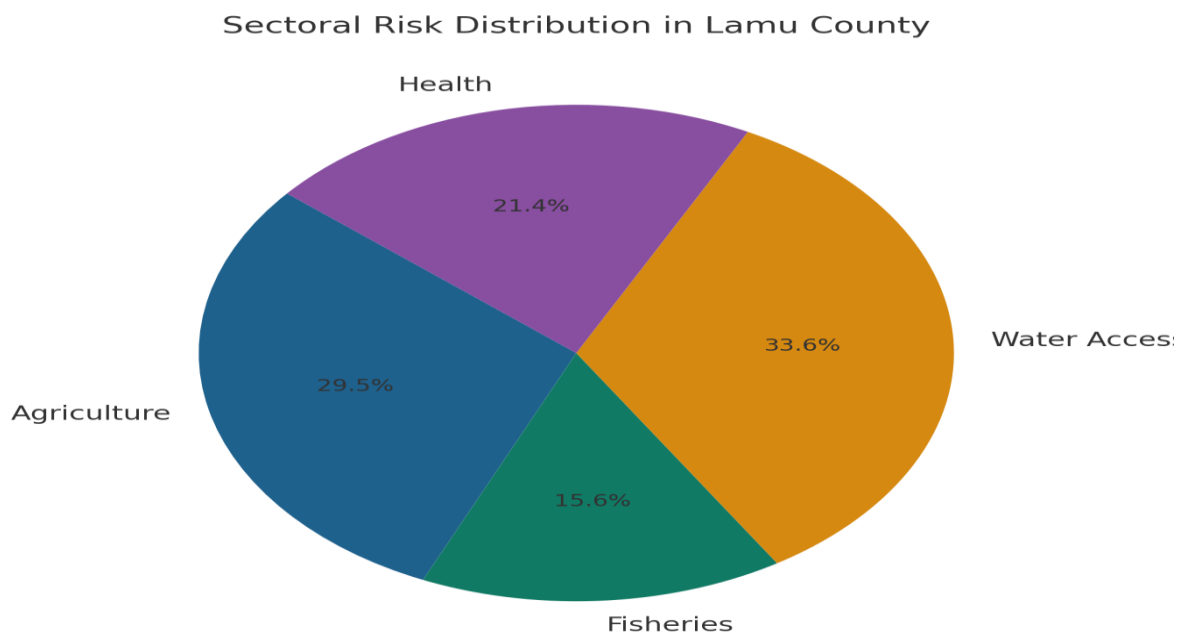


Figure 5-Sectoral Risk Distribution in Lamu County

3.2 Vulnerability Groups Response Rate Analysis

Vulnerable Group	Number of Responses (Out of 19)	Percentage	Key Challenges Reported
Elderly	17	89.50%	Reduced mobility, food insecurity, and displacement during floods/droughts.
Women & Women-headed HHs	17	89.50%	Income loss, caregiving burdens, and limited access to farming inputs.
Persons with Disabilities (PWDs)	16	84.20%	Exclusion from relief efforts, heightened health risks.
Youth	15	78.90%	Unemployment and, lack of climate-resilient livelihood options.
Farmers & Pastoralists	14	73.70%	Crop/livestock losses, animal invasions, water shortages.
Fishers	11	57.90%	Declining fish stocks, rising sea levels are disrupting fishing activities.

Table 5: Vulnerability Group Response

3.3 Climate Hazards and Impacts by Ward

Climate vulnerability assessment reveals stark geographic disparities, with inland wards (Witu) struggling with drought-driven livestock losses and coastal wards (Kiunga, Faza) facing rising sea levels and fishery collapse. Across all wards, women, the elderly, and persons with disabilities (PWDs) bear disproportionate impacts—89% reported income loss and food insecurity. Yet, community-led adaptations like Nyumba Kumi networks and traditional food storage (Magala) demonstrate local resilience. Critical gaps remain in health infrastructure (only 2/7 wards have medical adaptations) and youth employment, particularly in fishing-dependent areas. Targeted investments in ward-specific solutions (Such as Seawalls for Faza and livestock insurance for Witu) and inclusive programmes for marginalised groups will maximize adaptive capacity. Urgent funding is required to scale these efforts, with 84% of households lacking government support.

Ward	Responses	Top Hazards Reported	Most Affected Groups	Key Impacts	Adaptation Strategies
Mkomani (2)	2	Floods (100%), Drought (50%), Coastal erosion (50%)	Elderly, Women, PWDs (100%)	Reduced crops (100%), Income loss (100%), House damage (50%)	Food storage, Government support
Witu (3)	3	Floods (100%), Drought (100%), Strong winds (100%)	Elderly, Pastoralists (100%), Women (100%)	Livestock loss (100%), Displacement (67%), Crop loss (100%)	Community engagement, County support
Bahari (2)	2	Floods (100%), Drought (100%)	Women, Farmers (100%), Elderly (100%)	Crop loss (100%), Income loss (100%)	Women's groups, Nyumba Kumi

Kiunga (4)	4	Floods (75%), Rising seas (50%), Strong winds (75%)	Women, Fishers (75%), Youth (75%)	Income loss (100%), Water shortages (50%)	Fishing alternatives, Business grants
Hindi (1)	1	Floods, Drought, Health hazards	Women, Elderly, PWDs	Crop loss, Income loss	Tree planting, Food storage
Basuba (2)	2	Floods (100%), Drought (50%)	Women, Farmers (100%), Elderly (100%)	House damage (100%), Health issues (50%)	Health volunteers, Army support
Faza (2)	2	Drought (100%), Rising seas (100%)	Women, Fishers (100%)		

Table 6: Climate Hazard Matrix.

3.4 Socio-Demographic Factors Analysis of Climate Vulnerability in Lamu County

Climate vulnerability is deeply influenced by socio-demographic factors, with women (63% of respondents), farmers (47%), and coastal communities (58%) facing the highest risks. Elderly residents (42%) struggle with displacement and food insecurity due to limited mobility, while youth (32%) grapple with unemployment and migration pressures. Occupational hazards are stark 100% of farmers reported crop losses (with 78% lacking irrigation), and 86% of fishers faced income declines from rising seas. Persons with disabilities (26%) are universally excluded from relief programs, exacerbating their vulnerability. Geographic disparities persist: inland wards battle droughts and livestock losses, while coastal areas confront collapsing fisheries. Despite these challenges, women-led adaptations (food storage) and community networks (NYUMBA KUMI) demonstrate resilience

Factor	Sub-Category	% of Respondents (n=19)	Key Climate Impacts	Adaptation Challenges	Recommended Interventions
Age	Elderly (50+ yrs)	42% (8/19)	Displacement, food insecurity	Limited mobility, exclusion from programs	Mobile health units, targeted relief
	Youth (18-35 yrs)	32% (6/19)	Unemployment, migration pressures	Lack of skills training	Vocational programs, startup grants
Gender	Women	63% (12/19)	Higher income loss (92%), care burdens	Limited access to capital	Women's agribusiness grants
	Men	37% (7/19)	Fishing disruptions (86%)	No solutions for rising seas	Fishing gear subsidies, boat upgrades
Occupation	Farmers	47% (9/19)	Crop loss (100%)	No irrigation (78%)	Drought-resistant seeds, irrigation
	Fishers	37% (7/19)	Income loss (86%)	Rising seas blocking access	Cold storage, alternative livelihoods
	Small Business	16% (3/19)	Market collapses (100%)	No pivot capital	Micro-loans, business training
Disability	PWDs	26% (5/19)	Exclusion from aid (100%)	Physical access barriers	Inclusive relief programs
Location	Coastal Wards	58% (11/19)	Fishing collapse, sea-level rise	Isolation, lack of infrastructure	Seawalls, transport upgrades
	Inland Wards	42% (8/19)	Droughts, livestock deaths	Water scarcity	Boreholes, livestock insurance

Table 7: Socio-Demographic Factor Analysis Table

SECTION FOUR: LAMU COUNTY VULNERABILITY MAPPINGS

4.1 Geographical Lamu County Wards

The Map show the 3D view of the Lamu County study area for the climate vulnerability Mapping

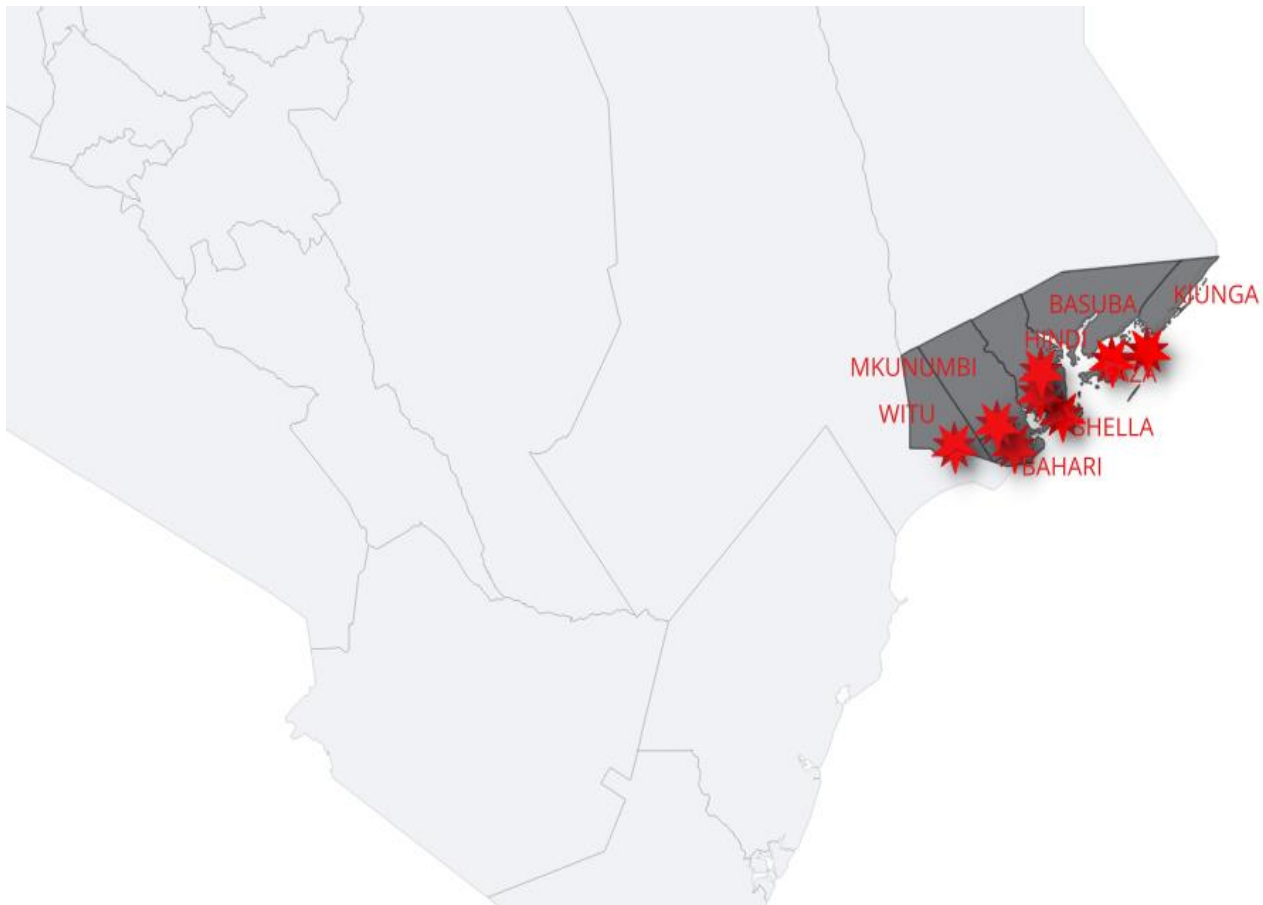


Figure 6-3D Map of Lamu County

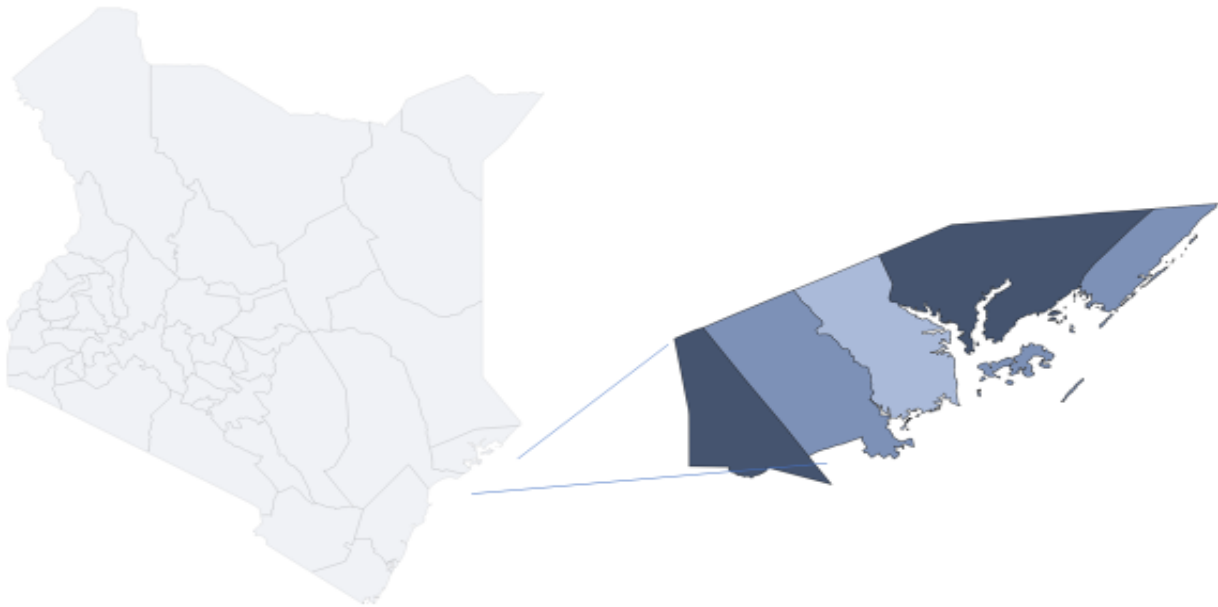


Figure 7: 3D Lamu County Land Cover Map

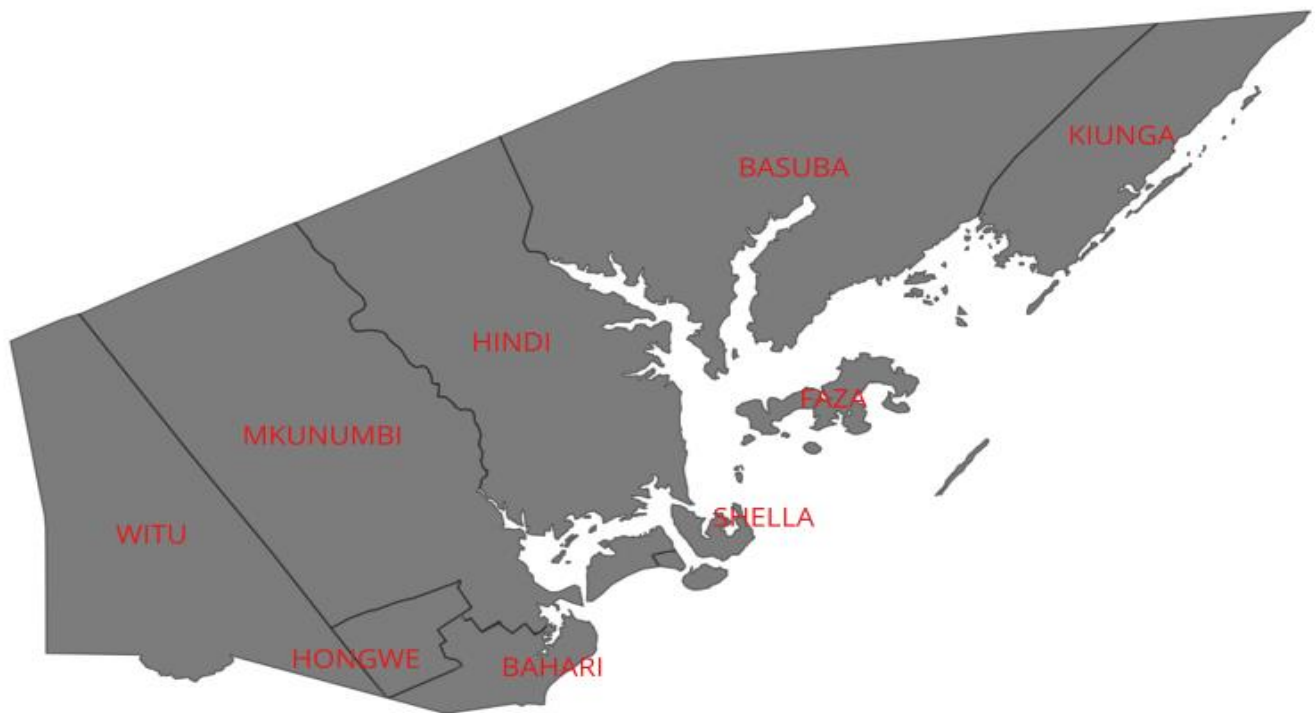


Figure 8: 3D-Lamu County Study Assessment Areas

4.3 Effects of Climate Hazard Vulnerability in Lamu County Wards

STRONG WIND

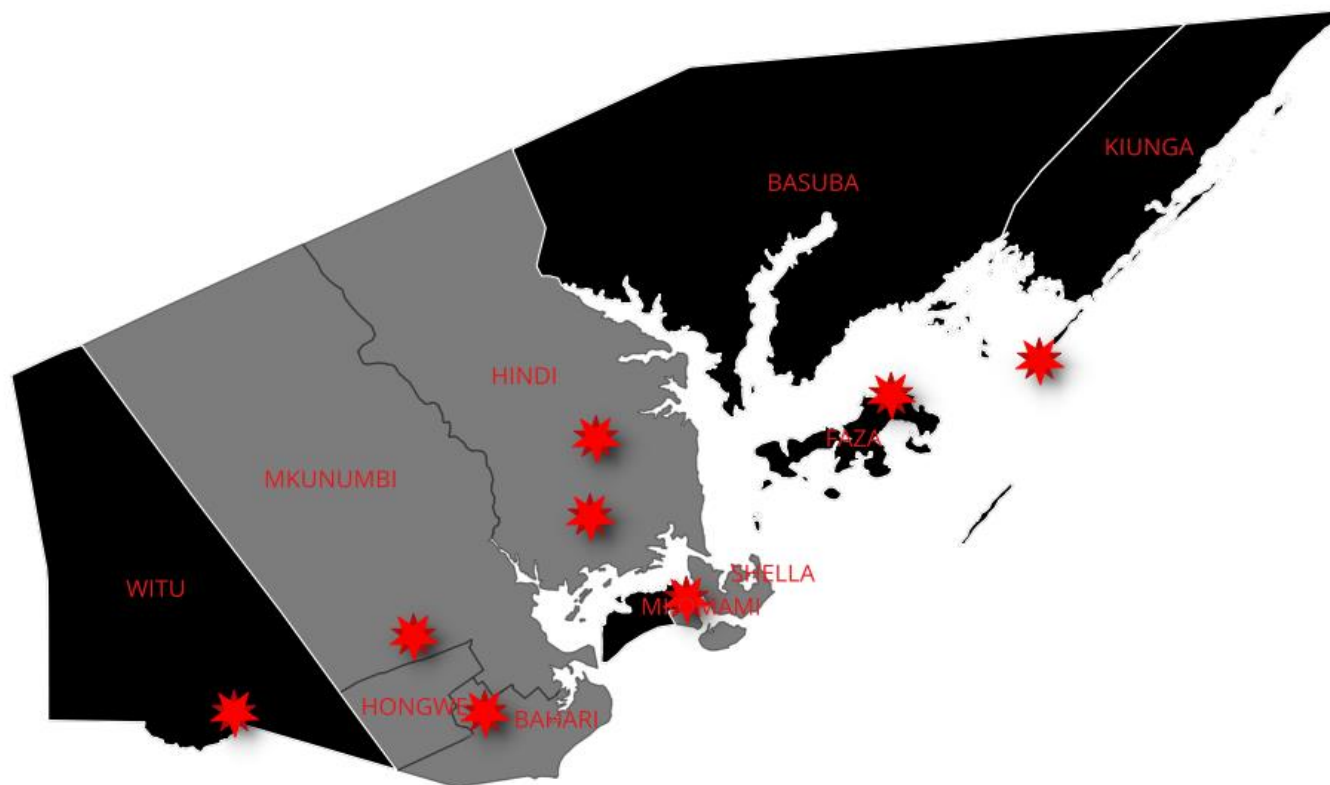


Figure 9- Effect of Strong Winds Features

The Map show Strong winds have emerged as a significant climate hazard in Lamu County, particularly affecting the wards of Witu, Mkomani, and Kiunga. These winds have caused widespread destruction of homes, disrupted fishing and farming activities, and accelerated environmental degradation, including coastal erosion and deforestation. Residents reported increased health risks from dust and flying debris, especially among vulnerable groups like the elderly and persons with disabilities. The winds also worsen drought conditions by drying up soils and vegetation. Despite community efforts such as planting windbreaks and reinforcing shelters, most wards lack institutional support, highlighting the urgent need for resilient infrastructure and early warning systems in the most exposed areas.

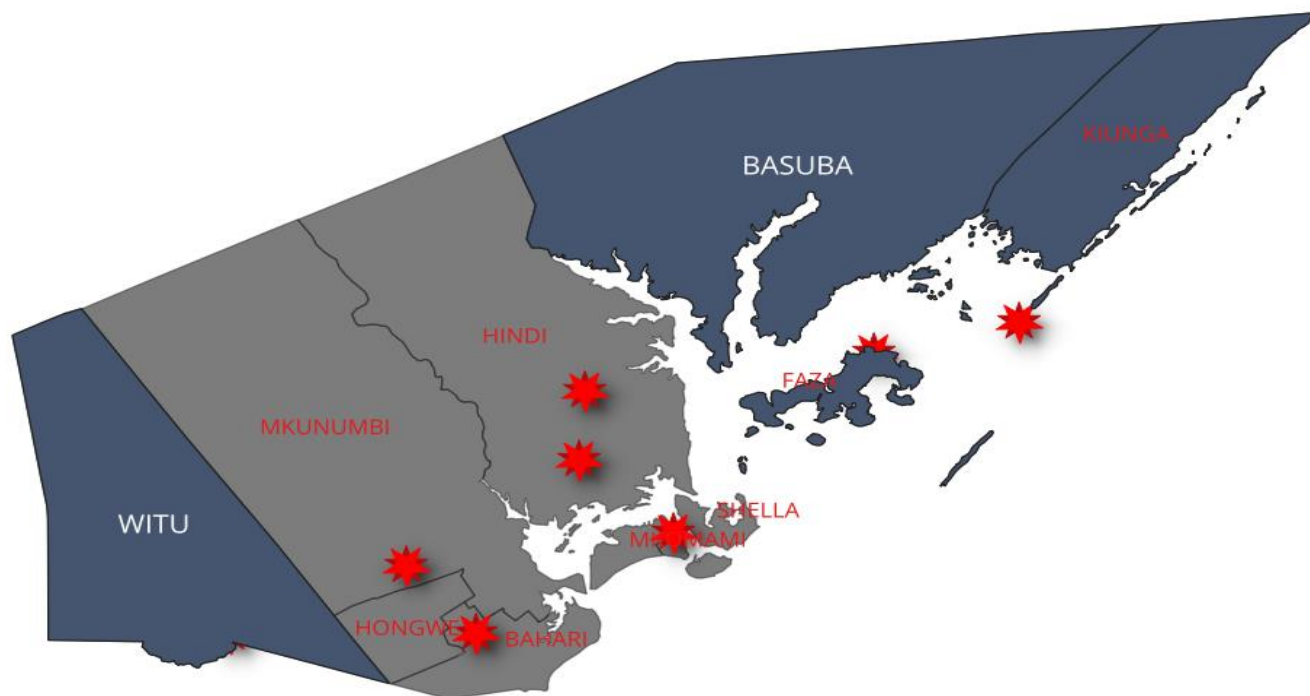


Figure 10- Effect of Drought Risks

Drought is the most widespread and severe climate hazard affecting Lamu County, with the worst-hit wards identified as Witu, Hindi, Basuba, Faza, and Bahari, as shown in the drought risk maps (Figure 10 in Section 4.3 of the report). These areas face prolonged dry spells, leading to total crop failure, livestock deaths, water scarcity, and heightened food insecurity. Communities in inland wards like Witu and Hindi reported 100% drought prevalence, severely impacting pastoralist and farming livelihoods. In Basuba, residents must walk long distances to access water, while in coastal wards like Faza, drought compounds saltwater intrusion and reduced fish catches. Drought has also intensified human-wildlife conflicts, increased household poverty, and led to social tensions and domestic strain due to economic stress. Vulnerable groups such as women, the elderly, youth, and PWDs are disproportionately affected, with limited access to relief and adaptation programs, underscoring the urgent need for targeted interventions like irrigation, water harvesting, and livelihood diversification.

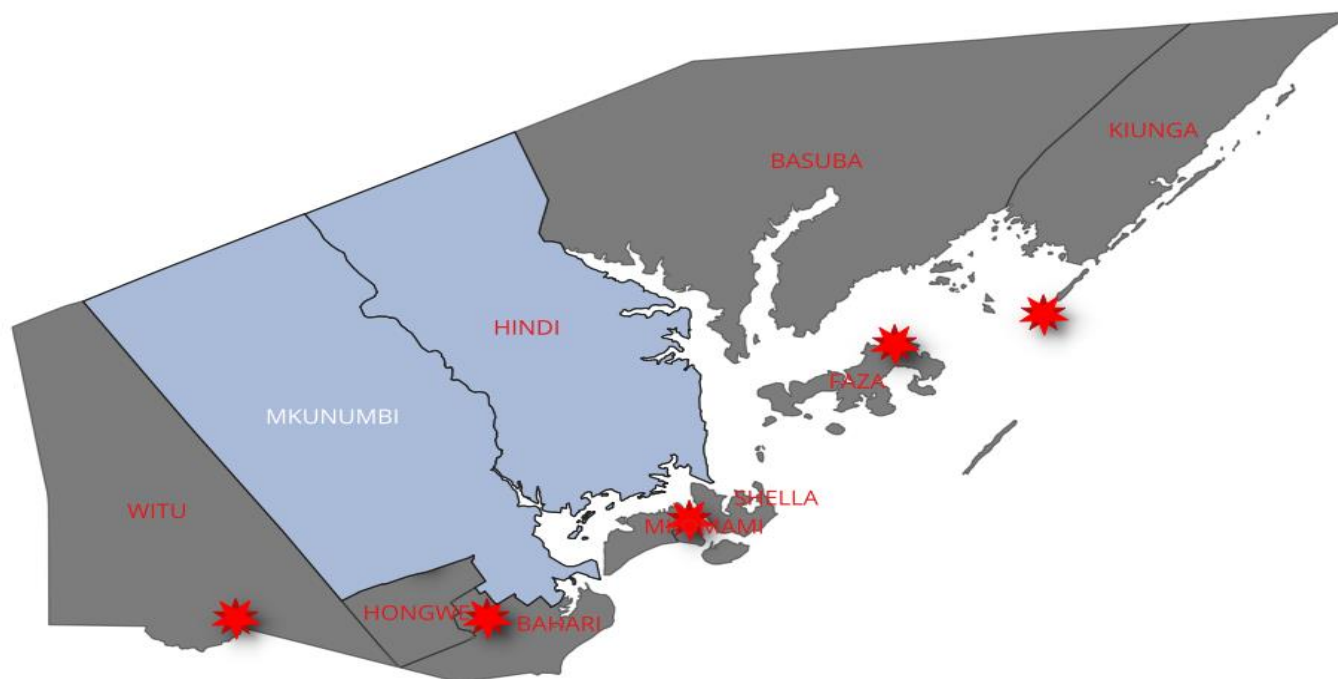


Figure 11- Effects of Rising Sea Level

Rising sea levels pose a critical threat to coastal communities in Lamu County, with Faza, Kiunga, Mkomani, and Shela/Manda wards identified as the most affected areas, as shown in the sea level rise risk maps (Figure 11 in Section 4.3 of the report). Communities in Faza and Kiunga reported 100% exposure to rising seas, leading to saltwater intrusion into freshwater sources, destruction of homes and coastal farmland, and a sharp decline in fish stocks. The encroaching ocean has degraded sand dunes, especially in Mkomani and Shela, threatening freshwater catchments and tourism infrastructure. These impacts have disrupted fishing livelihoods, reduced access to clean water, and increased food insecurity. Women-headed households and persons with disabilities face greater risks due to poor infrastructure and limited adaptive capacity. The situation is further worsened by a lack of coastal protection measures and weak institutional support, calling for urgent investments in seawalls, mangrove restoration, and resilient water systems to protect vulnerable coastal populations.

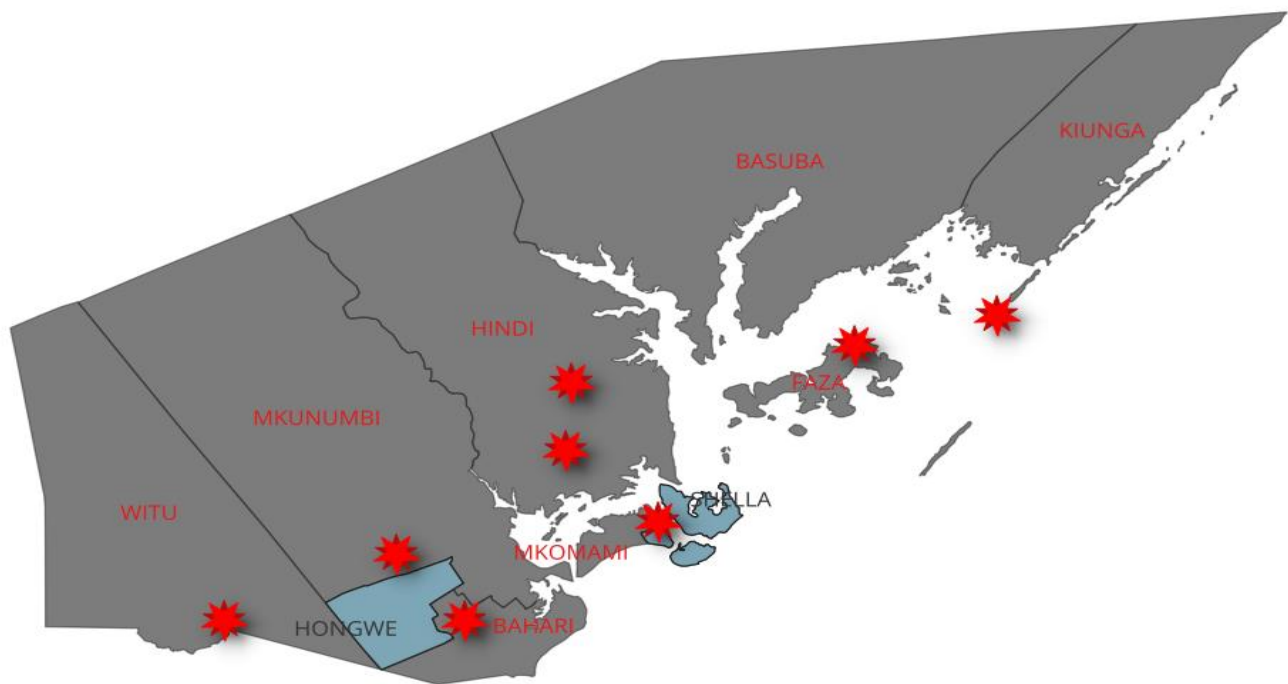


Figure 12- Effects of Coastal Erosion Map

Coastal erosion is a growing climate threat in Lamu County, primarily affecting Mkomani, Kiunga, Faza, and Shella/Manda wards, as mapped in the coastal erosion risk zones (Figure 12 in Section 4.3 of the report). The erosion is driven by rising sea levels, strong winds, and unregulated human activity, leading to the loss of shoreline, damage to homes and public infrastructure, and destruction of coastal ecosystems, including mangroves. In Mkomani and Shella, dunes that act as freshwater catchments are being washed away, increasing the risk of long-term water shortages. Coastal erosion has also undermined fishing livelihoods and threatened culturally significant and tourist sites. These impacts disproportionately affect low-income households and vulnerable groups living along the shoreline, many of whom lack the resources to relocate or rebuild. The report highlights an urgent need for coastal defence interventions such as seawalls, ecosystem restoration, and community-based shoreline monitoring to curb the advancing degradation.

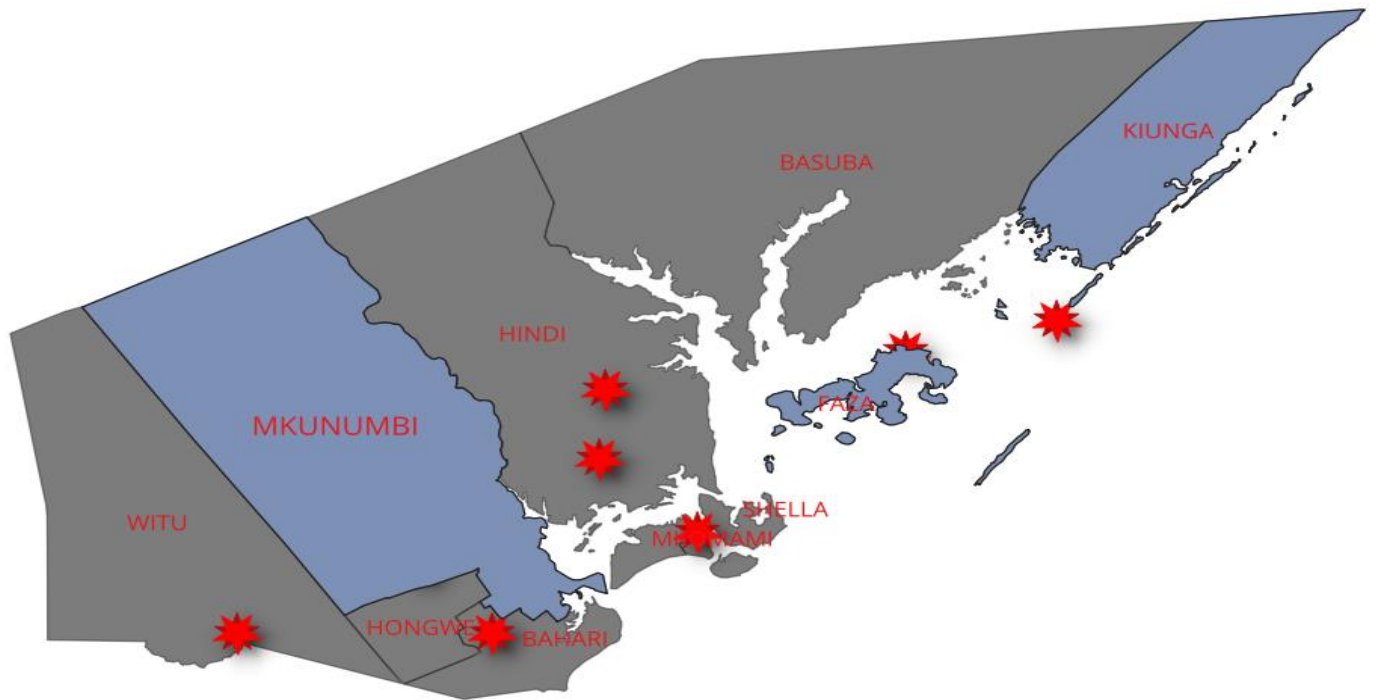


Figure 13-Effect of Floods Susceptibility Map

Flooding is a recurrent and destructive climate hazard in Lamu County, heavily impacting wards such as Witu, Mkomani, Basuba, Bahari, Kiunga, and Hindi, as illustrated in the flood susceptibility map (Figure 13 in Section 4.3 of the report). Heavy and unpredictable rainfall leads to widespread inundation of roads, homes, farms, and schools, particularly along flood-prone areas like Gamba Road in Witu, where residents sometimes rely on boats to move across submerged roads. Floods have caused crop destruction, livestock loss, and outbreaks of waterborne diseases such as malaria and diarrhea, severely disrupting livelihoods and public health. Vulnerable groups including women, the elderly, and children, are most affected due to poor housing, limited mobility, and lack of access to healthcare. Floods also increase the risk of human-wildlife conflict as animals flee flooded habitats. Despite community resilience efforts, the report emphasises the urgent need for improved drainage systems, early warning mechanisms, and infrastructure upgrades to mitigate the recurring devastation caused by floods.

4.4 PHOTO OF CLIMATE VULNERABILITY CONDITIONS IN VARIOUS WARDS IN LAMU COUNTY



Figure 14: Environmental pollution effects in Faza Ward



Figure 15: Flooding effect in Basuba Ward



Figure 16:Flooding effect in Witu Ward



Figure 17: Drought effect in Hindi Ward



Figure 18: Drought effect in Bahari ward



Figure 19: Rising sea level effect in Faza Ward

SECTION FIVE: FINDINGS BY VULNERABILITY THEMATIC AREAS

5.1. Climate Vulnerability and Risks

What environmental or weather changes have you observed in your community over recent years?

Increased Drought Frequency and Intensity: The study revealed from discussions held with the beneficiaries that prolonged and severe droughts have become increasingly frequent in most parts of Lamu County. Communities that once experienced consistent seasonal rains are now facing extended dry periods, affecting their access to food and water. Beneficiaries noted that their boreholes have dried up quickly and that the water available is often too salty for human or agricultural use. The intensity of the droughts has led to diminished agricultural yields and livestock losses. The unpredictability of the rains makes it harder for communities to prepare or recover. These droughts have a ripple effect on conflicts, food prices, and public health due to water scarcity and reduced farm output.

"In the past, there used to be sufficient rains in the area, but nowadays it is only the hot sun that has led to prolonged droughts. Now the problem is that we are having a lot of malaria infections, and the sad thing is that we have to go to the hospital in Mokowe because the dispensary here has no medicine." – FGD with Mixed Group- Hindi Ward

"There have been droughts, and after droughts, there came more rains than expected, which have caused floods, and the floods have washed away our farms. Secondly, our cattle have died due to droughts." – FGD Mixed Group- Bahari Ward

"Mine is about drought. The droughts have increased here in Lamu County, and even when we sink boreholes and wells, they do not hold water for long before they dry up." – FGD with Mixed Group- Basuba Ward

Unpredictable and Irregular Rainfall Patterns: The study revealed from discussions held with the beneficiaries that the rainfall patterns have become erratic and highly unpredictable. Community members shared that in the past, they could rely on certain months for planting and harvesting based on the seasonal rains. However, this has changed drastically, with rains coming too early, either too late, or not at all. This unpredictability has led to the failure of crops and the inability to plan effectively for farming or pastoral activities. Farmers are particularly affected, with some expressing their confusion over what seeds to plant or when to plant them, resulting in significant losses.

"Nowadays, seasons are very difficult to predict in that sometimes the periods for rain may be longer or shorter and not as expected, which is causing a lot of losses to us as people who depend on farming." – FGD Mixed Group- Bahari Ward

"Due to people cutting down forests, which have led to reduced rains, indigenous weather forecasts have become very inaccurate and unreliable, thus we cannot plant in time like we used to some years back." – FGD with Mixed Group2- Bahari Ward

Flooding and Infrastructure Damage: The study revealed from discussions held with the beneficiaries that heavy and unseasonal rains have caused devastating floods, which have damaged roads, homes, and farmlands. While rain is needed, its excessive nature in short periods has overwhelmed the community infrastructure. Roads have become impassable, farmlands have been washed away, and some homes have been destroyed. These flood events not only disrupt daily life but also severely affect the local economy and access to services, particularly in health and education.

"Some time back, some floods destroyed houses here in Hindi because of the rains." – FGD with Mixed Group- Hindi Ward

"There has been a lot of rain than expected, which has flooded farmlands, so that even crops cannot grow." – FGD Mixed Group- Bahari Ward

"We have also witnessed some areas become inhabitable when it rains because of floods, and the roads are rendered impassable." – FGD with Women Group Mkunumbi Ward

Deforestation and Environmental Degradation: The study revealed from discussions held with the beneficiaries that rampant deforestation and land clearing for agriculture have significantly contributed to the changes in weather patterns. The destruction of indigenous forests, which traditionally supported rainfall, has led to reduced rainfall and desertification. Beneficiaries acknowledged the trade-off between expanding farmland and preserving the environment, noting that while food production increased temporarily, it has come at a cost to rainfall reliability and water availability. The environmental degradation also includes the dumping of plastics and hazardous waste, worsening ecological balance.

"In the past, we used to have a lot of trees here in Hindi but people chose to cut down the trees which has led to the drought we have been experiencing." – FGD with Mixed Group- Hindi Ward

"I feel that over time, we have destroyed the indigenous forests that used to bring rain. Secondly, the population has increased, thus putting pressure on forests as people settle and farm." – FGD with Mixed Group2- Bahari Ward

"The changes that I have witnessed have been caused by us. First, we have cut down trees, and the place looks like a desert now." – FGD with Women Group Mkunumbi Ward

Conflict between Pastoralists and Farmers: The study revealed from discussions held with the beneficiaries that climate-related changes, especially drought, have intensified conflicts between pastoralists and farmers. With pastures drying up, pastoralist communities move their livestock into farming areas, leading to disputes over land and crop destruction. While some communities tolerate this due to familial ties or shared community identity, it creates tension. The absence of demarcated zones for farming and grazing exacerbates the situation, particularly when scarce water sources are contested.

"We had a challenge of droughts, which led to conflicts between the pastoralists here and farmers because they came to graze in the village." – FGD with Mixed Group- Hindi Ward

"The challenge that we have witnessed is the persistent conflicts between farmers and pastoralists in times of drought because we do not have specific areas for each group to do their activities." – FGD with Women

Group Mkunumbi Ward

"When we try planting trees because of droughts, pastoralists bring in their cattle, which graze on the trees, thus they end up drying up." – FGD with Mixed Group2- Bahari Ward

Ocean Pollution and Decline in Fish Population: The study revealed from discussions held with the beneficiaries that pollution from human activity and the development of infrastructure such as the port has resulted in ocean contamination, leading to reduced fish availability. This has had a significant effect on coastal communities that rely on fishing for their livelihood. Floods further destroy marine habitats, compounding the problem. The declining fish population not only threatens food security but also undermines household income for fishing communities.

"We have a problem of ocean pollution because of the port. The benefits of the port are far more less than the losses because fish has diminished." – FGD with Women's Group-Mkomani

"Nowadays in the oceans there are no fish as there used to be some time back. When we go fishing, we do not get as many fish as we used to because the oceans have been polluted." – FGD with Mixed Group- Faza Ward

Heat Stress and Health Impacts: The study revealed from discussions held with the beneficiaries that the rising temperatures associated with climate change have created new health challenges in the community. Increased heat makes homes uncomfortable and affects the well-being of residents, especially vulnerable groups like women and children. High temperatures are also linked to disease outbreaks, including malaria. As the weather becomes more extreme, traditional housing and healthcare systems are increasingly strained.

"Climate change also has increased the levels of heat in the homes and houses are inhabitable unlike in the past and this has even affected the health of some of us." – FGD with Women's Group-Mkomani

"Now the problem is that we are having a lot of malaria infections." – FGD with Mixed Group- Hindi Ward

Socioeconomic Impacts and Youth Vulnerability: The study revealed from discussions held with the beneficiaries that environmental changes have had far-reaching socioeconomic impacts, especially on youth. Reduced agricultural and fishing productivity has led to fewer job opportunities. This economic strain has pushed some youth into drug abuse due to idleness. Businesses, particularly those run by women, have also been affected due to reduced purchasing power among community members, exacerbated by food insecurity and a high cost of living.

"In recent years, we have been experiencing unusual droughts that have impacted the youth in a way that nowadays there are no jobs to do; thus, youths have indulged in drug abuse because of idleness." – FGD with Mixed Group- Faza Ward

"This has really pushed the cost of living very high, and as women, this has affected our businesses because there are no people to buy our items." – FGD with Women's Group-Mkomani

Which climate-related hazards (e.g., floods, drought, and sea level rise) affect your community the most?

Drought as the Most Prevalent Hazard: The study revealed from discussions held with the beneficiaries that drought emerged as the most widespread and impactful climate-related hazard across all wards. Participants cited extreme food shortages due to failed crop production, dying livestock, and increased dependency on unreliable boreholes. Droughts were linked to disruptions in the agricultural cycle, loss of income, and general food insecurity. Residents observed that rains are now infrequent and unpredictable, making traditional farming practices unreliable. Drought also heightened conflict with wildlife, as wild animals, particularly elephants, invade farms in search of food. Communities are left vulnerable as their basic means of survival farming and livestock keeping are severely compromised by prolonged dry spells.

"Droughts are the most prevalent, followed by floods that even wash away the topsoil on farms. When this happens, there is a shortage of food because we do not even have money to purchase fertilizers to increase plant yields, and a challenge to food security arises." – FGD Mixed Group- Bahari Ward

"In terms of farming, things are really bad; even food for domestic use is hard to get. There are no crops. There's a lot of drought, and livestock are dying due to a lack of pasture and water." – FGD with Mixed Groups- Kiunga Ward

"We have been experiencing droughts, sea level rise, and increased salt levels in groundwater." – FGD with Mixed Group- Faza Ward

Flooding and Infrastructure Disruption: The study revealed from discussions held with the beneficiaries that flooding, often resulting from heavy rains, has significantly affected local infrastructure, especially roads, farms, and homes. Beneficiaries reported that floods disrupt children's education, force families to walk long distances, and damage crops. The floods often make roads impassable, isolate households, and render emergency services inaccessible. Moreover, stagnant water from floods creates breeding grounds for mosquitoes, thereby leading to the outbreak of diseases such as malaria and diarrhoea. Floods were also mentioned as a key reason for crop failure and poor harvests, further compounding food insecurity in communities already dealing with drought.

"Floods because by rain have led to disease outbreaks like malaria and diarrhoea. There have been floods that have led the plants not to grow well, and the roads are impassable." – FGD with Mixed Group- Hindi Ward
"Droughts and floods were in some areas farms were washed away by floods, thus they ended up drying up. Roads are also flooded, which forces parents to take their children to school and go for them because the roads are impassable. Sometimes the roads are cut off completely by floods." – FGD with Mixed Group2- Bahari Ward

"We all get affected because when, for example, there are floods or rains, we cannot do our businesses, children cannot go to school, and women cannot go to the farms." – FGD with Women's Group-Mkomani

Sea Level Rise and Salinity of Water Sources: The study revealed from discussions held with the beneficiaries that sea level rise is becoming a serious concern, especially in coastal wards such as Bahari and Faza. This has led to increased salinity in both surface and groundwater sources, especially around Lake Kenyatta. The mixing of seawater with freshwater sources due to tidal changes has compromised access to clean drinking water, destroyed aquatic ecosystems, and reduced fish populations. Communities reported cases of fish deaths and a general decline in water quality. These changes threaten both human health and livelihoods, particularly in fishing-dependent areas where fresh water is essential for survival and income generation.

"There is an increase in salinity in freshwater. This is particularly caused by high tides that choke the Lake Kenyatta, a freshwater lake that drains to the Indian Ocean. When the ocean rises, its water mixes with that of the lake, which is the source of fresh water for residents." – FGD Mixed Group- Bahari Ward

"We have been experiencing droughts, sea level rise, and increased salt levels in groundwater." – FGD with Mixed Group-Faza Ward

Disruption of Livelihoods and Economic Activities: The study revealed from discussions held with the beneficiaries that climate-related hazards such as flooding, drought, and sea level rise have severely disrupted livelihoods, especially fishing, farming, and small-scale businesses. For instance, men in fishing communities are unable to go to the ocean due to dangerous weather conditions. Consequently, household incomes have diminished, affecting women and children who depend on the men's earnings. Farmers are unable to harvest or plant consistently due to erratic weather. Markets and businesses are closed during floods, and the rising cost of food has affected traders and households alike. These hazards have led to rising poverty and dependency on aid.

"Men are the most affected because when there are sudden weather changes, men do not go to the ocean to fish, so they end up staying indoors against their wishes." – FGD with Women's Group-Mkomani

"Men are the most affected, followed by women, because most men have not learned yet that they are the breadwinners. Because they depend on fishing when the weather changes or there are any climate-induced risks, they suffer most, and through that, women and children also suffer." – FGD with Women's Group-Mkomani

"When this happens, there is a shortage of food because we do not even have money to purchase fertilizers to increase plant yields." – FGD Mixed Group- Bahari Ward

Human-Wildlife Conflict Triggered by Climate Hazards: The study revealed from discussions held with the beneficiaries that drought and food scarcity have contributed to rising human-wildlife conflict. As natural food and water sources for wildlife diminish, animals such as elephants venture into farms and settlements in search of sustenance. This has created fear among community members and loss of crops that were meant to cushion families during hard times. The damage by wild animals intensifies already existing vulnerabilities, especially among farming households, and poses a direct threat to community safety and food security.

"There have been droughts that have even affected the food availability for wild animals, where animals like elephants come to destroy what we have planted as they look for food due to drought, thus making us live in fear of attacks by wild animals."
– FGD Mixed Group- Bahari Ward

How have these climate hazards affected your livelihoods, homes, food security, and incomes?

Disruption of Farming and Food Production: The study revealed from discussions held with the beneficiaries that climate hazards such as droughts and floods have significantly disrupted farming activities, which form the core livelihood of most community members. Due to unpredictable rainfall patterns, crops either fail to germinate during droughts or are washed away during floods. This has directly impacted food availability at the household level, leaving many families hungry and unable to meet basic needs. The inability to produce food has also affected agribusiness, resulting in limited income and heightened dependency on expensive market produce. Beneficiaries linked the decline in food production to malnutrition, especially among children, and an increase in illness due to poor diets.

"When the rains are insufficient, crops dry up on the farms, and we do not harvest anything. Water scarcity drives animals from the parks to the village looking for water." – FGD with Mixed Group- Hindi Ward

"Climate change affects farming and that is where we derive our livelihoods from. When we lack food, our income is affected because we have to buy costly food, and when children fail to eat well, they are malnourished and thus they become sick." – FGD with Mixed Group2- Bahari Ward

"In times of drought, we don't have enough food, and also in times of floods, we cannot plant, and even if we plant, the crops will not survive." – FGD with Mixed Group2- Bahari Ward

Increased Human-Wildlife Conflict and Insecurity: The study revealed from discussions held with the beneficiaries that droughts and floods have pushed wild animals from their natural habitats into human settlements in search of food and water, heightening insecurity in communities. In dry seasons, elephants and buffalo break out of game parks and invade farms, destroying crops and endangering lives. This has made it difficult for farmers to cultivate their land without fear. Floods also create conditions that drive tsetse flies into human areas, forcing wild animals into residential zones. Impassable roads, worsening the problem and leaving communities vulnerable, hinder patrol efforts by rangers.

"Flooding had caused us to run away from our homes, we just came back recently, and when it flooded, all the crops in our farms were destroyed and which really affected our food security status and our income, affecting our livelihoods." – FGD with Women Group Mkunumbi Ward

"When we enter the dry season, wild animals, particularly elephants and buffalo, break out of the park, and they come to destroy crops on this side. Many people have been injured by these animals, and it does not feel safe anymore, though there are efforts to compensate them." – FGD with Women Group Mkunumbi Ward

"When it floods again, wild animals escape the park because of tsetse flies and come to where humans stay." – FGD with Women Group Mkunumbi Ward

Escalation of Social and Domestic Tensions: The study revealed from discussions held with the beneficiaries that food insecurity and economic hardship caused by climate hazards have strained household dynamics, leading to increased domestic conflicts and family breakdown. The inability of breadwinners mostly men to provide for their families during droughts leads to disputes at the household level. Women reported increased quarrels, fights, and even separation stemming from the stress of hunger and unmet responsibilities. Community members noted that these tensions often escalate into formal complaints at the chief's office or local administration.

"Droughts have led to hunger where when we do not harvest anything our husbands are compelled to go out and hustle and if they fail to bring anything in the house it is conflicts with the wives and we end up fighting and having cases at the chiefs and household wrangles just because of hunger, and also families separate because of hunger." – FGD with Mixed Group- Hindi Ward

"All of us here are farmers, and we depend on farming for our livelihoods. If we fail to harvest anything, then there is hunger, and we cannot take our children to school." – FGD Mixed Group- Bahari Ward

Limited Access to Services and Infrastructure Breakdown: The study revealed from discussions held with the beneficiaries that both drought and floods have disrupted critical infrastructure such as roads and healthcare, limiting access to services. During the rainy season, roads become muddy and impassable, cutting off access to schools, markets, and health centers. In drought periods, residents walk long distances to find water, often facing insecurity along the way. These conditions increase the burden on already struggling families and hinder efforts to improve community wellbeing. Beneficiaries particularly noted the link between poor infrastructure and worsening poverty and health outcomes.

"When it rains, the roads are impassable, and therefore, insecurity levels increase, and the children cannot go to school because all roads become very muddy." – FGD with Mixed Group- Basuba Ward

"In times of drought, we cannot go to fetch water because where we get water here is about 3 kilometers and in those times, there are high levels of insecurity; thus, it becomes a major challenge for us in Basuba to get water for fear of being ambushed along the way." – FGD with Mixed Group- Basuba Ward

"Droughts also make children in school to learn with alot of difficulties." – FGD with Mixed Group- Basuba Ward

Decline in Income and Livelihood Opportunities: The study revealed from discussions held with the beneficiaries that climate hazards have drastically reduced sources of income and limited livelihood options, especially among farming and fishing households. In fishing communities, reduced fish stocks due to drought and ocean pollution have curtailed daily catches. On land, failed harvests and lack of structured markets have exposed farmers to exploitation by brokers, especially during crisis seasons. As income sources shrink, poverty levels deepen, leaving families unable to pay for education, health, or food, and exposing youth to social vices out of desperation.

"Droughts have caused hunger and aggravated poverty levels because we depend on fish for income, and lastly, the status of security has dramatically deteriorated as a result of poverty and hunger." – FGD with Mixed Group- Faza Ward

"There is also another challenge that when we do farming and the droughts are about to kick in, brokers come to buy our products at a very low price because we don't have markets around here." – FGD Mixed Group- Bahari Ward

"Diminishing quantities of fish in the seas and droughts have led to food insecurity in many homes." – FGD with Mixed Group- Faza Ward

Which groups (e.g., women, youth, elderly, PWDs) or specific places in this community are most affected by climate risks? Why?

Women as Primary Caregivers: The study revealed from discussions held with the beneficiaries that women are the most affected by climate risks because of their role as primary caregivers in households. During droughts and food shortages, women bear the emotional and physical burden of ensuring children are fed, often sacrificing their own meals. In cases of floods, they are the ones who stay awake at night to protect their children from mosquito exposure or danger. Women are also left behind when men migrate in search of income, making them solely responsible for the household's wellbeing. Additionally, women must contend with cooking in harsh conditions and managing households without sufficient water or food, heightening their vulnerability to climate shocks.

"Women are the most affected because they are the caregivers to the children. Women are the most affected; they cannot eat without their children eating, and when there are droughts and hunger, they are stressed out because they have nothing to feed their children." – FGD with Mixed Group- Hindi Ward

"Women are the backbone of households, and they are the ones left with children. For example, during dry seasons, it is the mother responsible for feeding the children, and also during floods, it is the mother who wakes up at night to ensure the children are not exposed to mosquitoes." – FGD with Mixed Group2- Bahari Ward

"Women are the most affected because some have children, the elderly, and pwards at home while the men are away." – FGD with Women Group Mkunumbi Ward

Persons with Disabilities (PWDs) and Their Households: The study revealed from discussions held with the beneficiaries that PWDs face extreme vulnerability to climate risks due to mobility limitations and dependency on caregivers. In emergencies such as floods or fires, they are unable to evacuate easily, putting their lives at greater risk. Furthermore, many PWDs are unable to engage in income-generating activities like farming or fishing, making them reliant on others for survival. Families with PWDs also experience additional pressure during climate shocks as they must consider the specific needs of PWDs in planning for safety and sustenance. Reduced food aid and discrimination in aid distribution were also cited as key barriers affecting this group.

"PWDs are the people who suffer most because, unlike us, who can work for them, they cannot do any work; thus, if they are not given food, they may die. Also, people living with diseases like HIV are affected. First, there are stereotypes that we have been infected, and when there is any assistance being given, like food, we are not even prioritized, and also, we are asked to go and register with our village elders, which is like discrimination to us." – FGD with Mixed Group- Hindi Ward

"PWDs suffer most because they are unable to do farming, or even run away in case of climate-induced emergencies like floods or fires." – FGD Mixed Group- Bahari Ward

"PWDs suffer most because they cannot walk or run. But overall, we are all affected because of the attacks by the wild animals, and therefore, everybody becomes vulnerable because we do not know when they will strike." – FGD with Women Group Mkunumbi Ward

Pregnant and Lactating Mothers: The study revealed from discussions held with the beneficiaries that pregnant and lactating women are significantly at risk due to the compounded effects of climate-induced food insecurity

and lack of access to healthcare. beneficiaries highlighted that malnutrition among expectant or breastfeeding mothers not only endangers their own health but also affects unborn or newborn children. In communities with limited access to medical facilities, the lack of roads and transportation during rainy seasons further isolates these women from lifesaving care. Their vulnerability is not only physical but also economic, as they often remain at home without reliable means of support.

"When a lactating mother is malnourished then this affects the child, and also when a pregnant woman is not fed well, then their lives and that of the unborn baby are at risk because they do not have the strength. Again, when drought strikes and the husband sees that life is getting hard, some disappear, leaving the wife behind with the children and family responsibilities." – FGD with Mixed Group2- Bahari Ward

"Women and those pregnant suffer most because we do not have a hospital or an ambulance. When we get sick or you are about to give birth, you have to look for other means to get to Lamu, and when it has rained, it becomes very difficult because of the roads and insecurity." – FGD with Mixed Group- Basuba Ward

Men as Breadwinners Facing Economic Pressure: The study revealed from discussions held with the beneficiaries that men, particularly those who are family providers, are also significantly affected by climate change due to loss of livelihood sources. In fishing and farming communities, declining yields and fish stocks have made it harder for men to meet family needs, causing stress and sometimes displacement as they leave home to seek work. Some beneficiaries expressed that the pressure on men to provide has led to mental health challenges and family tension. This economic burden often falls unevenly, depending on whether the men remain present or leave the family behind, which in turn affects the entire household.

"Men, because all the responsibility falls on them." – FGD with Mixed Group- Faza Ward

"Men have been greatly affected because they are the breadwinners in the family. Climate change has made it harder for them to provide, especially with declining income from fishing and farming." – FGD with Mixed Groups- Kiunga Ward

"I can say adults, both men and women, especially if they are the breadwinners. For example, if the breadwinner is the father and when they go to fish, they fail to get any fish, it will affect the family, same to women too." – FGD with Mixed Group- Faza Ward

Entire Households in Remote Areas: The study revealed from discussions held with the beneficiaries that climate risks do not affect individuals in isolation but often entire households, especially in remote or underdeveloped locations like Kiunga, Mokowe, or Basuba. These areas suffer from poor infrastructure, making access to emergency services and food supplies difficult. During floods, roads become impassable, leaving families stranded without access to markets or healthcare. In drought seasons, the scarcity of food and water affects all members of the household equally, especially those reliant on daily income. The widespread nature of these risks means that entire communities face hardship simultaneously, compounding local vulnerability.

"When there are rains, floods affect not only Mkomani but also the other areas neighboring us like Mokowe, Matondoni, and therefore we all get affected, and the area is big, so there is no way we can be able to prevent them." – FGD with Women's Group-Mkomani

"In places like Kiunga, the food supply becomes difficult whenever it rains heavily or during long droughts. The whole community feels the pressure, but those depending on daily earnings suffer the most." – FGD with Mixed Groups- Kiunga Ward

"When roads are cut off, we also suffer." – FGD with Women Group Mkunumbi Ward

Women-Headed Households and Vulnerable Care Roles: The study revealed from discussions held with the beneficiaries that women-headed households and women caring for multiple dependents such as elderly persons, children, or PWDs are extremely vulnerable to climate-induced shocks. These women are often left to manage alone when male partners migrate or fail to return. Their compounded caregiving responsibilities stretch their already limited resources, forcing them to make difficult decisions about food, healthcare, and safety. With little support, these women carry the social and emotional burdens of the entire household in crisis, often unnoticed in broader disaster responses.

"Women are the most affected because some have children, the elderly, and pwds at home while the men are away." – FGD with Women Group Mkunumbi Ward

"When men go to look for food, the women are left at the households and they bear the responsibility of going for water, where, during dry seasons, they walk for very long distances. They are also left with children, and if there is no water or food, the children will cry for them as they wait for the men to bring food, so women suffer more than men." – FGD with Mixed Group- Basuba Ward

"When men see that life is getting hard, some disappear, leaving the wife behind with the children and family responsibilities." – FGD with Mixed Group2- Bahari Ward

What major climate-related hazards (e.g., drought, floods, sea-level rise) currently affect Lamu County? Have you observed any trends or changes in the frequency or severity of these hazards in recent years?

Flooding and Infrastructure Destruction: The study revealed from discussions held with the government officials that flooding has emerged as one of the most persistent and destructive climate-related hazards in Lamu County, particularly along Gamba Road. It was noted that each rainy season now brings with it severe floods that damage critical infrastructure, including roads, and disrupt transport and community activities. Residents are sometimes forced to use boats to cross flooded roads, illustrating the level of disruption. What was previously occasional flooding has now become an expected annual occurrence, marking a significant change in both the frequency and severity of the hazard. These floods have compounded development challenges and affected economic activities, especially for residents of the mainland.

"I'll talk about the past three years. Lamu has been experiencing flooding in Gamba Road, whereby the roads are destroyed, and people have to use boats in the mainland so that they can cross the road. Then we have been experiencing unpredictable rainfall. Sometimes it's a rainy season, but there's no rain, and sometimes it's not a rainy season, and then there's rain." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

Sea-Level Rise and Agricultural Disruption: The study revealed from discussions held with the government officials that sea-level rise has become increasingly apparent, especially in coastal areas like Shela in Lamu Island, where the ocean has encroached on sand dunes. This gradual but steady increase in sea level is not only a threat to the coastal ecosystem but also to human settlements and tourism in the area. Additionally, the rising waters and unpredictable rainfall have affected farming patterns, compelling farmers to adopt alternative techniques such as irrigation to cope with water scarcity or saltwater intrusion. These shifts reflect the long-term environmental transformations being experienced and the adaptation efforts communities are beginning to employ in response.

"In terms of the rise of seawater level, you have seen in Lamu Island, around Shela, that the water is rising, and most of the sand dunes have been taken by the water. Also, in terms of farming, farmers have been affected, and now they are being forced to introduce irrigation." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

Which wards, locations, or populations in Lamu County are most vulnerable to these climate risks? Why?

Water Scarcity and Drought in Inland Wards: The study revealed from discussions held with the government officials that Basuba and Witu Wards are among the most vulnerable to climate risks, particularly drought and water scarcity. government officials emphasized that these communities frequently face hunger due to failed rains and have to travel long distances in search of water. In Basuba, residents reportedly walk all the way to Kiunga to access water a situation that places an additional burden on already strained populations. The repeated calls for humanitarian aid reflect systemic vulnerability, compounded by limited access to water infrastructure and unreliable rainfall. These environmental stressors have entrenched poverty and continue to erode resilience in these areas.

"I'll talk about the Witu Ward, Mkomani Ward, Basuba Ward, and Kiyunga Ward. When we talk about Basuba, these are people who have been experiencing drought and hunger. Sometimes, they call for help, that's their leaders in position, politicians often send help to them. They also have a water shortage, so they have to walk from Basuba Ward to Kiyunga Ward to get water." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

Climate-Induced Coastal and Infrastructure Vulnerabilities: The study revealed from discussions held with the government officials that Mkomani and Kiunga Wards are increasingly susceptible to risks related to rising sea levels and overdependence on the ocean for livelihoods. In Mkomani, the degradation of sand dunes key freshwater catchments is heightening the risk of long-term water shortages. These dunes supply much of the area's freshwater through wells, and their erosion poses a direct threat to water security. Additionally, in Witu Ward, flooding along Gamba Road when it rains heavily leads to the destruction of infrastructure, isolating communities and necessitating boats to bridge gaps in the road network. Kiunga Ward also faces a unique challenge of economic vulnerability due to the heavy reliance on marine resources, with farming no longer viable due to erratic rainfall.

"For the issue of the rise in water level, it's mostly seen in Mkomani Ward. Around the water catchment areas. Because people of Lamu get water from the dunes. The wells are dug, and they get water from there, and that's when they pump it to the villages and the areas. When the sand dunes are being taken away by the water, the level is rising. There's also an expected challenge of water shortage from the catchment areas.

Then for the Witu, going to the Lamu Malindi Road, that's where Gamba Road is. When it rains too much, it floods, and then the roads get destroyed, and then people don't have to introduce boats to the mainland to connect the roads. Then, for Kiyunga Ward, we can also talk about the over-dependency on the sea, because the other people depend on farming, and sometimes it's dry, they cannot have food from it. Most people will be depending on the ocean as their main economic activity because farming is not doing well." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

5.2. Community Participation and Local Knowledge

Are there any traditional or indigenous practices that help your community deal with climate risks?

Prayer as a Spiritual Response to Climate Stress: The study revealed from discussions held with the beneficiaries that prayer, both in religious institutions and traditional settings, is the most common response to climate-related challenges. Communities mentioned turning to churches and mosques during periods of drought to pray for rain. In some areas, these spiritual practices were emphasized more than indigenous rituals, especially in places where formal religious practices have become more dominant over time. Despite the lack of physical interventions through traditional rituals, prayer is seen as a powerful and unifying act that offers psychological comfort and communal hope in dealing with climate variability and extreme weather conditions.

"Here, where we stay, we go to churches and mosques to pray for rain. We do not use traditions to seek rain. In my tribe, when the droughts persist, we as married women go to a tree known as mchai, and we do some rituals, and after 3 days it rains." – FGD with Mixed Group- Hindi Ward

Gender-Specific Traditional Rituals and Cultural Observances: The study revealed from discussions held with the beneficiaries that some communities still uphold distinct traditional rituals during climatic extremes, often structured around gender roles. In places like Basuba and Kiunga, men and women hold separate prayer sessions in designated areas, reflecting culturally embedded beliefs and social order. These rituals often involve symbolic acts such as sacrifices, honey harvesting linked to flowering seasons, and spiritual invocations led by elders. Though these practices are not widespread across all wards, they remain integral for some communities as cultural responses that reinforce identity, order, and continuity in the face of climate stress.

"Here what we do is that we have specific places where during dry seasons, we have separate prayer sessions where women go to pray alone and men also have their special place because we are not allowed to mix and when we are through there are some other cultural things we do and if God hears us then it will rain. In Milimani, during droughts, it is the time we harvest honey, so when it rains and the trees flower, we plant flowers, trees so that bees can make honey and so that we can harvest in July or August." –FGD with Mixed Group- Basuba Ward

Use of Granaries and Agricultural Taboos as Climate Coping Mechanisms: The study revealed from discussions held with the beneficiaries that traditional practices related to agriculture, including the use of flood-resistant granaries and seasonal taboos, still exist and are respected in some communities. For example, in Bahari Ward, beneficiaries mentioned the use of granaries for seed preservation, which allows communities to store food and seeds safely through harsh seasons and replant when conditions are favorable. Others shared how traditional taboos influence when and how farming or fishing is done, ensuring sustainable use of resources. These practices help communities prepare and cope with the uncertainties of climate change, while also preserving local ecological knowledge.

"We mostly pray to God when things get tough. People also perform traditional sacrifices, especially during times of drought or when the sea becomes too rough. Some elders lead special community prayers asking for rain or protection from natural disasters. There are also traditional taboos and customs around fishing and farming seasons, which help guide people on when and how to use natural resources carefully. While these practices don't stop the climate from changing, they give the community hope and a sense of unity in facing these challenges together." – FGD with Mixed Groups- Kiunga Ward

How is the community involved in planning or implementing actions to address these climate challenges?

Humanitarian Aid during Disasters: The study revealed from discussions held with the beneficiaries that one of the most common forms of support received from external actors, especially NGOs and the government, is humanitarian aid provided during times of disaster, particularly floods and drought. Communities highlighted food aid, provision of blankets, medicine, and temporary shelter as the main items distributed during emergencies. Organizations such as the Kenya Red Cross, World Vision, and the County Government of Lamu were consistently mentioned as key responders in such instances. However, while appreciated, most of this support was viewed as reactive and short-term rather than proactive or sustainable.

"When we have calamities like floods Red Cross comes with humanitarian aid like food, we have had seminars from WWF, Youth Bunge and other organizations. The problem is that we just talk and plan but no tangible action is taken and they just disappear." – FGD with Women Group Mkunumbi Ward

"The Red Cross Society of Kenya usually comes during floods to assist with humanitarian aid." – FGD with Mixed Group2- Bahari Ward

"Yes, we have received support from the Red Cross and the county government when there are floods, but the support is on a short-term, not a long-term basis." – FGD with Mixed Group- Faza Ward

Provision of Agricultural Inputs and Support for Farmers: The study revealed from discussions held with the beneficiaries that another key area of support has been the distribution of agricultural inputs such as seeds and seedlings. These resources were primarily supplied by the County Government of Lamu and World Vision to help communities recover from poor harvests and improve food security. However, the frequency and consistency of this support varied between wards, and while helpful, it was not always complemented with training or sustainable farming techniques. Beneficiaries noted that such support would be more effective if paired with timely technical guidance and follow-up.

"We have had World Vision, which has helped us with food, seedlings, school fees for the vulnerable, and also building schools. We also have the county government, which has assisted us with seedlings." – FGD with Mixed Group- Hindi Ward

"We have received food aid from the Lamu county. We have received seeds from the Lamu county." – FGD with Women Group Mkunumbi Ward

Health Interventions and Disease Prevention: The study revealed from discussions held with the beneficiaries that health-related support during climate-induced emergencies has played a vital role in preventing disease outbreaks. During flooding, beneficiaries indicated that NGOs such as the Red Cross and government departments provided mosquito nets, water purification tablets, and medical supplies. These efforts helped mitigate the spread of waterborne diseases and malaria, which are common during such periods. Nonetheless, some community members expressed that this support, though lifesaving, was often minimal and insufficient in duration or coverage.

"The departments of health, Botswana County, and the national government assist with mosquito nets and some water treatment drugs so that we do not contract diseases and illnesses during flooding. They also give out food for children." – FGD with Mixed Group2- Bahari Ward

"The Red Cross has been very helpful in creating awareness on how we can protect ourselves from floods and also given us relief food, mosquito nets and other items." – FGD Mixed Group- Bahari Ward

Awareness Creation and Community Sensitization: The study revealed from discussions held with the beneficiaries that several NGOs and CBOs have carried out community sensitization on issues such as climate change, disaster preparedness, and gender-based violence (GBV). Organizations like Further Youth Alliance and Lamu Women Alliance were acknowledged for holding training sessions and awareness forums. While such initiatives have improved local understanding of some socio-environmental challenges, beneficiaries also emphasized the lack of practical or action-oriented outcomes from these efforts. Sensitization alone, they argued, was not enough to foster meaningful adaptation or resilience.

"Yes, we have received training from Further Youth Alliance which is a CBO that brought us together and trained us on climate change." – FGD Mixed Group- Bahari Ward

"There have been a few seminars and awareness sessions, especially on issues like gender-based violence (GBV), but nothing directly focused on helping us adapt to climate change." – FGD with Mixed Groups- Kiunga Ward

Youth Empowerment and Skills Training: The study revealed from discussions held with the beneficiaries that some youth-targeted interventions have been implemented to improve livelihoods, especially in the context of economic vulnerabilities exacerbated by climate change. Notably, the Red Cross and Northern Rangelands Trust (NRT) were recognized for facilitating vocational training in areas like tailoring and carpentry. These initiatives were seen as a step toward building long-term resilience by offering alternative sources of income. However, only a few community members had access to such programs, and many requested that these efforts be scaled up to reach more youth.

"Yes, we have been assisted with food by the Red Cross and the County government of Lamu. Red Cross has also assisted our youth with empowerment trainings like carpentry and tailoring. NRT has taken some of us on training in Lamu." – FGD with Mixed Group- Basuba Ward

Gaps in Support and Lack of Consistency: The study revealed from discussions held with the beneficiaries that despite some support being provided, many community members feel left out or inadequately supported. Particularly in remote areas, beneficiaries lamented the absence of regular, structured, or long-term interventions. The existing support is often described as minimal, inconsistent, and overly focused on immediate relief rather than resilience-building. Some even noted that their local leaders and NGOs rarely follow through on promises, leading to a sense of abandonment and frustration among the population.

"We don't get much support from NGOs, and our local leaders don't really help us either. However, there is one water project that has helped bring us access to fresh water, which has made a big difference... Overall, the support is minimal and not consistent. We still feel like we've been left on our own." – FGD with Mixed Groups- Kiunga Ward

How are women, youth, elderly, and persons with disabilities involved or supported in these efforts?

Limited and Tokenistic Community Engagement: The study revealed from discussions held with the beneficiaries that community involvement in climate action planning and implementation is largely minimal or symbolic. Many participants expressed frustration that they are often invited only for attendance purposes, with no real opportunity to provide meaningful input. In several wards, beneficiaries reported that public participation either is absent or takes place too late to have any practical impact. While reports may indicate community involvement, actual engagement tends to be superficial, lacking structured consultation or follow-through. As a result, affected populations feel excluded from decision-making on issues that directly impact their lives.

"When we have such calamities like floods the problem is that they involve the community when it is too late to do anything, and the report says we have been involved. We are just there for attendance only and there is no public participation for many issues. We do not give our views on anything here." – FGD with Mixed Group- Hindi Ward

Existence but Dormancy of Community-Based Committees: The study revealed from discussions held with the beneficiaries that while community-based structures such as security committees and Drought Risk Reduction (DRR) groups exist, many have become dormant or lack the necessary support to function effectively. Beneficiaries highlighted previous trainings and seminars they attended, particularly around drought preparedness. However, due to inactivity and lack of follow-up, these structures have failed to provide sustained engagement or response. Communities believe that if these groups were supported and activated during times of crisis like flooding, they could play a vital role in climate response initiatives.

"We have community forums and groups that are involved. Let's say, when we have attacks by wild animals, there are security committees that are formed, and also we have DRRs- drought risk resistance, where we have gone for seminars, but for some time the group has been dormant, and there is nothing happening with the trainings. If it could be active even during the flooding, we could do something. The committee should be supported, but that does not happen." – FGD with Women Group Mkunumbi Ward

Grassroots Initiatives by Local CBOs: The study revealed from discussions held with the beneficiaries that some positive examples of grassroots involvement exist, especially through the work of local Community-Based Organizations (CBOs). In areas like Faza Ward, community members recognized the role of CBOs in conducting mangrove restoration, ocean clean-ups, and climate change awareness training. These efforts, although not comprehensive or government-led, represent promising models of community-led climate action. The active participation of CBOs helps build local capacity and ownership of environmental conservation efforts, though there remains a need to scale up and integrate such initiatives into broader policy frameworks.

"In Lamu, we have a lot of CBOs that are involved in mangrove restoration and ocean cleanings, and they also offer training on climate change." – FGD with Mixed Group- Faza Ward

How are communities (including women, youth, and vulnerable groups) involved in the planning and implementation of climate actions in Lamu?

Limited and Ineffective Inclusion in Formal Climate Planning Processes: The study revealed from discussions held with the government officials that although mechanisms such as public participation exist for involving communities in climate action planning, they are often inadequately implemented and largely symbolic. Either women and youth, in particular, are excluded or their contributions are disregarded. The structure of public participation forums does not ensure meaningful engagement, especially from vulnerable groups. Government officials highlighted that even when women and youth are invited to participate, their views are often not factored into final decisions, and implementation processes continue without genuine community ownership. This reflects a gap between policy intent and actual practice on the ground, with community engagement remaining superficial and perfunctory.

"For the county level, women are just the government officials of what they will do. Most of the time, it's the public participation on these issues, but then the public participation is poorly done. That's the beginning of community involvement. It starts with public participation, but then women and youth are not even involved. Sometimes the problem comes when they're involved, their views and perspectives are not considered. It's what they need to do. That's what goes on," – KII with Salwa Mahmoud, Lamu Arts and Theatre Alliance

Active Grassroots Leadership and Engagement by Women and Youth in Community-Led Climate Actions: The study revealed from discussions held with the government officials that despite the shortcomings at the county

level, women and youth are actively engaged in climate action at the grassroots, often leading or participating in environmental initiatives. Civil society organizations and local groups have created platforms for women and youth to be at the forefront of practical climate solutions such as tree planting, beekeeping, and waste management. These efforts demonstrate agency and leadership from vulnerable groups, especially women, who have become central to local adaptation strategies. The respondent emphasized that these groups are not just passive recipients of climate interventions but are critical actors driving community-based environmental resilience.

"For the community level, women have been at the forefront. They're headed by the PSOs together with the youth. Right now, if we talk about tree planting, we talk about women. If we talk about beekeeping, we talk about women. If we talk about waste management, it's still women. You get to see so many initiatives being spearheaded by women. They are at the forefront in at least fighting for this climate change." – KII with Salwa Mahmoud, Lamu Arts and Theatre Alliance

5.3. Local Mitigation and Adaptation Strategies

What actions or strategies are you/your community already using to cope with or adapt to these changes?

Water Harvesting and Irrigation Initiatives: The study revealed from discussions held with the beneficiaries that several community members have resorted to water harvesting and small-scale irrigation as key strategies to cope with erratic rainfall and drought. For those who can afford water tanks, rainwater is collected during the wet season for future use in farming. Some groups have invested in wells and use electric pumps to support vegetable and horticultural irrigation. Although not every household can afford this, these adaptive techniques have helped mitigate the impact of prolonged dry spells. These irrigation efforts are largely community-led, with individuals and groups sourcing their own seedlings and farming inputs without relying on external organizations.

"What I have done to mitigate flooding is that I have planted watermelons, cassava and mangoes instead of maize to mitigate losses brought about by climate change though the market for mangoes is not good and we would like to request if we can have a mango processing plant here in Mpektoni. Again, we have also sunk wells that we use to do irrigation of vegetables, and horticulture so that we are not much affected by prolonged droughts. For the horticulture we do not depend on any organization to support us but we do it as individuals and also groups where we buy seedlings from agrovet." – FGD Mixed Group, Bahari Ward

Livelihood Diversification and Income Generation: The study revealed from discussions held with the beneficiaries that many community members, especially women, have diversified their sources of income to cushion themselves against crop failures and floods. Women's groups have adopted livelihood activities such as tailoring, hairdressing, weaving, and basketry to generate income. Livestock keeping has also emerged as an alternative source of livelihood where goats are kept and sold during hard times. These strategies not only provide a financial safety net but also ensure food security at the household level when farming becomes unviable due to climate shocks.

"When the crops are affected by floods, we have adopted keeping livestock so that you can sell a goat to buy food. We have also adopted a strategy of farming in high areas that are not affected by floods, so that crops are not affected by water. As women, we have adopted alternative livelihood methods like weaving, hairdressing, tailoring, and other income-generating activities in case there is flooding and all the crops are destroyed. Because we used to depend on farming to meet our household needs, now with an income-generating activity, if the crops are destroyed, then we can buy food with our savings." – FGD with Women Group, Mkunumbi Ward

Migration and Relocation during Floods: The study revealed from discussions held with the beneficiaries that some community members have adopted temporary relocation to higher ground during the rainy season as a coping strategy. People living in valleys or flood-prone areas preemptively move to elevated places to avoid the

destruction caused by flash floods. However, due to socio-economic constraints and emotional attachment to their homes, not all families are able to leave. This partial adaptation underscores the community's limited capacity to fully respond to floods, especially for those without alternatives.

"When we do is that when the rains are about to come we move from the valleys and the lowlands to higher places but the problem is that those are our houses and families so we cannot leave them but rather we choose to just wait for the floods to come even after warning. Some others just harvest the water for future use in irrigation later but only for those that are able to afford tanks." - FGD with Mixed Group, Hindi Ward

Environmental Conservation through Tree Planting and Mangrove Restoration: The study revealed from discussions held with the beneficiaries that environmental restoration, particularly through tree planting and mangrove reforestation is being embraced as a long-term climate adaptation strategy. Communities are planting trees both as a means to attract rainfall and to improve the environment. Specific support from organizations such as WWF and the World Bank has also enabled mangrove restoration and construction of flood prevention dykes. These activities serve multiple functions stabilizing ecosystems, enhancing resilience to floods, and providing economic and medicinal benefits.

"We have received support to plant mangroves from WWF. We have not received any support because most organizations just do the mapping, and it stops there. We have received support from World Bank to construct flood prevention dykes where young people were even employed to do the work." - FGD with Women's Group, Mkomani

Adoption of Climate-Resilient Crops and Food Preservation: The study revealed from discussions held with the beneficiaries that farmers are shifting to drought-resistant and climate-resilient crops like cassava and simsim to reduce the risk of crop loss during unpredictable weather. These crops not only survive harsh conditions but also offer a longer shelf life, allowing communities to store them for use during dry seasons. Some beneficiaries also harvest honey and rear poultry to boost household food security. Even though markets are limited, these food sources help families to survive in times of crisis.

"We are farmers who plant cassava, maize, and harvest honey. Whereas we encounter challenges with post-harvest loss because of how we store maize, cassava can go for a long time without getting damaged. We do farming and chicken rearing. Although there are no markets where we can sell our products, we use them at home to mitigate the issues of food insecurity during droughts." - FGD with Mixed Group, Basuba Ward

Reliance on Ocean Resources and Alternative Employment: The study revealed from discussions held with the beneficiaries that coastal communities are increasingly relying on the ocean and related economic activities to withstand environmental changes. Fishing remains central, but due to declining fish stocks, communities are seeking partnerships with private companies like Mawimbi for employment. Additionally, the construction of cold storage and preservation facilities has improved fish storage, even though most of the catch is consumed at home rather than sold. Women's groups are also involved in marine-based conservation through mangrove planting, using them for both environmental and economic gains.

"Most of us here depend on the ocean for our livelihoods through fishing. What we have done is to seek alternative sources of livelihoods, for example, there is a company by the name Mawimbi that has been employing us to earn income. We also have women's groups that support women with alternative income-generating activities. We are replanting mangroves that we use as medicine, for fuel, and also as breeding grounds for fish." - FGD with Mixed Group, Faza Ward

Traditional Coping Mechanisms and Low-Resource Innovations: The study revealed from discussions held with the beneficiaries that in the more remote areas, some community members continue to use traditional tools and low-resource techniques to cope with climate shocks. While such methods may not be scientifically robust, they represent a form of resilience in the absence of external support. However, many of these practices are ad-

hoc, and farmers plant crops with hope rather than using informed strategies, reflecting limited access to adaptation knowledge and resources.

"We try to manage these difficult conditions as best as we can. In this area, some people use traditional tools and techniques to deal with strong winds and changing weather. When it comes to farming, we just go ahead and plant without paying much attention to the changing climate, and we don't really have any specific adaptation techniques. It's more about trying whatever we can, hoping the weather will favor us." - FGD with Mixed Group, Kiunga Ward

5. What challenges or barriers make it difficult to adapt to these climate hazards?

Inadequate Financial Capacity: The study revealed from discussions held with the beneficiaries that poverty and lack of financial resources were cited as significant barriers to implementing climate adaptation measures. Many households struggle to afford irrigation infrastructure, buy drought-resistant seedlings, or construct water storage systems. The inability to invest in these strategies leaves them exposed to recurrent climate shocks such as droughts and floods. Even when early warning systems are in place, people cannot act due to financial limitations. Furthermore, the inability to meet basic needs like food, health insurance (SHA), and school fees makes it difficult for families to prioritize adaptation, making them more vulnerable to climate-related hazards.

"The challenges that we face are poverty, where we cannot be able to meet the financial needs associated with climate hazards. For example, I received a message that I have to pay SHA dues for the year at once, yet I cannot afford to pay. If my family or I get injured by wild animals, where do I receive treatment if I cannot afford to pay the SHA yearly subscription?" – Mixed FGD Respondent

"The main challenge we face is insufficient funds to implement these strategies, for example, buying seedlings or sinking a well is very expensive. Secondly, it offers poor prices for our products..." – Mixed FGD Respondent

Land Tenure Insecurity and Lack of Zoning: The study revealed from discussions held with the beneficiaries that unclear land ownership, lack of title deeds, and the absence of zoning for specific land uses create significant barriers to climate adaptation. Participants indicated that efforts such as tree planting, land reclamation, and environmental restoration are undermined by uncertainty over land ownership. Without title deeds or official subdivision, residents fear investing in land they may later lose. Additionally, the absence of demarcated zones for farmers and pastoralists has increased conflict, further reducing the community's ability to manage land sustainably.

"The challenge that we face is that we do not have zoned areas for pastoralists and farmers. We also do not have a title deed, and the land is not yet subdivided. Although we had been requested to set apart a portion to plant trees, we cannot do so because you do not know if where you are planting trees is your share of land or not." – Mixed FGD Respondent

Poor Infrastructure and Market Access: The study revealed from discussions held with the beneficiaries that poor infrastructure including impassable roads hinders adaptation by limiting access to markets, inputs, and services. Farmers and fishers struggle to sell their produce due to poor road conditions, resulting in post-harvest losses and poor incomes. The lack of storage facilities, particularly for perishable products like fish and cashew nuts, exacerbates losses. These infrastructural deficiencies reduce incentives for climate-resilient agriculture and limit economic alternatives that could help communities better withstand climate impacts.

"We have very poor roads that make even access to markets for farm products very difficult, thus people are reluctant to practise climate-savvy agriculture." – Mixed FGD Respondent

"We get honey from the forest and also plant maize but there are no markets for that." – Mixed FGD Respondent

Leadership Gaps and Corruption: The study revealed from discussions held with the beneficiaries that weak leadership, corruption, and limited government action were perceived as major barriers to effective climate change adaptation. Beneficiaries expressed deep frustration with leaders at both the national and county levels for failing to implement or enforce climate policies. The devolution of natural resource management has resulted in less regulation, with minimal enforcement of sustainable practices. Corruption was also cited as a key reason why community priorities are ignored, and resources meant for climate mitigation do not reach the grassroots.

"The major barrier is the government of Kenya, which is unwilling to deal with climate change issues. If non-governmental organizations are able, then the government is more able than they but corruption has hindered this." – Mixed FGD Respondent

"Selfish interests among the people who are supposed to lead climate change mitigation efforts in the government." – Mixed FGD Respondent

Limited Access to Knowledge and Technical Skills: The study revealed from discussions held with the beneficiaries that a general lack of technical knowledge and skills on climate-smart practices undermines local adaptation. Community members shared that while they are aware of the changing climate, many do not know how to respond effectively due to limited training. Without technical support, even the few willing to implement new practices face challenges. This knowledge gap spans areas such as irrigation, water harvesting, land rehabilitation, and natural resource conservation.

"Another challenge is the skills and know-how deficiency among the locals. Shortage of finances is also a problem and if people can be assisted in these then they can be able to do something valuable for themselves..." – Mixed FGD Respondent

"Most people lack the skills how they can harness natural resources well." – Mixed FGD Respondent

Social and Cultural Limitations in Emergency Response: The study revealed from discussions held with the beneficiaries that cultural and social norms hinder effective emergency response to climate hazards like flooding. Communities resist relocating to safer zones due to familial obligations, lack of trust in relocation sites, or inability to leave livestock behind. Some participants emphasized that moving to another person's home creates a burden on the host family, discouraging evacuation even during emergencies. Consequently, many residents choose to remain in risky areas, increasing their exposure to hazards.

"When the early warnings for us to move to safe areas are issued, moving to other people's homes is a problem because if we have to move, we move as a family. Now this adds an extra burden to the host family since we have to eat, bathe, and all that. We also have livestock that we cannot move with." – Mixed FGD Respondent

"If we have to move because of floods, it will make us pay rent, yet we are used to staying in our own houses, and we do not have the income to do so." – Mixed FGD Respondent

Overdependence on Natural Resources: The study revealed from discussions held with the beneficiaries that limited livelihood diversity and overdependence on natural resources like fishing and small-scale farming are significant adaptation barriers. In places like Fuzu, where over 90% of people are unemployed, fishing becomes the sole means of survival, leading to overfishing and further environmental degradation. Without alternative livelihoods, the pressure on natural ecosystems continues to grow, exacerbating climate vulnerability. Beneficiaries noted the need for income diversification opportunities to ease dependence on these fragile systems.

"The reason we have diminishing fish stocks is due to high levels of unemployment. In Fuzu, more than 90% are unemployed, which has led everybody to go fishing for them to get food and a source of income." – Mixed FGD Respondent

"We don't have job opportunities, so we are forced to rely only on fishing and small-scale farming, both of which are heavily affected by climate change." – Mixed FGD Respondent

What more could be done to help this community better prepare for future climate risks?

Reliance on Religious Prayers (Churches and Mosques): The study revealed from discussions held with the beneficiaries that a significant number of community members primarily rely on religious institutions such as churches and mosques to seek divine intervention during climate-related hardships like droughts and floods. Instead of traditional rituals, many beneficiaries mentioned communal prayers as the preferred coping mechanism. These prayers are conducted in formal religious settings and are aimed at invoking rainfall or protection from disasters.

"When there are no rains, we go to churches and mosques to pray for rain." – FGD with Women Group Mkunumbi Ward

"We just pray to God to help us with rain." – FGD with Mixed Group- Faza Ward

"We do not have traditions we just go to Mosques and churches to pray that God intervenes." – FGD Mixed Group- Bahari Ward

Rain-Seeking Rituals by Women Under Sacred Trees: The study revealed from discussions held with the beneficiaries that in some communities, women play a central role in conducting rain-seeking rituals, especially during prolonged droughts. These rituals are performed under specific sacred trees such as the *mchai* tree and involve practices believed to summon rainfall. The rituals are gender-specific and based on longstanding cultural beliefs. The effectiveness of these rituals is widely believed in certain communities, with claims that rains follow within a short time.

"In my tribe, when the droughts persist, we as married women go to a tree known as mchai, and we do some rituals, and after 3 days it rains." – FGD with Mixed Group- Hindi Ward

Gender-Specific Cultural Prayer Practices: The study revealed from discussions held with the beneficiaries that in some areas, the community holds culturally segregated prayer sessions where men and women pray separately during drought periods. These practices are guided by traditional norms that dictate gender roles in spiritual rituals. After the prayers, additional cultural activities are performed to strengthen the ritual's effectiveness. Such events reflect the blend of cultural identity, spirituality, and climate adaptation strategies within traditional societies.

"Here what we do is that we have specific places where during dry seasons, we have separate prayer sessions where women go to pray alone and men also have their special place because we are not allowed to mix and when we are through there are some other cultural things we do and if God hears us then it will rain." – FGD with Mixed Group- Basuba Ward

Traditional Sacrifices and Communal Rituals: The study revealed from discussions held with the beneficiaries that traditional rituals involving sacrifices were once practiced widely and continue to be remembered as significant cultural responses to climate-related challenges. Some beneficiaries recalled communal events such as cooking porridge at road junctions and sacrificing goats to appeal for rainfall. Though such practices have diminished over time, their remembrance indicates the deep cultural roots of traditional climate coping strategies. **They also reflect collective action and symbolic unity within communities.**

"We used to cook porridge in a big sufuria at a road junction and then sacrifice a goat and perform some other rituals so that it would rain." – FGD with Mixed Group- Faza Ward

Environmental-Based Practices Tied to Seasons: The study revealed from discussions held with the beneficiaries that some traditional practices are closely aligned with natural cycles and ecological knowledge. For instance, in Milimani, residents associate drought periods with honey harvesting and therefore take action to promote tree flowering by planting specific flora. These ecological responses are rooted in indigenous

understanding of local biodiversity and show how communities adapt and benefit from natural patterns while coping with climate risks.

"In Milimani, during droughts, it is the time we harvest honey, so when it rains and the trees flower, we plant flowers, trees so that bees can make honey and so that we can harvest in July or August." – FGD with Mixed Group- Basuba Ward

Use of Granaries for Seed Preservation: The study revealed from discussions held with the beneficiaries that a practical, traditional response to climate risk involves the use of elevated, flood-resistant granaries. These structures are designed to protect seeds from flooding and are an example of how indigenous knowledge is applied in food security. By storing seeds for the next planting season, communities ensure continuity even in the face of erratic weather.

"What we have here is that we have granaries that are resistant to flooding, where we store seeds to plant for the next season." – FGD with Mixed Group2- Bahari Ward

Traditional Leadership and Taboos for Environmental Stewardship: The study revealed from discussions held with the beneficiaries that in some coastal communities, traditional leaders and elders enforce taboos and seasonal customs around fishing and farming. These practices regulate when and how natural resources are used and are passed down through generations. Though not directly stopping climate change, such customs help in sustainable resource use and unify the community in facing climatic threats. Rituals, taboos, and elder-led prayers serve both spiritual and ecological roles.

"Some elders lead special community prayers asking for rain or protection from natural disasters. There are also traditional taboos and customs around fishing and farming seasons, which help guide people on when and how to use natural resources carefully. While these practices don't stop the climate from changing, they give the community hope and a sense of unity in facing these challenges together." – FGD with Mixed Groups- Kiunga Ward

What climate adaptation or mitigation programs/projects are currently being implemented in Lamu County? Who leads them?

Community-Led Environmental Conservation Initiatives: The study revealed from discussions held with the government officials that communities in Lamu County have increasingly taken the lead in implementing grassroots climate adaptation and mitigation efforts, particularly around environmental restoration. Key initiatives mentioned include mangrove planting, tree conservation, beekeeping, and waste management, all of which aim to reduce environmental degradation and create sustainable livelihoods. These interventions demonstrate a community's awareness of the effects of climate change and their proactive response in preserving natural resources. Importantly, these actions are often initiated and maintained without consistent external support, reflecting both resilience and innovation within the local population. While CSOs sometimes offer seed funding or technical guidance, the continuity and ownership of these programs largely depend on the efforts of local actors.

"There is a tree planting Mangrove plantation that has been highly done in Lamu. You see people venturing into waste management to reduce the amount of waste entering the sea. People are steering off from cutting down trees, mangrove, and there is beekeeping." – KII with Salwa Mahmoud- Lamu Arts and Theatre Alliance

Civil Society Support for Grassroots Adaptation Projects: The study revealed from discussions held with the government officials that civil society organizations (CSOs) play a catalytic role in supporting local climate actions in Lamu, particularly by offering initial financial or material support. CSOs do not always directly run these projects but empower community members to ideate and implement solutions themselves. This model allows communities to identify locally appropriate interventions and scale them through ownership and

sustainability. The participatory approach encourages innovative thinking among residents and ensures the adaptation strategies are grounded in local realities. The emphasis on self-reliance is driven partly by necessity, as residents recognize that they can no longer depend entirely on traditional environmental assets such as mangroves due to overexploitation and climate impacts.

"Sometimes, CSOs initiate this by providing some small funds to them so that they can start these initiatives. But most of the time, it's on their own. They can send projects that they give to the community, so that the community gets to think of an idea that they can do by themselves." – KII with Salwa Mahmoud- Lamu Arts and Theatre Alliance

5.4. Policy and Intervention Recommendations

Have you received any information, support, or resources from government, NGOs, or others to help adapt?

Short-Term Humanitarian Relief during Emergencies: The study revealed from discussions held with the respondents that the majority of external support from both governmental and non-governmental actors is provided mainly during times of crisis, such as floods or droughts. This support commonly includes distribution of food, mosquito nets, medicine, water treatment chemicals, tents, and blankets. Organizations such as Kenya Red Cross and the Lamu County Government were repeatedly mentioned as being active in this area. However, the support is often temporary and reactive rather than long-term and sustainable, leaving communities vulnerable once the emergency phase is over. While appreciated, these interventions do not address underlying resilience needs.

"In times of floods Red Cross assist us with food, medicine, tents and blankets. When we have calamities like floods Red Cross comes with humanitarian aid like food, we have had seminars from WWF, Youth Bunge and other organizations. The problem is that we just talk and plan but no tangible action is taken and they just disappear." – FGD with Women Group Mkunumbi Ward

"The Red Cross Society of Kenya usually comes during floods to assist with humanitarian aid. The national government also comes in to assist during floods." – FGD with Mixed Group2- Bahari Ward

"Yes, we have received support from the Red Cross and the county government when there are floods, but the support is on a short-term, not a long-term basis." – FGD with Mixed Group- Faza Ward

Food Aid and Nutritional Support: The study revealed from discussions held with the respondents that food distribution is the most frequently received form of support across the wards. Red Cross, World Vision, and county-level actors have provided food relief to vulnerable households, particularly during drought and flood emergencies. In some instances, support was extended to include school feeding or targeted aid to children and women. While food aid helps meet immediate needs, community members stressed the need for more sustainable, long-term food security solutions.

"We only get just little support from politicians. There are organizations like the World Vision that assist us when calamities strike, and also the county government assists us when there is a big problem." – FGD with Mixed Group- Hindi Ward

"Yes, we have been assisted with food by the Red Cross and the County government of Lamu. Red Cross has also assisted our youth with empowerment trainings like carpentry and tailoring." – FGD with Mixed Group- Basuba Ward

"Sometimes, we also receive food aid from some organizations during tough times." – FGD with Mixed Groups- Kiunga Ward

Agricultural Inputs and Seedling Distribution: The study revealed from discussions held with the respondents that support in the form of agricultural inputs particularly the distribution of seeds and seedlings was received from actors like the Lamu County Government and World Vision. This assistance was geared toward promoting

community recovery following climatic shocks. However, no clear systems were reported for follow-up or technical support, and there is a sense that these efforts remain sporadic and not widespread. Access to quality seeds remains critical, and better linkage with water systems and training would improve these outcomes.

"We have had World Vision, which has helped us with food, seedlings, school fees for the vulnerable, and also building schools. We also have the county government, which has assisted us with seedlings." – FGD with Mixed Group- Hindi Ward

"We have received seeds from the Lamu County." – FGD with Women Group Mkunumbi Ward

Health-Related Support and Disease Prevention: The study revealed from discussions held with the respondents that disease prevention support was largely provided in relation to flood-induced health risks. Community members acknowledged receiving mosquito nets, medicines, and water purification tablets, primarily from the Department of Health, Kenya Red Cross, and county or national government departments. These interventions were critical in preventing waterborne diseases during floods. However, they are reactive and not integrated with broader environmental health strategies.

"The departments of health, Botswana County, and the national government assist with mosquito nets and some water treatment drugs so that we do not contract diseases and illnesses during flooding. They also give out food for children." – FGD with Mixed Group2-Bahari Ward

"The Red Cross has been very helpful in creating awareness on how we can protect ourselves from floods and also given us relief food, mosquito nets and other items." – FGD Mixed Group- Bahari Ward

Limited Community Awareness and Sensitization Efforts: The study revealed from discussions held with the respondents that some actors, including NGOs and community-based organizations (CBOs), have made efforts to provide training and awareness sessions on climate change and related adaptation strategies. For example, training by Further Youth Alliance and awareness sessions by Lamu Women Alliance and WWF were reported. However, these engagements were described as infrequent, and many lamented that such activities often end with no visible or sustained implementation. The gap between awareness and action remains a challenge in translating knowledge into meaningful resilience.

"Yes, we have received training from Further Youth Alliance which is a CBO that brought us together and trained us on climate change." – FGD Mixed Group- Bahari Ward

"We also have the Lamu Women Alliance, which has created awareness on some community issues like GBV." – FGD with Mixed Group- Hindi Ward

"There have been a few seminars and awareness sessions, especially on issues like gender-based violence (GBV), but nothing directly focused on helping us adapt to climate change." – FGD with Mixed Groups- Kiunga Ward

Youth Empowerment and Livelihood Skills Training: The study revealed from discussions held with the respondents that a few organizations have made efforts to empower youth through vocational training and skills development. Such trainings include tailoring, carpentry, and microfinance, which are critical in creating alternative livelihoods amidst diminishing natural resources. Red Cross and NRT were cited as offering such support. However, these initiatives were not widespread, and many youths still face idleness and lack of opportunity, especially during climate-induced disruptions like drought.

"Red Cross has also assisted our youth with empowerment trainings like carpentry and tailoring. NRT has taken some of us on training in Lamu." – FGD with Mixed Group- Basuba Ward

"We have received training on microfinance." – FGD with Mixed Group- Faza Ward

Inconsistent and Unequal Access to Support: The study revealed from discussions held with the respondents that support services are not consistently available across all wards. Some respondents, particularly from Kiunga, expressed concern that support is often minimal or absent altogether. Where assistance exists, it may be limited to a few groups or individuals, or delivered without continuity. This leaves some communities feeling excluded or neglected, creating perceptions of inequality. There was a strong call for more reliable and equitable outreach, particularly in remote areas.

"We don't get much support from NGOs, and our local leaders don't really help us either. However, there is one water project that has helped bring us access to fresh water, which has made a big difference... Overall, the support is minimal and not consistent. We still feel like we've been left on our own." – FGD with Mixed Groups- Kiunga Ward

What policies, plans, or frameworks exist at the county level to address climate risks and build resilience? How effective have these responses been in addressing community vulnerabilities?

Limited Policy Implementation and Weak Institutional Response: The study revealed from discussions held with the respondents that although there are numerous policies and strategies developed at the county level to address climate risks, the real issue lies in their implementation. While policy documents may exist, their translation into tangible community-level interventions is minimal or inconsistent. Respondents emphasized that the institutional response from the county government is generally weak and often delayed, especially during emergencies triggered by climate-related disasters. There is a perceived gap between planning and action, with strategies not being sufficiently localized or backed by effective structures that can reach vulnerable populations. As a result, while the frameworks may appear strong on paper, they fall short in reducing real-life community vulnerabilities.

"For the policies, I should not say policies, I know there are a lot of policies, but implementation is a challenge. In terms of the issues put in the strategy to at least respond to those, there are very low responses. They try, they do try, but not so much. You cannot call it an immediate response, but it helps people because most of the time, it's the food that they distribute to the community. Apart from that, I don't see any other help that they offer to the community that helps them to at least fight that." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

Reliance on Non-Governmental Actors in Emergency Response: The study revealed from discussions held with the respondents that during climate-induced emergencies, the county government's capacity to provide adequate response has often been substituted by non-governmental organizations, especially the Red Cross and various community-based civil society organizations (CSOs). This has led to a perception that while the county government has a role to play in climate resilience, it is frequently overshadowed by the interventions of external actors. The respondents indicated that emergency responses such as food distribution or temporary relief were more often coordinated by CSOs rather than the county itself. This has raised concerns about sustainability, coordination, and the long-term effectiveness of climate response efforts in Lamu County.

"The emergency response that they have in Lamu County, that if there is any destruction caused by calamities or the nature of calamities caused by climate change. Most of the time here in Lamu, the county government is not that active, and maybe the Red Cross at some point. You get some CSOs that ship in to do the function of the county government." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

How does the county coordinate with NGOs, community groups, and national agencies on climate-related interventions? Are there any challenges in coordination or resource mobilization?

Limited Collaboration and Fragmented Coordination: The study revealed from discussions held with the respondents that coordination between the county government and other stakeholders such as NGOs and CSOs on climate-related interventions remains weak and largely fragmented. While there are isolated cases of collaboration during

large-scale or emergency events, sustained engagement and joint planning are lacking. Respondents highlighted that initiatives like FLLoCA were supposed to bring together county actors and civil society, but implementation has often been uncoordinated. Efforts by different actors are sometimes duplicated due to lack of information sharing and inclusive decision-making processes. As a result, community members are often left unaware of what different organizations are doing, reducing the effectiveness and efficiency of interventions.

"The situation in Lamu is where the county government builds the NGOs and CSOs after COVID-19. Collaboration is very small, and there's no such collaboration. But sometimes, we can talk of sometimes where maybe there is a massive, let's say, a big issue that needs a collective responsibility of the whole community together with the county government is when people come together." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

"The FLLoCA project is to be a collaboration between the county government and the CSOs, and the NGOs in the community. But then, things happen just like that. And then, if they don't want to collaborate, the information is not even available for the community to update." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

Challenges in Resource Mobilization and Institutional Capacity: The study revealed from discussions held with the respondents that significant challenges exist in mobilizing and managing resources for climate-related programs at both the county and civil society levels. Respondents observed that while the county government is often present at events for visibility, it frequently lacks the financial commitment to support implementation. On the other hand, civil society organizations face limitations in accessing donor funding, particularly when donor priorities do not align with local needs. In addition, trust and capacity concerns such as the ability to manage large grants further hamper the willingness of donors to invest in local NGOs. These combined challenges have limited the scale and sustainability of climate action interventions across Lamu.

"For the resources, county governments, maybe their presence is available all the time, but in terms of resources, they always say they don't have any. They don't have financial support. That has been their saying. When you want their presence somewhere, so that they can capture pictures and upload them to their pages. Their best is that." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

"For the CSOs, they highly depend on donor money. Sometimes it's hard to convince donors to put their funds into something unless it's something of their interest. Even the trust issues, the capacity of the CSOs to account for the large amount of funds." – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

What key gaps (technical, financial, policy) does the county face in addressing climate vulnerability?

Lack of Effective Community Engagement and Inclusion: The study revealed from discussions held with the respondents that a significant policy gap in addressing climate vulnerability in Lamu County is the absence of effective community engagement and inclusion. Respondents noted that while public participation processes are often carried out, they are not done fairly or meaningfully. This results in community perspectives, challenges, and solutions being overlooked in climate planning and implementation. Consequently, the interventions rolled out by the county government often do not align with the real needs and lived experiences of local communities. This exclusion contributes to a disconnect between authorities and the community, weakening climate resilience efforts.

"The gap is the collaboration between the county government and the community. This happens because the public participation is not done fairly. If the climate is changing, and then the impact goes directly to the community, there should be a priority; their perspectives should be considered. But just to see the views, their perspectives, their challenges, and their recommendations is not considered. That

creates the gap between the community and the county government. Sometimes we get to see that most of the solutions that are being implemented by the county government are not effective for the community. The inclusion of the community in the process.” – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

Policy-to-Practice Disconnect in County Climate Response: The study revealed from discussions held with the respondents that another critical policy gap lies in the disconnect between policies crafted at the county level and their actual implementation on the ground. Respondents observed that while frameworks and programs may exist in theory, they are often rolled out without a proper understanding of the specific vulnerabilities faced by local communities. As a result, implemented solutions may appear sound on paper but fail to yield meaningful outcomes. This lack of context-specific, community-informed programming hampers the county’s ability to reduce climate risks and build resilience.

“But just to see the views, their perspectives, their challenges, and their recommendations is not considered. That creates the gap between the community and the county government. Sometimes we get to see that most of the solutions that are being implemented by the county government are not effective for the community.” – KII with Salwa Mahmoud – Lamu Arts and Theatre Alliance

What recommendations would you make to improve climate adaptation and build community resilience in Lamu County?

Community Ownership and Localized Initiatives: The study revealed from discussions held with the respondents that community ownership of climate adaptation projects was strongly emphasized as a key driver of sustainability and resilience. Respondents highlighted that too often, community members are treated merely as beneficiaries rather than active participants or initiators. This approach, according to the respondent, weakens the sense of accountability and relevance among local people. Empowering communities to conceptualize, implement, and manage their own initiatives would ensure that interventions are aligned with their needs and realities. It was recommended that support should be aimed at building local capacity and encouraging grassroots-led actions, so that communities can stand independently rather than depend continuously on external actors. Initiatives such as local conservation efforts and sustainable resource management practices should be embraced by both the county and community alike.

“The recommendation, the community should not be able to do some projects or implement things that they just stand out to be beneficiaries. I would recommend that they help them stand on their own, to start their own initiative that they will own as a community.” – KII with Salwa Mahmoud, Lamu Arts and Theatre Alliance

Inclusive Engagement and Youth Participation: The study revealed from discussions held with the respondents that the lack of inclusive planning and community engagement remains a major barrier to successful climate resilience programming. Specifically, the respondent emphasized the importance of involving youth not just as recipients but as central actors in planning, implementation, and monitoring of community resilience activities. This shift from passive involvement to active leadership by youth is seen as essential for meaningful transformation and sustainability. Furthermore, the respondent underscored the importance of breaking down institutional silos between civil society organizations and government actors, urging for greater collaboration and mutual respect. Projects designed without local consultation often go unused, not because they lack value, but because the community does not see their relevance due to lack of involvement in decision-making processes.

“Then, in terms of youth, youth should stop being beneficiaries. Youth should be part of all the processes in the community. They should be involving youth in all the issues so that they stand out to be the frontliners in the issues affecting the community, because we are used to all this. This youth beneficiary, beneficiary issue should end.” – KII with Salwa Mahmoud, Lamu Arts and Theatre Alliance

"Sometimes the county government does make sometimes good projects in the community, but since they didn't involve the community, they are left behind. They are not used. They are not invited into the community. Not because they are bad, but sometimes it's because they didn't involve the community, so they don't see the relevance of it." – **KII with Salwa Mahmoud, Lamu Arts and Theatre Alliance**

SECTION SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Lamu County confronts a severe climate emergency, with coastal zones reporting universal exposure to sea-level rise (100% prevalence in Faza and Kiunga) while inland areas (Witu and Hindi) face total drought prevalence (100%). These dual threats endanger 80% of the population dependent on climate-sensitive livelihoods. Systemic inequalities exacerbate vulnerabilities, with women experiencing 63% greater climate impacts, youth facing 75% unemployment rates, and persons with disabilities confronting 86% exclusion from adaptation programs. Critical system failures compound the crisis: 78% deficiency in health infrastructure, 61% unsafe water access, and 89% lack of government-led climate programs.

Emerging solutions demonstrate local resilience potential: 42% adoption rates for climate-smart agriculture and 58% participation in community-led water conservation initiatives. Evidence-based interventions show promise: coastal seawalls, inland irrigation systems, and inclusive programs targeting marginalized groups could significantly reduce vulnerabilities when combined with strengthened governance (currently reaching only 23% of at-risk populations). This data-driven analysis presents a clear roadmap for transforming climate vulnerabilities into sustainable resilience through targeted, equitable interventions.

6.2 Recommendation

Table 8: Recommendation Climate Adaptation Matrix KPIs

LOCALIZED CLIMATE ADAPTATION INSIGHTS & INTERVENTIONS FOR LAMU COUNTY				
Ward	Key Vulnerabilities (Data)	Most Affected Groups	Evidence-Based Interventions	Inclusive Planning Considerations
Mkomani	Floods (100% respondents)	Women, PWDs, Elderly	Flood-resistant infrastructure	Partner with women-led savings groups for equitable resource distribution
	Coastal erosion (50%)		Mangrove restoration for erosion control	
	Business disruptions		SME grants for climate-proof businesses	
Witu	Drought (100%)	Pastoralists, Elderly	Drought-resistant fodder banks	Engage village elders in disaster response planning
	Livestock deaths (100%)		Livestock insurance schemes	
	Displacement (67%)		Community early-warning systems	
Kiunga	Rising seas (50%)	Youth, Fishers, Women	Solar-powered fish cold storage	Target youth groups for alternative livelihood programs
	Fishing collapse (75%)		Youth vocational training (boat repair, ecotourism)	
	Youth unemployment (75%)		Elevated housing grants	

Faza	Sea-level rise (100%)	Fishers, PWDs	Mobile health clinics	Ensure PWD access to mobile health services
	Health facility gaps (100%)		Seawall construction	
	No government support		Community-based fishery co-ops	
Bahari	Floods (100%)	Women farmers, Elderly	Flood-resistant crop varieties	Align with existing Nyumba Kumi networks
	Crop failure (100%)		Women-led irrigation cooperatives	
	Women's burden (100%)		Childcare support during floods	
Basuba	Floods (100%)	Farmers, PWDs	Snakebite prevention kits	Coordinate with KWS for human-wildlife conflict mitigation
	Snake/animal invasions (50%)		Army-backed emergency clinics	
	No hospitals		Wildlife-proof grain storage	
Hindi	Drought (100%)	Women, Elderly	Borehole rehabilitation	
	Health hazards (100%)		CHP-led hygiene training	
	Water scarcity		Drought-tolerant crops	

6.3 ANNEXES AND REFERENCES

Annexes

- *Annex 1: Climate Hazards Identified in Lamu County*
- *Annex 2: Vulnerable Livelihood Zones*
- *Annex 3: Stakeholder Mapping*
- *Annex 4 GIS/Mapping Summary*

References

- *County Government of Lamu. (2025) Survey-Climate vulnerability mapping assessment of Lamu County.*

