



**PCRA
REPORT
2023**

**TAITA TAVETA COUNTY
PARTICIPATORY CLIMATE RISK
ASSESSMENT REPORT**

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DEFINITION OF TERMS

Hazard: A potentially damaging physical event, human activity or phenomenon with a potential to cause loss of life or injury, property damage, social and economic disruption of life, environmental degradation among other effects

Vulnerability: Vulnerability refers to a set of conditions resulting from physical, social, economic and environmental factors, which increase the susceptibility of a community to the impact of disasters. Vulnerability also refers to the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard.

Disaster: A disaster can be defined as a serious disruption of the functioning of the society causing widespread human, material or environmental damage and losses which exceed the ability of the affected community to cope using their own resources.

Risk: Risk is the probability of harmful consequences or loss resulting from the interaction between natural hazards and vulnerable conditions of property and people.

Mitigation: Short and long-term actions, programmes or policies implemented in advance of a natural hazard or in its early stages, to reduce the degree of risk to the people, property, and productivity capacity.

Preparedness: Pre-disaster activities designed to increase the level of readiness or improve operational capabilities for responding to an emergency.

Response: Actions taken immediately before, during or directly after a disaster to reduce impacts and improve recovery.

Impacts: Specific effects of hazards or disasters also referred to as consequences or outcomes.

Coping refers to the use of existing resources to achieve desired goals during and immediately after climate-induced hazards.

Adaptive capacity refers to the ability of a system or a community to adjust to climate change effects, to moderate potential damages, to take advantage of opportunities, or to cope with the consequences

ABBREVIATIONS AND ACRONYMS

| | |
|---------------|--|
| CoK | Constitution of Kenya |
| UNFCCC | United Nation Framework Convention on Climate Change |
| PCRA | Participatory Climate Risk Assessment |
| FLLoCA | Financing Locally Led Climate Actions |
| ASAL | Arid and Semi-Arid Lands |
| GHG | Green House Gases |
| MRF | Material Recovery Facility |
| NAP | National Action Plan |
| CCRI | Climate Change Resilient Investment |
| MESPT | Micro Enterprise Support Programme Trust |
| NDMA | National Drought Management Authority |
| KALRO | Kenya Agriculture and Livestock Research Organization |
| NPS | National Police Service |
| FAO | Food Agriculture Organization |
| KEPHIS | Kenya Plant Health Inspectorate Service |
| ICIPE | International Center for insect Physiology and Ecology |
| JICA | Japan International Cooperation Agency |
| TTWCA | Taita Taveta Wildlife Conservation Association |
| AWF | African Wildlife Foundation |
| NGAO | National Government Administration Officers |
| KEFRI | Kenya Forestry Research Institute |
| WWF | World Wildlife Fund |
| WFP | World Food Program |
| KMC | Kenya Meat Commission |
| KMD | Kenya Metrological Department |

FOREWARD



The triple global crisis of climate change, biodiversity loss and pollution are inextricably interlinked and mutually reinforcing. They are driven largely by human activities through unsustainable patterns of consumption and production. There is sufficient scientific evidence – corroborated by the voices from diverse strata of our own communities – that Kenya is bearing the brunt of climate change impacts, despite contributing less than 4% of global greenhouse gas emissions, and negligible historical responsibility. Increased frequency of climate related emergencies and conflicts across the country continue to divert the County's meagre resources, hampering economic development.

Creating a foundation for climate resilient sustainable development within the County in line with the FLLoCA program, is laid on an effective climate risk management ecosystem which is derived from a context specific climate risk assessment that provides a framework for joint action and clearly expresses the needs and priorities of various communities at the ward level. The adaptation strategies proposed were considered for their potential in building climate resilient communities and economies, which were then aligned to the County's vision, driven by its own citizens as encapsulated in the County's CIDP and my Manifesto.

I acknowledge that mainstreaming these strategies into the County's development plans, will catapult the County into a vantage position to best address climate change effects and personally commit to offer the necessary support and political goodwill required to ensure the effective and successful implementation of the County Climate Change Action Plan that will be formulated from this process in order to enhance the socio-economic and climate resilient development of Taita Taveta County.

A handwritten signature in blue ink, which appears to read 'H. E. Andrew Mwadime'. The signature is stylized with a large initial 'A' and 'M'.

H. E. ANDREW MWADIME
GOVERNOR, TAITA TAVETA COUNTY.

ACKNOWLEDGEMENT



The participatory climate risk assessment, data collection and preparation of this report has been prepared through a multi-sectoral, participatory and consultative approach and enriched by rigorous technical review process. My sincere appreciation goes to The National Treasury and World Bank for providing the financial and technical resources through the FLLOCA program that enabled the County to successfully undertake this exercise.

This exercise will not have been undertaken were it not for the dedicated and spirited effort of the Multi-sectoral Technical Working Group under the stewardship of the County Directorate of Climate Change. My gratitude goes to my amiable ever supportive colleagues from the Directorate for their voluminous and invaluable contributions and generous support that helped in the coordination of the PCRA process, keeping the team focused in drafting the ward reports and finally consolidating and writing this report.

Moreover, I cannot quantify the contribution and support of all the other government departments, Non-State actors, the Technical Working Group, Ward Climate Change Planning Committees and the community at large for actively participating during the PCRA exercise and responding to the call to support the County in laying a firm foundation for low carbon climate resilient economic development.

Special gratitude goes to His Excellency, Governor Andrew Mwadime, his deputy, H.E Christine Kilalo, and my colleague County Executive Committee Members for their unequivocal support throughout this PCRA journey. The goodwill from the County's top leadership cannot be overlooked and for this I say a big Thank you to the 'Wakujaa' administration. Indeed, the PCRA process was in tandem with the Governor's clarion call, "**Uongozi ni Kuongozana**"

A handwritten signature in blue ink, appearing to read 'Grantone Mwandawiro'.

Hon. Grantone Mwandawiro

County Executive Committee Member

Department of Water, Sanitation, Climate Change, Environment and Climate Change

County Government of Taita Taveta

EXECUTIVE SUMMARY

According to Kenya's national development blue print, Vision 2030, the country envisions being a middle-income country with citizens enjoying high quality life and a sustained annual economic growth rate of at least 10% by the year 2030. The Government of Kenya is fully aware that the progress being made towards food security, poverty reduction and sustainable development is at risk due to adverse impacts of climate change. Historical records show that Kenya has experienced rising temperatures over the last 50 years coupled with intense and extreme climate and weather events like drought and floods. Future climate predictions of Kenya indicate a possible temperature increase of 2.3°C by 2050. These changes unless effectively mitigated, may result to erosion of productive assets and weakening of coping strategies and resilience mechanisms.

Considering that locally led adaptation can be more effective than adaptation interventions run in a top-down manner, the government of Kenya unveiled the FLLoCA program developed with support from the World Bank and governments of Denmark and Sweden. The program establishes the first national scale model of devolved climate finance that translates the ambitious climate agenda into scaled -up action on the ground. It applies the principles of meaningful citizen engagement in climate decision making and building on the foundations and structures set up through Kenya's devolution efforts. The principles provide touchstones to a range of actors who commit to changing their current practices towards those that enable more sustainable and effective adaptation at the local level. They aim to give vulnerable and excluded community's greater agency over prioritizing and designing adaptation solutions, shifting them from beneficiaries to empowered agents of change.

With the urgency to address climate change impacts and promote resilience at the local level, Taita Taveta County formulated the Ward Climate Change Planning Committees, mandated to mobilize communities and other stakeholders within the ward to design and implement climate response activities as well as facilitate research and knowledge management at the ward level, in line with Taita Taveta Climate Change Act, 2022. Together, with selected members of the Technical Working Group and a section of opinion leaders drawn from the wider community, they delved into comprehensive participatory climate risk assessments, examining the unique risk and vulnerabilities specific to each ward. The exercise relied on a number of tools such as historical timelines, seasonal calendars, resource and hazard maps, impact chain, adaptation pathway, daily clock, stakeholder analysis and vulnerability matrix.

To promote peer to peer learning, the team identified key resource persons within the ward including senior citizens who possessed vast reserves of knowledge and lived experience to guide in the PCRA process. Participants came up with innovative ideas, evidence- based strategies and best practices to bolster the resilience of communities against climate change. Multi-stakeholder workshops were organized to help validate the ward-level participatory

climate risk assessment reports from diverse wards within the County and inform the development of the CCCAP.

CHAPTER ONE: CONTEXT OF PARTICIPATORY CLIMATE RISK ASSESSMENT

1.1 Background

Climate change, global warming, environmental hazards and compounding resultant shocks are having devastating impacts on the entire facets of life posing threats to the survival, well-being and future humanity. Taita Taveta like other ASAL counties, is bearing the brunt of climate change and variability. In many parts of the County, residents are facing multiple climate-related impacts including erratic rains, prolonged droughts, food insecurity, urban displacements, famine, strife, flooding, destruction of infrastructure, conflict, water scarcity, and adverse effects on health. The aftermath of this is a crisis that threatens health, nutrition, education, development, survival and future generation thrift of humanity and life.

A climate risk assessment is thus significant to identify and evaluate climate risks, impacts, vulnerabilities and prioritize resilience choices in order to significantly develop local capacities. Recognizing that locally led adaptation is more effective than the top-down intervention, Kenya through the support of World Bank, launched the FLLoCA program that establishes the first national-scale model of devolved climate finance. The program supports partnerships between local governments and their citizens to assess climate risks and identify socially inclusive solutions tailored to local needs through the PCRA exercise.

1.2 Legal and Policy framework

Table 1.1 Legal and policy framework

| | |
|------------------------------------|--|
| Constitution of Kenya, 2010 | Article 42 of CoK 2010, provides for the right to clean and healthy environment for every Kenyan. This includes the right to have the environment protected for the benefit of the present and future generations. Further, Articles 2(5) and 2(6) of the CoK stipulates that rules of international laws and any treaty ratified by Kenya become integral components of the domestic legal system. Therefore, the UNFCCC and the Paris Agreement, which outline commitments made by countries regarding Climate Change Assessment Actions are considered part of Kenyan Laws. |
| Climate Change Act, 2016 | The main objective of this law is to enhance climate change resilience and low carbon development for sustainable development in Kenya. The Act establishes institutional structures that include the National Climate Change Council headed by the president of Kenya and the Climate Change Directorate. The Council is the overarching national institution on climate change with a role of providing strategic and policy direction for climate change to national and County governments as well as to administer the climate change fund established under the Act. |

| | |
|---|--|
| Taita Taveta Climate Change Act, 2022 | <p>This Act is applicable for the development, management, implementation, regulation, monitoring and adaptation and mitigation measures and actions to enhance climate change resilience and low carbon development in Taita Taveta County. The Act advocates for:</p> <ul style="list-style-type: none"> • Mainstreaming of climate change response into development planning, decision making and implementation; • Implementation of coordinated and integrated response to climate change and its impacts by all actors and stakeholders; • Establishment and implementation of mechanisms to promote and facilitate climate change research and development, training and capacity building; • Mainstream the principle of sustainable development into planning and decision making on climate change response. |
| Taita Taveta Climate Change Policy, 2021 | <p>The policy aims to ensure that climate change is mainstreamed in economically and socially vulnerable sectors of the economy and to steer the County towards climate resilience, blue economy and green development pathway. Key objectives of the policy include:</p> <ul style="list-style-type: none"> ➤ To focus on pro-poor gender sensitive adaptation while also promoting mitigation to the extent possible in a cost-effective manner; ➤ To minimize the risks arising from expected increase in frequency and intensity of extreme events: floods, droughts, tropical storms, etc.; ➤ To strengthen inter-departmental decision making and coordination mechanism on climate change; ➤ To facilitate effective use of the opportunities, particularly financial, available both nationally and internationally; ➤ To foster the development of appropriate economic incentives to encourage public and private sector investment in both adaptation and mitigation measures. |
| Taita Taveta Disaster Management and Risk Policy | <p>This policy was developed with a primary focus of cushioning Taita Taveta residents against hazards. The main areas of focus included; identification of key hazards within the County that required abrupt intervention and key resource mobilization. The policy further provides guidance on the need to cascade disaster management committees at the ward level to ensure help is fairly distributed when shocks are encounter.</p> |

| | |
|---|---|
| Solid Waste Management Strategy | The strategy advocates for the need to have Material Recovery Facilities that will help reduce the amount of waste deposited at the dumpsite. The MRFs will act as central places where waste collected will be further sorted to enhance recycling and re-use thereby generating a circular economy thus reducing of GHG emissions. |
| National Climate Change Response Strategy | This was the first national planning document addressing the threats posed by climate change while at the same time taking advantage of potential climate change related opportunities. Its long-term strategy was to be implemented from 2010-2030 strengthening and focusing on nationwide actions towards Climate Change assessments, adaptations and GHG emissions mitigation. This ensures commitment and engagement of all stakeholders in view of the vulnerable nature of Kenya's natural resources and society. The National Climate Change Response Strategy provides a framework for integrating climate concerns into development priorities, government planning and budgeting. |
| National Climate Change Action Plans | The 2013-2017 Action plan was developed with the aim of implementing the National Climate Change Response Strategy. Envisaged as the first series of 5year action plans, the documents aimed to further the country's sustainable development goals through setting out priority adaptation, mitigation, enabling actions and promoting mainstreaming of climate change actions into development planning and budgeting process. The objective of the first plan was to encourage low carbon climate resilient development throughout the country. The second action plan 2018-2022 aimed to further Kenya's development by providing mechanisms and measures to achieve low carbon climate resilient development in a manner that prioritizes adaptation. It also considers the impact of climate change on Kenya's socio-economic sectors and further identified strategic areas where climate action was to linked to the big four agenda. |
| National Climate Change Framework Policy, 2018 | The document provides a framework to guide the development and implementation of detailed climate change interventions listed in the climate change action plans. The policy aims to integrate climate change considerations into planning, budgeting, implementation and decision making at the national, county level and across all sectors. It also established a funding mechanism and strategy that enables implementation of priority actions for climate resilience, adaptive capacity and low-carbon growth |
| National Adaptation Plan (2015-2030) | National Adaptation Plan details institutional arrangements, including monitoring and evaluation |

| | |
|---|--|
| | process, it also provides an analysis of the current and future climate trends in Kenya, highlighting key institutional and policy coordination relevant to climate change. It further presents climate risk profile for the country and identifies priority actions in key planning sectors for the short, medium and long term. |
| Climate Smart Agriculture Strategy (2017-2026) | The broad objective of the strategy is to adapt to climate change resilience of Agriculture systems while minimizing emissions from enhanced food and nutritional security in order to improve livelihoods. In this respect the strategy aims at enhancing the adaptive capacity and resilience of the actors in the agriculture sector by addressing cross cutting issues that adversely impact climate-smart Agriculture. The strategy further recognizes the role of the Climate Change Act and NAP in improving coordination and collaboration among institutions and stakeholders in Climate Smart Agriculture. |
| Climate Risk Management Framework (2017) | Outlines the government intention to harmonize its climate change and disaster risk policies. According to the framework, there are ten priority areas that overlap between climate change and disaster risk policies which can be areas of interventions. |
| National Climate Finance Policy | To finance these laws and policies, the country adopted the National Climate Finance Policy that aims to improve the nation's ability to mobilize, track and effectively manage climate change finances through enhanced mobilization of climate finance that contribute to low-carbon development. |
| Education Sector Disaster Management Policy | The Ministry of Education developed this policy which primarily underscores the importance of early warning systems and coordination during Disaster Risk Management activities within the education sector. The policy also emphasizes the role of educational institutions in providing for physical reconstruction and psychological protection to times of disasters. |
| Taita Taveta CIDP, 2018-2022, 2023-2027) | The 5-year plan integrates the long-term spatial sector, and urban plans with inputs from the views and expectations of the community, Governor's manifesto, national government plans and programs, past County development performance and development actors. The CIDP sets the priorities and guides all County government spending on various sectors. The CIDP is crucial in aligning key climate change priority actions. |

1.3 Purpose of the PCRA

The primary objective of the PCRA process was to help device tools intended to raise awareness, assess community climate change and disaster risks in order to develop adaptation strategies and finally an action plan which will be used as a basis for accessing the CCRI grants. The tools were designed to be self-explanatory to the degree that first time users with community participation, experience and basic knowledge of climate change can work their way through the modules without assistance. The exercise thus formed the first step in developing the local climate change profile which guided in developing local climate change response.

1.4 PCRA process

To effectively evaluate the risks and effects of climate change, so that informed climate resilience actions are sustainably designed. The following key steps were crucial:

- i) **Formation of cross-sectoral technical working group to lead the PCRA process:** This process was coordinated by the CCU to help identify and convene qualified individuals with relevant expertise to initiate, manage, run and complete reporting for the PCRA process. The TWG comprised of 26 members drawn from the following organizations: County Government Officials (Dept of lands, water, environment, social services, devolution, agriculture, governor's office, finance and municipality office), related MDAs such as NEMA, NDMA, KMD, and Non-State Actors such as Nature Kenya, TTWCA.
- ii) **Stakeholder Analysis and engagement process:** The main aim was to identify all key stakeholders at the County, Sub-County and ward level who can contribute in the PCRA process including the traditionally marginalized and those vulnerable to impacts of climate change and further develop a stakeholder engagement strategy for the process. Members were drawn from organizations such as NEMA, NDMA, KMD, KFS, KEFRI, KWS, County Government Officials (Dept of lands, water, environment, social services, devolution, agriculture, governor's office, education, energy, finance and municipality office) and Non-State Actors such as Nature Kenya, TTWCA, Wildlife Works, World Vision, MAZIDO, TTHRW, AWF, CBOs, Private Sectors, Business communities, Red Cross etc. Vulnerable groups incorporated include the, youth, women, indigenous groups such as the Waartha and Pare communities, PLWD.
- iii) **Stakeholder engagement at all levels:** This was meant to ensure all the key stakeholders identified in step 2, including communities and other key actors were fully engaged in and contributed to the PCRA exercise.

| Ward | Date of Meeting | No. of attendees | Venue | Female | Male | Youth | PLWD |
|------------------|------------------------|-------------------------|-------------------|---------------|-------------|--------------|-------------|
| Wumingu kishushe | 18th & 19th May 2023 | 42 | Taita Rocks Hotel | 12 | 30 | 22 | 1 |
| Wundanyi mbale | 27th & 28th May 2023 | 28 | Taita rocks hotel | 15 | 13 | 12 | 1 |
| Mghange mwanda | 27th & 28th May 2023 | 19 | Taita rocks hotel | 5 | 14 | 8 | 2 |
| Werugha | 27th & 28th May 2023 | 24 | Taita rocks hotel | 8 | 16 | 11 | 1 |
| Mwatate | 27th&28th May 2023 | 23 | Panilis | 14 | 9 | 8 | 3 |
| Bura | 27th&28th May 2023 | 25 | Panilis | 12 | 13 | 8 | 2 |
| Chawia | 27th & 28th May 2023 | 23 | Panilis | 8 | 15 | 12 | 1 |
| Ronge | 25th& 26th May 2023 | 31 | Panilis | 15 | 16 | 11 | 2 |
| Wusi kishamba | 25th& 26th May 2023 | 27 | Panilis | 13 | 14 | 19 | 1 |
| Challa | 2nd & 3rd June 2023 | 29 | Challa Hotel | 12 | 17 | 15 | 2 |
| Mahoo | 2nd & 3rd June 2023 | 33 | Challa Hotel | 11 | 22 | 15 | 1 |
| Mata | 26th 27th May 2023 | 24 | Challa Hotel | 7 | 17 | 12 | 1 |
| Bomeni | 25th& 26th May 2023 | 26 | Challa Hotel | 12 | 14 | 16 | 2 |
| Mboghoni | 25th& 26th May 2023 | 25 | Challa Hotel | 8 | 17 | 12 | 1 |

| | | | | | | | |
|--------------|---------------------|------------|------------|------------|------------|------------|-----------|
| Kaloleni | 25th& 26th May 2023 | 26 | Two Oceans | 12 | 14 | 16 | 1 |
| Kasighau | 27th &28th May 2023 | 25 | CIT | 6 | 19 | 6 | 2 |
| Marungu | 27th &28th May 2023 | 26 | CIT | 10 | 16 | 10 | 1 |
| Sagalla | 27th &28th May 2023 | 33 | CIT | 11 | 22 | 12 | 3 |
| Mbololo | 25th& 26th May 2023 | 28 | Two Oceans | 12 | 16 | 12 | 1 |
| Ngolia | 25th& 26th May 2023 | 30 | Two Oceans | 11 | 19 | 14 | 3 |
| Total | | 547 | | 214 | 333 | 251 | 32 |

- iv) **Data collection and workshop preparations:** This process was meant to analyze and integrate information and data inputs for the workshop, prepare presentations and finalize workshop preparations
- v) **Multi-stakeholder climate risk assessment workshop:** The aim of this workshop was to conduct a participatory and cross-sectoral holistic assessment of the current and future climate risk facing the County, exploring exposure, vulnerability and adaptive capacity. Moreover, this step helped identify robust, broad thematic adaptation investment areas that could address the and future climate vulnerabilities of different groups. (See Attachment 1)
- vi) **Climate risk assessment report:** This was the final step that accumulated to the multi-purpose climate risk assessment report meant to outline the broad strategic adaptation planning priorities for the County over 5-year time frame.

CHAPTER TWO: COUNTY CLIMATE HAZARD PROFILE

2.1 Current and Historical climate hazards and trends

Table1.2: Historical climatic hazards and their trends from the PCRA historical timelines

| Hazard Type | Year | Given name | Case study | Description |
|-------------|-----------|-------------------|--------------|--|
| Drought | 1930-1938 | Njaa ya Kishoo | Mwatate | This drought led to the death and loss of livestock. |
| | 1954-1958 | Njaa ya Mtunguru | Bura | People had to chew bitter herbs so as to survive, most people moved to safer grounds |
| | 1960-1962 | Njaa ya ndege | Challa, Mata | People had to assemble in one area, light up fire, so as to be visible to those distributing food using aero planes |
| | 1963-1966 | Njaa ya Nzighe | Bomeni | Invasion of locust into farms potentially aggravating an already precarious food security situation. Members of the community had no option than to roast and eat the locust as delicacy |
| | 1972-1974 | Njaa ya yanga | Mboghoni | There was rationing of food supplies, the only retailer back then was Joseph Kawiti who emphasized on the need to purchase other commodities with floor. |
| | 1974-1975 | Nikwa Ngwetee | Challa | There was money but no food to buy |
| | 1980-1982 | Njaa ya Mikaili, | Bura | Named after the only retailer, who distributed yellow maize |
| | 1984-1986 | Njaa Molyo | Challa | There was shortage of maize floor but wheat floor was in plenty |
| | 1990-1996 | Njaa Kali | Bomeni | Associated with increased food assistance through Local administration offices |
| | 2003-2004 | Njaa kali | Mahoo | Increased drought that led to scarcity of food, however a number of NGO's intervened to supply some food commodities such as Plan International |
| | 2007-2008 | High temperatures | Mata | Associated with declining waters of lake Jipe, bad odour emanating from the lake, decline in fish business |
| | 2019-2023 | Njaa ya corona | Bura, Bomeni | Erratic rainfalls, in rainfall dependent drylands agricultural systems, rapid loss of top soils reducing soil fertility |

| | | | | |
|---------------|-----------|--|-----------------|--|
| | | | | catalyzing famine and reduced vegetation leading to increased deaths of both animals and man |
| Floods | 1960 | The Uhuru Floods, Mvua ya Mka Solomon | Bomeni, Bura | The floods mainly inundated extensively the low -lying areas, causing widespread damage and destruction of existing infrastructure; dams, bridges, homesteads etc. as well as other facilities that existed then in Kenya. |
| | 1963-1964 | Mafuriko | Mboghoni | Destruction of houses leading to human and livestock displacement in areas of Kambi ya Moto and Madarasani |
| | 1965-1968 | Ndetua, Kiroro cha Maasai | Challa, Mahoo | Heavy rains that existed for a long period of time encouraging migration to safer grounds such as Salaita Hills |
| | 1968-1969 | Mafuriko | Mboghoni | Rains that led to sweeping away of homesteads |
| | 1980-1982 | (Kiroro ya Mafeta) – People, animals, belongings and houses swept away | Mboghoni, Mahoo | Rains that led to loss of lives, disease outbreaks |
| | 1983-1984 | Mvua Kali | Chawia | Rains that swept away domestic animals, baboons, monkeys, etc. |
| | 1985-1987 | Kiroro cha Dingiria | Mahoo | Vehicles were swept away |
| | 1997-1997 | El Nino | Countrywide | These floods were associated with land degradation, increased soil erosion with consequent silting and erosion of river banks which affected water intake facilities and river gauging facilities. The flow-measuring structures washed away by the floods included weirs, water-level gauges and data loggers |
| | 2003 | April/May Floods | Bomeni | These heavy rains caused flooding leading to water supply disruption in urban and rural centers and washing away of facilities |
| | 2007-2008 | Mvua Kali | Mboghoni | Houses washed away in Kimorigo, Mwarusa, Mboghoni, Kimundia, Riata Ndogo, Mrabani, Madarasani |
| | 2023 | Mvua Kali | Bura, Chawia | These rains washed away crops, there were landslides, government advised people to move to safer grounds |

2.2 Exposure and vulnerability profiles of the County.

Overview of the vulnerability indices as per the PCRA results

The assessment identified drought, human wildlife conflict, flash floods, forest fires, landslides and rock falls as the main hazards within Taita Taveta County across the 20 wards. This was further compounded by the fact that the County is located in the ASAL region where 62% of the land within the County is occupied by the Tsavo National Parks and 24% of the land is under ranches while remaining small percentage is left for settlement, Mega infrastructure and Agriculture. It was also established during the assessment that drought was the major hazard affecting 15 out the 20 wards in the County. Most of the wards within the lowlands were hard hit by drought and human wildlife conflict i.e out of the 6 wards in Voi subCounty only Kaloleni ward was not affected by human wildlife conflict. In Mwatate 4 out 5 wards are affected by human wildlife conflict, In Taveta the most affected wards were Mata and Chala while Kishushe in Taita SubCounty was hard hit by drought and human wildlife conflict.

Wards like Kaloleni, Mbololo, Marungu Bomeni and Chawia with urban setups were considered home to growing population. Urban residents in these areas however faced exposure to climate hazards such as increased temperatures, floods, and inadequate infrastructure. Flooding events were seen as key impacts to public health, destruction of infrastructure, and disrupt economic activities. Most of these Urban areas especially Voi town lacked proper drainage systems and resilient infrastructure, which heightened their vulnerability to climate change impacts. Urban flooding had been a common phenomenon in Voi and its environs such as Tanzania, Kasarani, Msambweni and Sofia.

| Climate Variable | Magnitude | Climate Hazards | Climate Risk | Timeline | Ward |
|------------------|-----------|-----------------|---|---|--|
| | High | Floods | Pest and Diseases Water logging Increased | March, April, May, October, November, December. | Mata, Mboghoni, Bomeni, Wumingu-Kishushe, Mwatate, Werugha, Wundanyi - Mbale, Kaloleni, Mbololo, Sagalla, Wusi -Kishamba |

| | | | | | |
|---------------|------|--|---|---|--|
| Precipitation | | | water levels | | |
| | | Landslides | Water logging | March, April, May, October, November, December. | Wusi- Kishamba, Wundanyi Mbale, Wumingu, Werugha, Mghange -Mwanda,Sagalla, Ronge-Juu, Ngolia, Bura |
| | Low | Drought | Water Scarcity Human wildlife conflict Pest and diseases Reduced soil moisture Forest fires | January, February, June, July, August. | Ngolia, Mbololo, Kasighau, Marugu,Sagalla,Challa, Mata, Mahoo, Bomeni, Ronge, Bura, Mwatate, Chawia,Werugha, Wusi-Kishushe |
| | High | Pest and diseases (Fall army warms, Mosquitos) (Malaria,bilharzia) | Crop morbidity Deterioration of human health | March, April, May, October, November, December. | All wards |
| | Low | Termites, ticks, stalk borer, | Crop/ Livestock morbidity | January, February, June, July, August. | Wumingi- Kishushe, Mghange Mwanda,Bomeni, Challa, Mata, Mahoo,Marungu, Kasighau, |

| | | | | | |
|-------------|------|---------|--|--|---|
| | | | | | Ngolia, Mbololo, Kaloleni, Chawia, Bura, Mwatate, Ronge |
| Temperature | High | Drought | Water Scarcity Human wildlife conflict Reduced soil moisture Forest fires | January, February, June, July, August. | Ngolia, Mbololo, Kasighau, Marugu, Sagalla, Challa, Mata, Mahoo, Bomeni, Ronge, Bura, Mwatate, Chawia, Werugha, Wusi-Kishamba, Wumingu/Kishushe |
| | Low | Fog | Reduced visibility Deterioration of human health Reduced solar energy production | June, July, November, December | Mwanda/Mgange, Wundanyi/Mbale, Werugha and Wusi/Kishamba |

Livelihood Exposure and Vulnerability

Farm wise the assessment established that the farmers heavily relayed on rain-fed Agriculture, particularly cultivating crops like maize, beans, and vegetables. Considering that most of the farming was carried out in small scale, subsistence farming was highly advocated within all the wards. Exposure to climate hazards such as erratic rainfall patterns, prolonged droughts, and increased incidences of

pests and diseases within these farms lead to crop failures, decreased yields, and food insecurity, making them highly vulnerable to climate change impacts. Considering that the lowlands favoured pastoral/ livestock keeping, climate change in these areas had led to changes in grazing patterns, loss of livestock due to inadequate water and pasture, and increased conflicts over diminishing resources. These challenges made pastoralists highly vulnerable to climate change impacts.

Eco-system Exposure and Vulnerability

Given the County's rich biodiversity, there wards such as Sagalla which hold the Sagalla Caecilian, and Mwanda-Mgange ward which host the Taita Appalis. These endemic species face exposure to climate hazards like habitat loss, invasive species, and changes in species distribution and behavior. Climate change had affected the delicate balance of ecosystems, threatening endangered species, and compromising the effectiveness of conservation efforts. These practitioners needed to adapt their conservation strategies to mitigate climate change impacts. Considering that the County was home to the Taita Hills, which harbor diverse forest ecosystems. Climate change had posed threats to the forests, including increased temperatures, altered rainfall patterns, and forest degradation. During the prolonged dry season, the forests were exposed to forest fires. It was established that the drought that had just ended in April 2023 was characterized by quite a number of forest fires among them Kitobo forest, Sagalla Forest, Mwambirwa Forest and Chawia Forest. These changes affected the water availability, biodiversity loss, and reduced ecosystem services like timber, fuelwood, and non-timber forest products. Forest-dependent communities, therefore, faced exposure and vulnerability to climate hazards through the loss of their resources and cultural heritage.

In summary, the key interest groups in Taita Taveta County, including smallholder farmers, pastoralists, forest-dependent communities, urban residents, and biodiversity practitioners, faced exposure and vulnerability to climate hazards and trends. Erratic rainfall, droughts, water scarcity, increased temperatures, and extreme weather events posed significant challenges to their livelihood systems. Efforts to address climate change in the County thus focus on enhancing adaptive capacities, promoting sustainable agricultural practices, improving water management, strengthening infrastructure resilience, and supporting biodiversity conservation efforts.

2.3 Differentiated impacts of climate trends and risks

Climate Change affects men and women differently. These impacts were closely associated with roles & responsibilities assigned by the society for men and women. Therefore; the gender analysis was an important integral part of the PCRA exercise. Mapping of

Gender roles / responsibilities helped greatly to identify the different roles played by men and women in a particular society and how they got disrupted due to climate change. The exercise helped in providing information on the triple roles (Productive, Reproductive and Social) of the men, women and Youth. The discussion was important as they facilitated to see how different roles and responsibilities changed over time due to male migration, increased responsibilities in farm lands and changes in the livelihood practices.

Findings from the daily clocks

- Women carry out more tasks than men
- Women have no leisure time throughout their daily schedule
- Men have less attention to their children
- Men go early to bed than women

The past and current climate trends and risks have had differentiated impacts on different key interest groups in Taita Taveta County, with particular attention to women, youth, ethnic minorities, people living with disabilities, and other marginalized and vulnerable groups. Other marginalized and vulnerable groups, such as the elderly, low-income communities, and those living in informal settlements, also face specific challenges. These groups often lack access to basic services, including clean water, sanitation, healthcare, and adequate housing, which are further strained by climate change impacts. Extreme weather events like floods disproportionately affect these communities, leading to displacement, loss of assets, and increased health risks. Here is an overview of their specific challenges:

Women: Women in Taita Taveta County often bear a significant burden in the face of climate change impacts. They play essential roles in agricultural activities, food production, and natural resource management. However, the changing climate has affected their livelihoods and well-being. Erratic rainfall patterns and prolonged droughts have resulted in reduced agricultural productivity, increased food insecurity, and water scarcity. Women often face challenges accessing resources, such as land, credit, and technology, which hampers their ability to adapt to climate change. Additionally, women may experience increased workloads and health risks due to the need to travel long distances for water and firewood in the face of diminishing resources.

People Living with Disabilities: People living with disabilities faced additional challenges in dealing with climate change impacts. They had limited mobility, sensory impairments, or required assistive devices, making it difficult to adapt to changing conditions or evacuate during extreme weather events. Accessing relevant information, early warning systems, and appropriate infrastructure was critical to ensure their safety and well-being during climate-related disasters. Furthermore, the loss of livelihood opportunities exacerbated their socio-economic vulnerabilities. People living with disability and the elderly were also among those considered vulnerable to a number of key issues such as human-wildlife, as they are unable to rescue themselves during attacks.

The youth: faces unique challenges pertaining to climate change. Limited employment opportunities, exacerbated by climate impacts on Agriculture and other sectors, contribute to youth unemployment and underemployment. The reduced viability of traditional livelihoods like farming and herding pushes youth towards urban areas in search of alternative opportunities. However, urban areas lack sufficient infrastructure and resources to accommodate this influx, leading to increased vulnerability, unemployment, and social challenges among the youth.

Ethnic Minorities: Ethnic minority groups, such as indigenous communities, often have strong cultural and economic ties to the land and natural resources in Taita Taveta County. Climate change impacts, such as deforestation, habitat loss, and land degradation, threaten their traditional livelihoods and cultural heritage. These groups may face limited access to resources, exclusion from decision-making processes, and inadequate recognition of their indigenous knowledge and practices, which are crucial for adapting to climate change. Minority groups in Taita Taveta include the Pare which are hosted in Mata, Kimorigo, Kitobo (Mbogonyi ward) and Chala Ward. The Maasai are found in Marungu ward while the Wartha are located in Voi, Sagala, Marungu wards. The later is characterized by high poverty, illiteracy and unemployment levels. These minority groups in most cases do not get the privilege to access essential services like relief food and credit facilities.

Overview in line with the PCRA process

During the assessment it was noted that 15 out of the 20 wards within Taita Taveta County had experienced prolonged dry seasons which led to drying up of water sources. This had impacted mostly women and young girls considering they are tasked with the role of searching for water to meet the domestic demands of the household. They walked for longer distances in search of water which exposed them to incidences of sexual violence that reflects in the rise of teenage pregnancies and high rate of school dropout.

Addressing the differentiated impacts of climate change on these groups require targeted interventions which include enhancing women's access to resources and decision-making processes, providing skill development and employment opportunities for youth, recognizing and incorporating indigenous knowledge and practices, improving accessibility for people with disabilities, and ensuring the inclusion and participation of marginalized and vulnerable groups in climate change adaptation and mitigation strategies. It is crucial to adopt a holistic and inclusive approach that recognizes the unique needs, challenges, and strengths of these groups to build resilience and promote sustainable development in Taita Taveta County.

2.4 Spatial distribution of risks

The figures below give a graphical representation of the distribution of climate risks within Taita Taveta County.

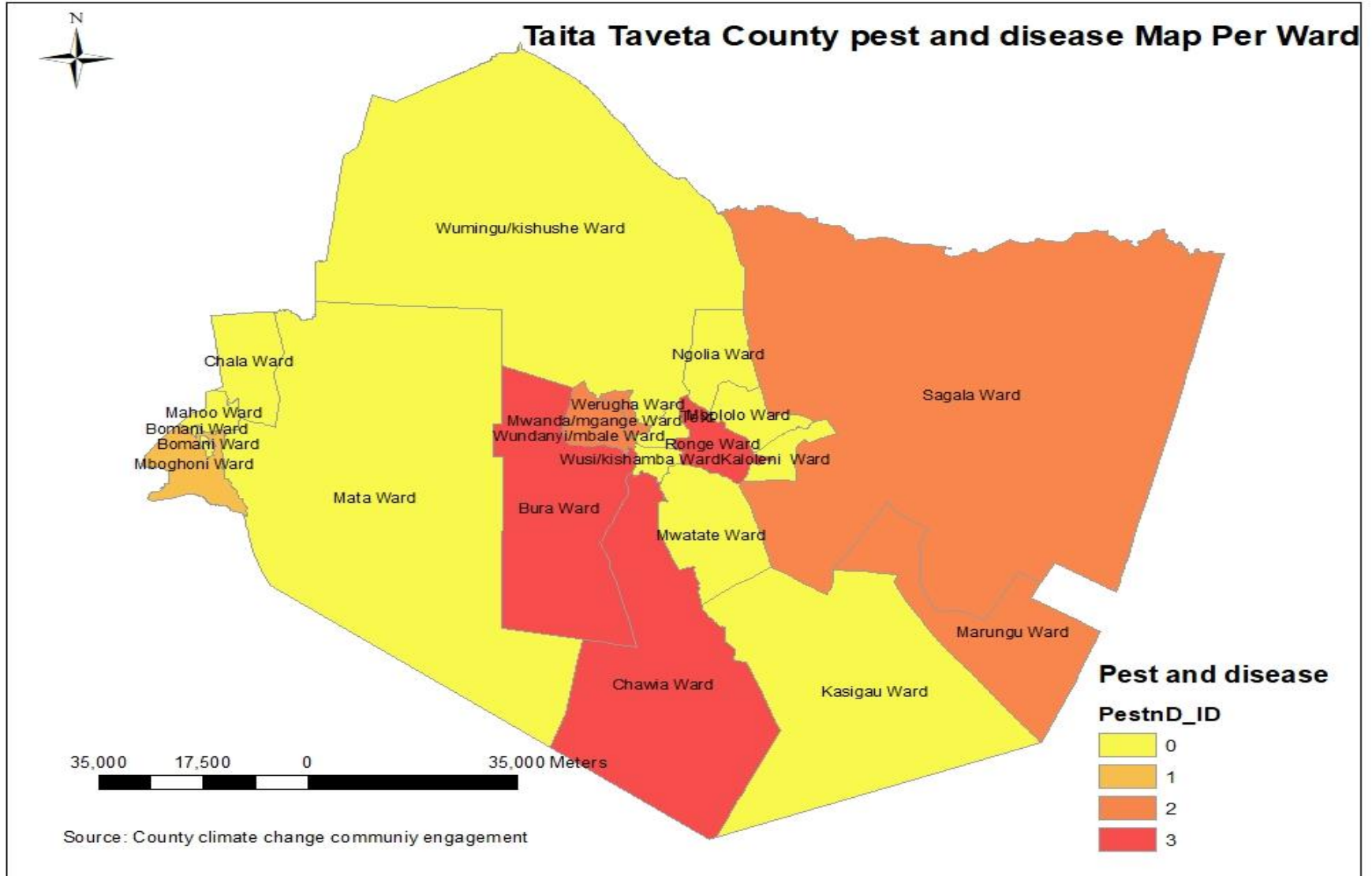


Figure 1. County Pest and Disease Hazard Map

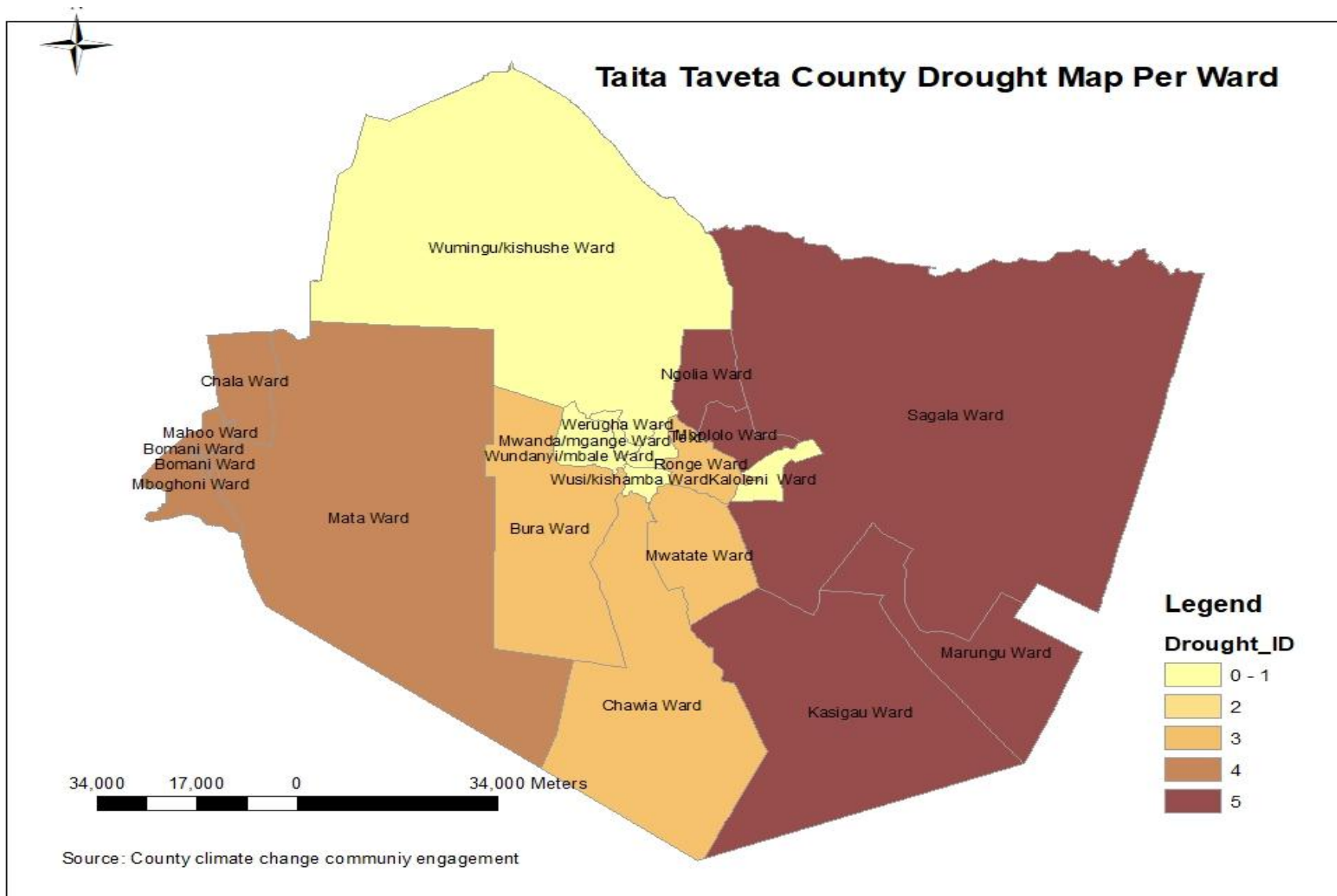


Figure 2. County Drought Hazard Map

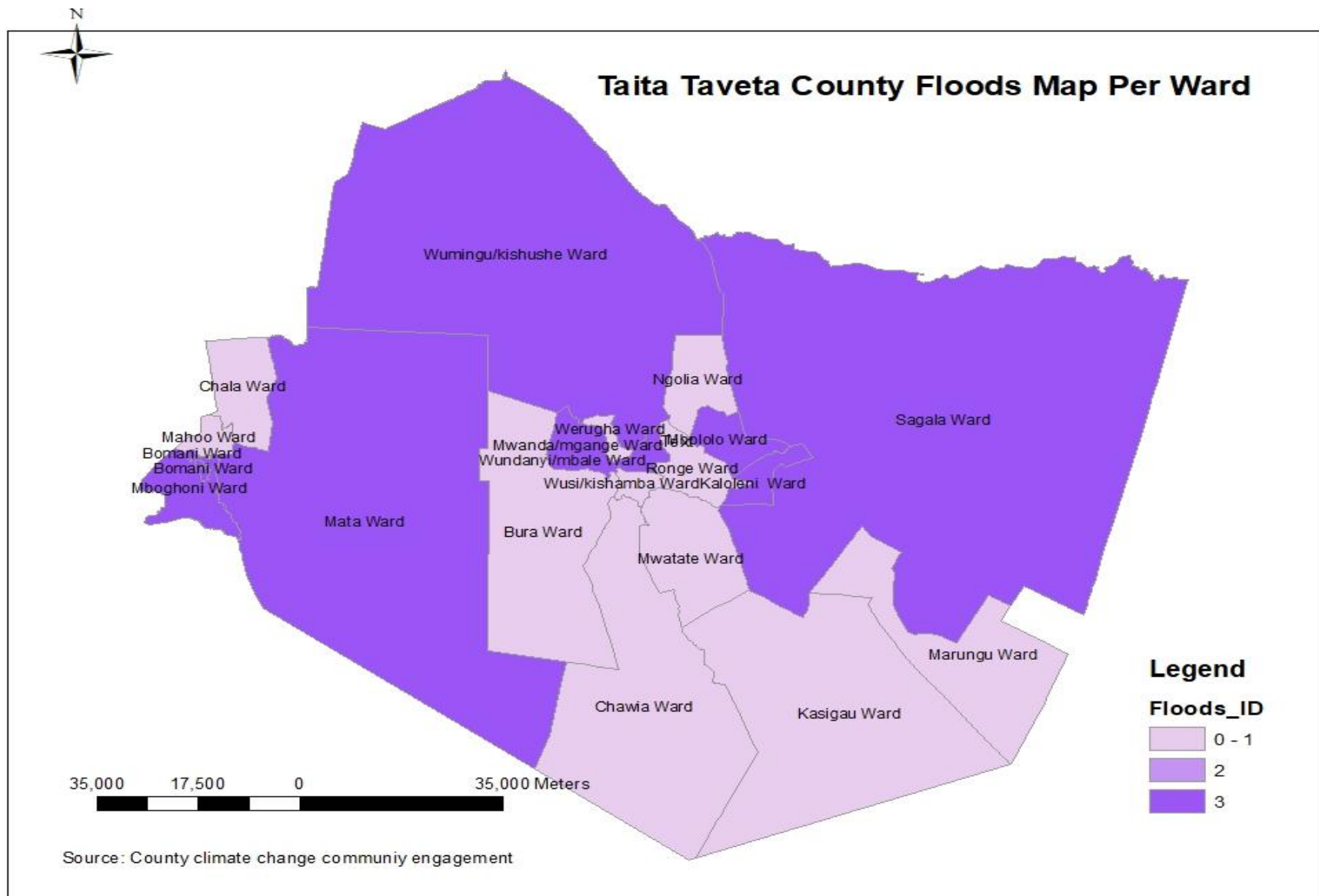


Figure 3. County Flood Hazard Map

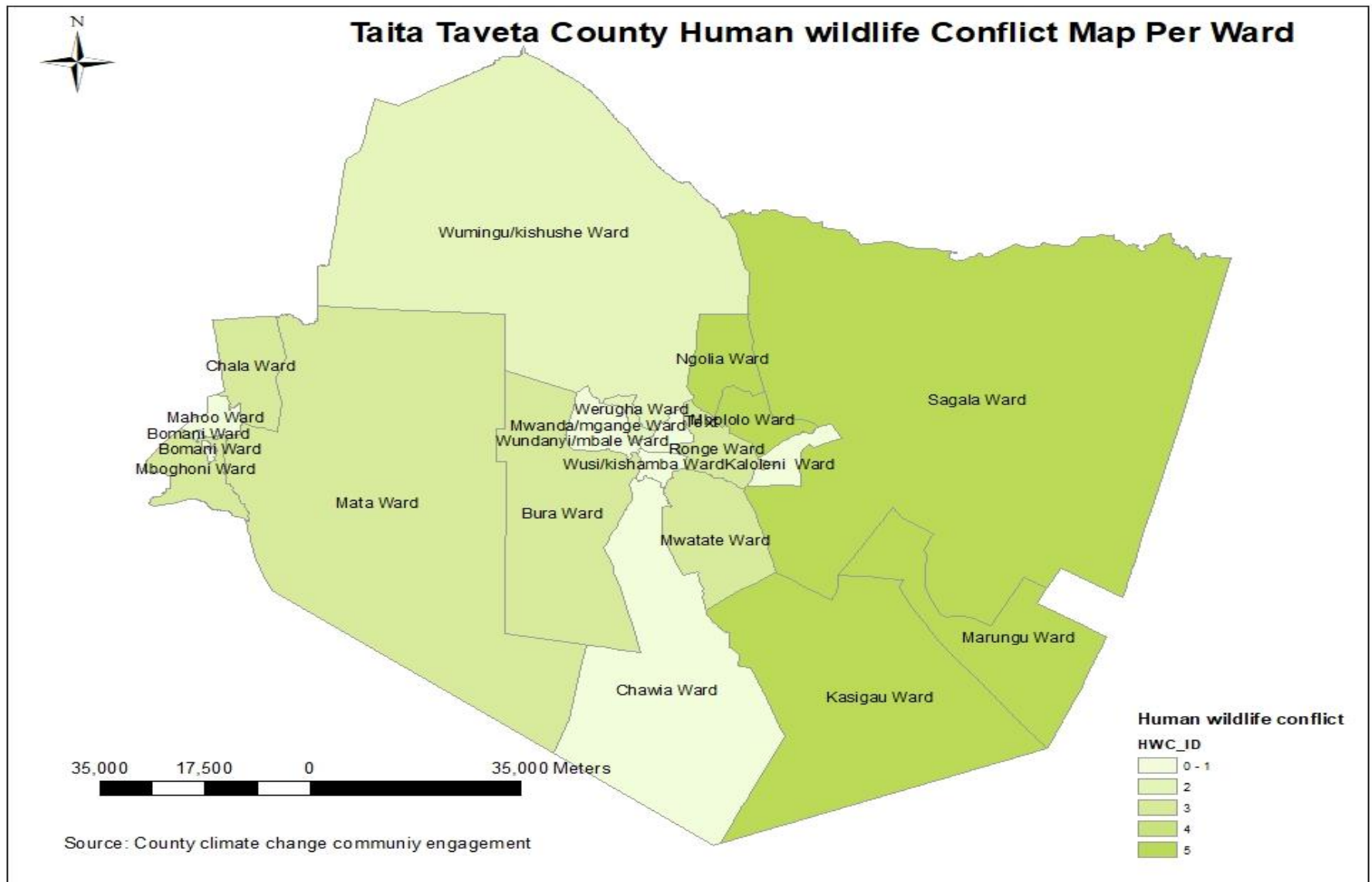


Figure 4. County Human Wildlife Conflict Hazard map

3.1 National and downscaled climate projections

The temperature for Taita Taveta County varies from place to place. The lowlands are generally warmer than the highland areas. On average the days are warmer than the nights with places in the lowland areas getting temperatures of upto 39.0°C during the hottest month of March. July is usually the coldest month. Vuria in Taita Sub County is the coldest place. Temperatures fall to as low as 8.0°C in the highland areas. Maximum Temperature projection from 2006 to 2100 indicates that maximum temperatures are likely to increase over the years with most places of the County becoming warmer. The average maximum temperature are likely to be 28.1°C over the highland areas, and between 28.0°C to 33.4°C over the lowland areas



The long-term average annual rainfall for Taita Taveta County using 1981 to 2005 rainfall data is 603 to 903 mm of



rainfall. The lowland areas received less rainfall compared to the highland areas. The annual rainfall projection between 2011 to 2035 indicates that the amount of rainfall will increase over the years. The rise in the amount of rainfall may be due to an increase in off season rains. The expected rainfall as projected may range between 632 and 1108mm. The annual rainfall projection between 2036 to 2070 indicates that the amount of rainfall will increase over the years. The rise in the amount of rainfall may be due to an increase in off season rains. The expected rainfall as projected may range between 800 and 1282mm.

The annual rainfall projection between 2071 to 2100 indicates that the amount of rainfall will increase over the years. The rise in the amount of rainfall may be due to an increase in off season rains. The expected rainfall as projected may range between 1112 and 2221mm. The rainfall

amounts will vary depending on topography. The highland areas are likely to receive more rainfall than in the lowland's areas.

Table 1.3: Taita Taveta annual rainfall in millimeters (mm)

| S/NO | WARD | Mean Rainfall | Rainfall in mm Projections over the specified Period | | |
|---------------------------|------------------|---------------|--|--------------|--------------|
| | Period | 1981 TO 2005 | 2011 to 2035 | 2036 to 2070 | 2071 to 2100 |
| VOI SUB COUNTY | | | | | |
| 01 | Kaloleni | 627 to 875 | 686 to 968 | 852 to 1183 | 1116 to 1581 |
| 02 | Kasighau | 671 to 983 | 719 to 1010 | 891 to 1263 | 1184 to 1761 |
| 03 | Marungu | 672 to 957 | 718 to 982 | 891 to 1214 | 1186 to 1673 |
| 04 | Sagalla | 603 to 884 | 650 to 968 | 813 to 1183 | 1119 to 1580 |
| 05 | Mbololo | 576 to 875 | 632 to 968 | 800 to 1183 | 1112 to 1581 |
| 06 | Ngolia | 586 to 875 | 703 to 968 | 809 to 1183 | 1122 to 1652 |
| TAVETA SUB COUNTY | | | | | |
| 07 | Chala | 586 to 963 | 703 to 1108 | 809 to 1282 | 1122 to 2221 |
| 08 | Mahoo | 963 | 1108 | 1282 | 1672 |
| 09 | Bomeni | 963 | 1108 | 1282 | 1672 |
| 10 | Mboghoni | 963 | 1084 to 1108 | 1282 | 1672 to 1700 |
| 11 | Mata | 658 to 963 | 771 to 1108 | 892 to 1282 | 1231 to 1672 |
| MWATATE SUB COUNTY | | | | | |
| 12 | Bura | 671 to 875 | 774 to 968 | 892 to 1183 | 1199 to 1581 |
| 13 | Chawia | 671 to 875 | 729 to 968 | 892 to 1248 | 1199 to 1628 |
| 14 | Mwatate | 671 to 875 | 729 to 968 | 892 to 1183 | 1199 to 1581 |
| 15 | Rong'e | 627 to 875 | 686 to 968 | 851 to 1183 | 1116 to 1581 |
| 16 | Wusi Kishamba | 875 | 968 | 1183 | 1581 |
| TAITA SUB COUNTY | | | | | |
| 17 | Mwanda Mgange | 686 to 875 | 781 to 968 | 927 to 1183 | 1243 to 1581 |
| 18 | Werugha | 875 | 968 | 1183 | 1581 |
| 19 | Wumingu Kishushe | 686 to 875 | 781 to 968 | 927 to 1183 | 1243 to 1581 |
| 20 | Wundanyi Mbale | 875 | 968 | 1183 | 1581 |

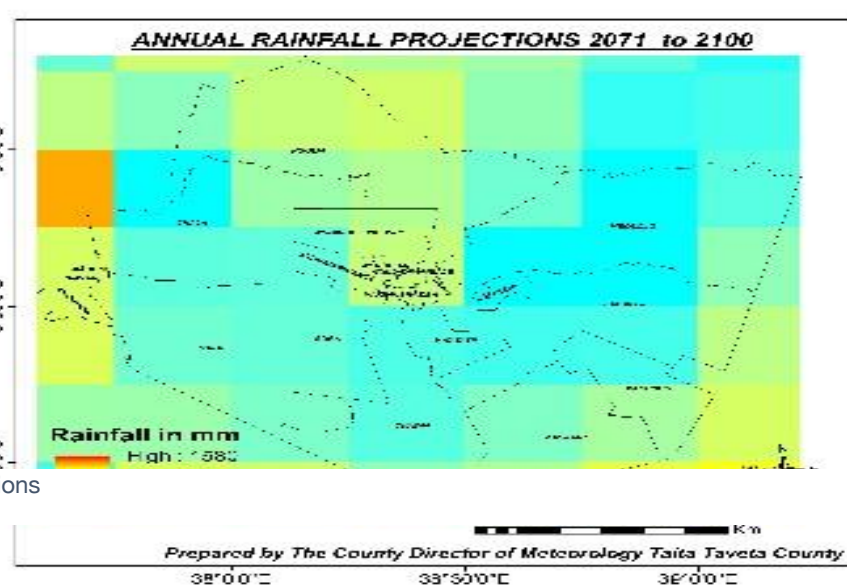
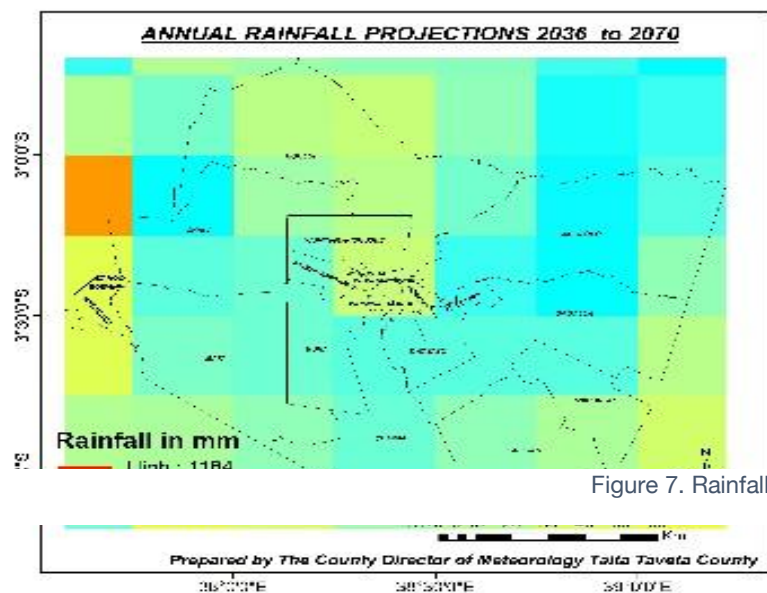
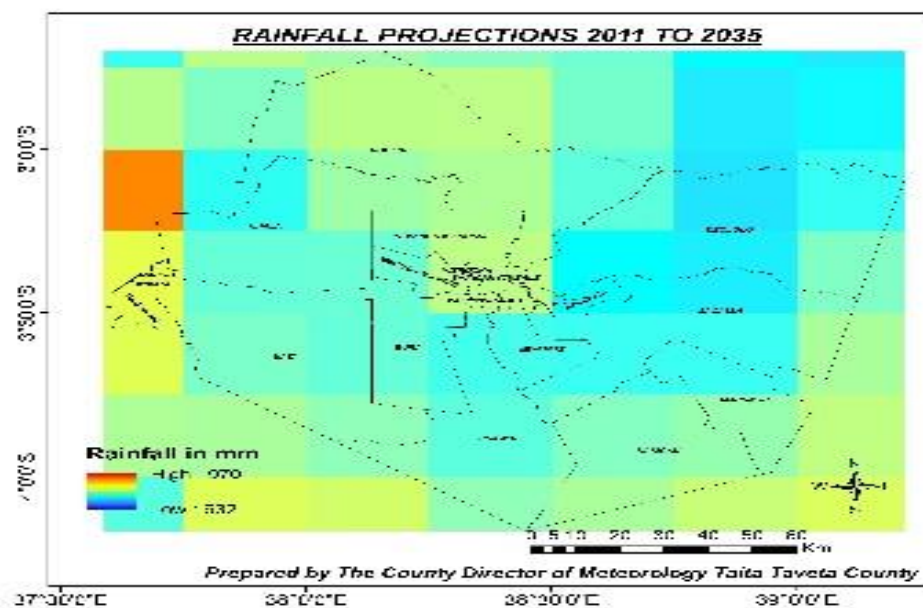
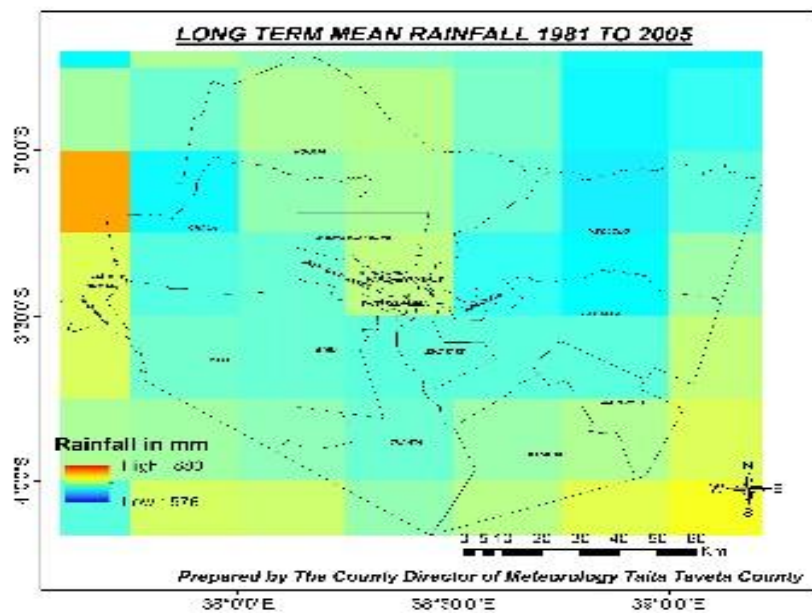


Figure 7. Rainfall Projections

3.2 County future climate scenarios

3.2.1 MAM Rainfalls

The maps below are seasonal rainfall for the March April May long rains season. The observed long term mean rainfall for the Taita Taveta County ranges from 203 to 360 mm during the March April May season using rainfall data between 1981 to 2005. The highland areas received more rainfall than the lowland areas. The highlands have long term mean rainfall of 330mm, and the lowlands 250 mm during the long rains season.

Rainfall projection between 2011 to 2035 over the March April May long rains season shows the likelihood of rainfall increasing across the entire County. The highlands and the lowland areas are likely to receive more or less the same rainfall. The expected rainfall is likely to be between 283 to 549 mm. the highlands are likely to be wetter.

Rainfall projection between 2036 to 2070 over the March April May long rains season shows a likelihood of decreased rainfall. The lowlands and the highlands are likely to receive depressed rainfall. The amounts will vary between 93 and 180 mm.

Table 1.4: Taita Taveta rainfall projections

| S/NO | WARD | Mean Rainfall | Rainfall in mm Projections over the specified Period | | |
|---------------------------|---------------|---------------|--|--------------|--------------|
| | Period | 1981 TO 2005 | 2011 to 2035 | 2036 to 2070 | 2071 to 2100 |
| VOI SUB COUNTY | | | | | |
| 01 | Kaloleni | 236 to 331 | 283 to 397 | 100 to 139 | |
| 02 | Kasighau | 251 to 359 | 287 to 386 | 103 to 141 | |
| 03 | Marungu | 251 to 345 | 287 to 375 | 103 to 135 | |
| 04 | Sagalla | 221 to 331 | 264 to 397 | 96 to 139 | |
| 05 | Mbololo | 203 to 331 | 263 to 397 | 93 to 139 | |
| 06 | Ngolia | 218 to 331 | 290 to 418 | 93 to 141 | |
| TAVETA SUB COUNTY | | | | | |
| 07 | Chala | 218 to 440 | 290 to 549 | 94 to 180 | |
| 08 | Mahoo | 318 | 387 | 129 | |
| 09 | Bomeni | 318 | 387 | 129 | |
| 10 | Mboghoni | 295 to 318 | 348 to 387 | 121 to 129 | |
| 11 | Mata | 234 to 318 | 295 to 387 | 97 to 129 | |
| MWATATE SUB COUNTY | | | | | |
| 12 | Bura | 249 to 331 | 289 to 397 | 101 to 139 | |
| 13 | Chawia | 252 to 331 | 288 to 397 | 101 to 139 | |
| 14 | Mwatate | 256 to 331 | 288 to 397 | 102 to 139 | |
| 15 | Rong'e | 236 to 331 | 283 to 397 | 100 to 139 | |
| 16 | Wusi Kishamba | 331 | 397 | 139 | |
| TAITA SUB COUNTY | | | | | |
| 17 | Mwanda Mgange | 257 to 331 | 312 to 397 | 106 to 139 | |
| 18 | Werugha | 331 | 397 | 139 | |
| 19 | Wumingu | 257 to 331 | 312 to 397 | 121 to 139 | |

| | | | | | |
|----|----------------|-----|-----|-----|--|
| | Kishushe | | | | |
| 20 | Wundanyi Mbale | 331 | 397 | 139 | |

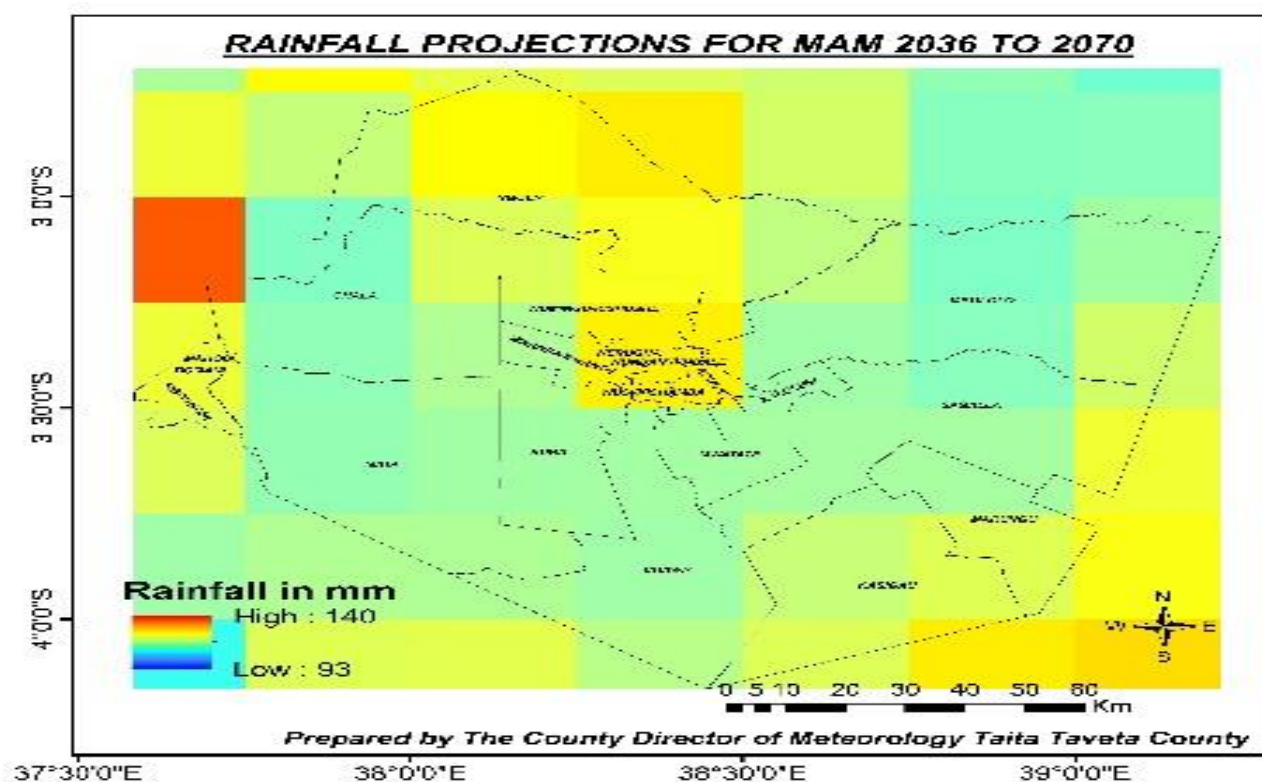
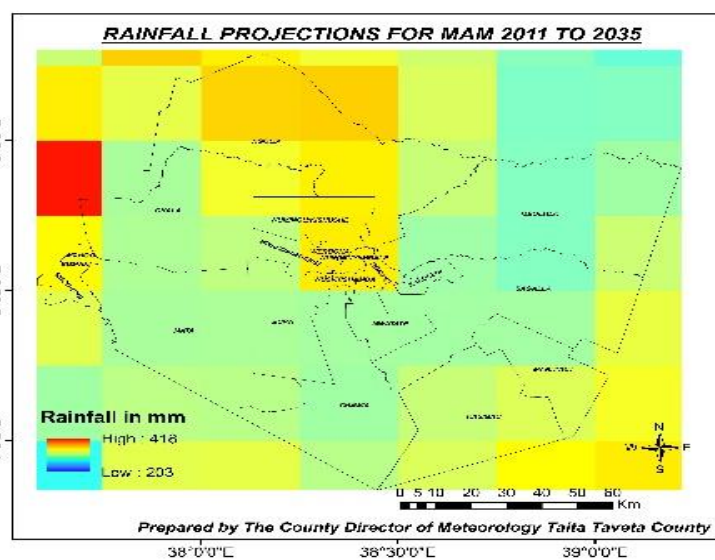
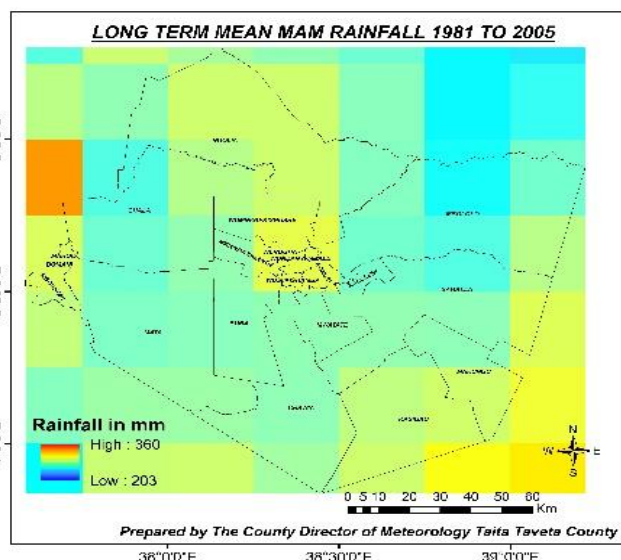


Figure 8. MAM Rainfall Projections

3.2.2 OND rainfall

The October November December (OND) rainfall in Taita Taveta County is represented in the maps below. The long term mean rainfall during the short rains season using the 1981 to 2005 rainfall data gives an average of 289 to 566 mm. the highland areas receiving more rainfall than the lowland areas. The OND long term rainfall projection between the year 2011 to 2035 shows a decline in the rainfall over the years. The rainfall amount is likely to reduce to between 267 and 561 mm over that period. The highland areas receiving more rainfall than the lowland areas. The OND long term rainfall projection between the year 2036 to 2070 shows a further decline in rainfall over the years. The rainfall amounts are likely to be the same over the lowland and the highland areas. The mean rainfall amounts may range between 120 to 252mm.

Table 1.5: Taita Taveta October November December rainfall in millimeters (mm)

| S/NO | WARD | Mean Rainfall | Rainfall in mm Projections over the specified Period | | |
|---------------------------|------------------|---------------|--|--------------|--------------|
| | Period | 1981 TO 2005 | 2011 to 2035 | 2036 to 2070 | 2071 to 2100 |
| VOI SUB COUNTY | | | | | |
| 01 | Kaloleni | 295 to 395 | 279 to 369 | 133 to 181 | |
| 02 | Kasighau | 298 to 427 | 289 to 396 | 137 to 196 | |
| 03 | Marungu | 298 to 421 | 282 to 400 | 137 to 190 | |
| 04 | Sagalla | 295 to 395 | 278 to 385 | 132 to 181 | |
| 05 | Mbololo | 296 to 395 | 276 to 369 | 135 to 181 | |
| 06 | Ngolia | 260 to 418 | 358 to 386 | 120 to 187 | |
| TAVETA SUB COUNTY | | | | | |
| 07 | Chala | 260 to 566 | 358 to 561 | 120 to 252 | |
| 08 | Mahoo | 424 | 414 | 189 | |
| 09 | Bomeni | 424 | 414 | 189 | |
| 10 | Mboghoni | 420 to 424 | 405 to 414 | 189 | |
| 11 | Mata | 289 to 424 | 280 to 414 | 134 to 189 | |
| MWATATE SUB COUNTY | | | | | |
| 12 | Bura | 289 to 395 | 267 to 369 | 133 to 181 | |
| 13 | Chawia | 289 to 395 | 267 to 384 | 134 to 181 | |
| 14 | Mwatate | 289 to 395 | 267 to 369 | 134 to 181 | |
| 15 | Rong'e | 296 to 395 | 279 to 369 | 134 to 181 | |
| 16 | Wusi Kishamba | 395 | 369 | 181 | |
| TAITA SUB COUNTY | | | | | |
| 17 | Mwanda Mgange | 300 to 395 | 285 to 369 | 138 to 181 | |
| 18 | Werugha | 395 | 369 | 181 | |
| 19 | Wumingu Kishushe | 300 to 395 | 285 to 369 | 138 to 181 | |
| 20 | Wundanyi Mbale | 395 | 369 | 181 | |

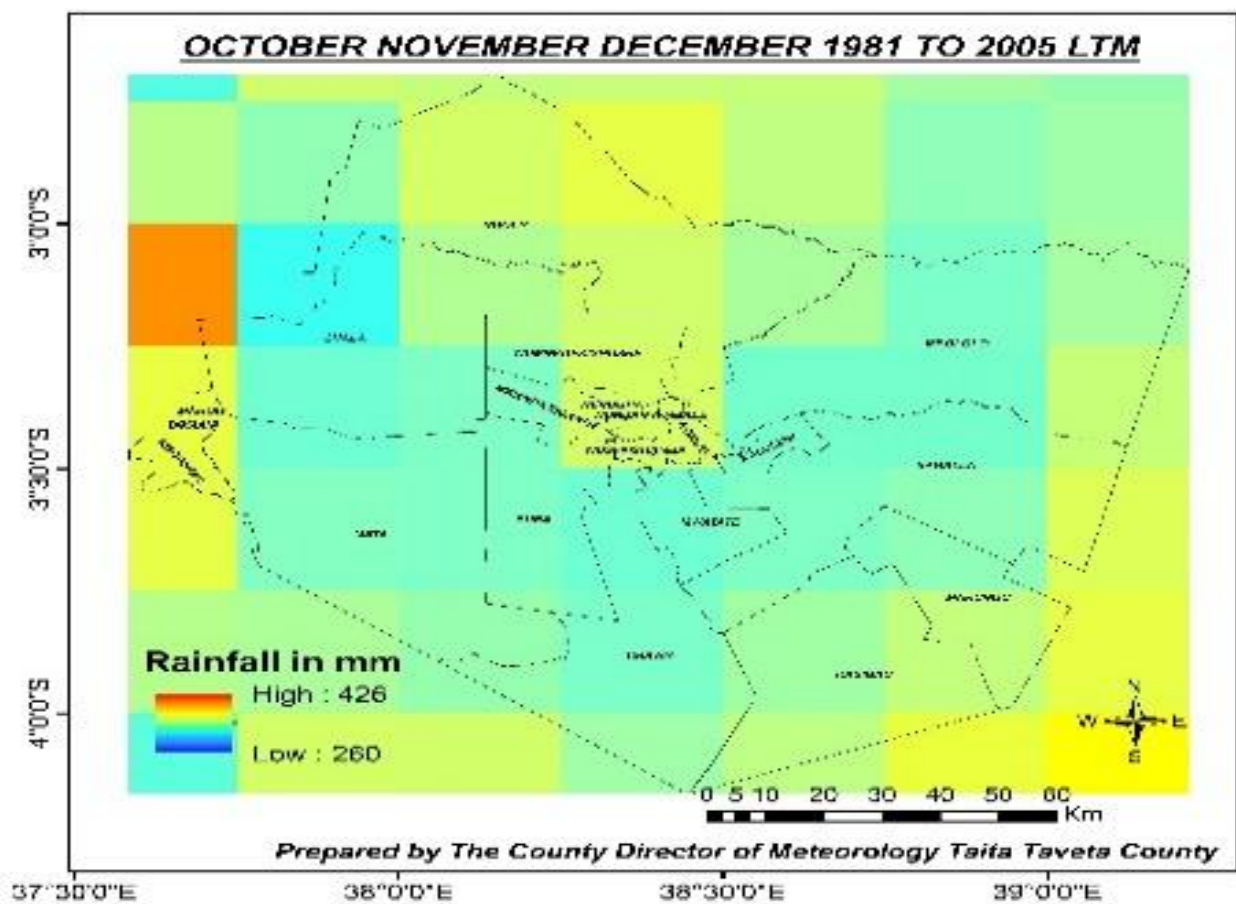
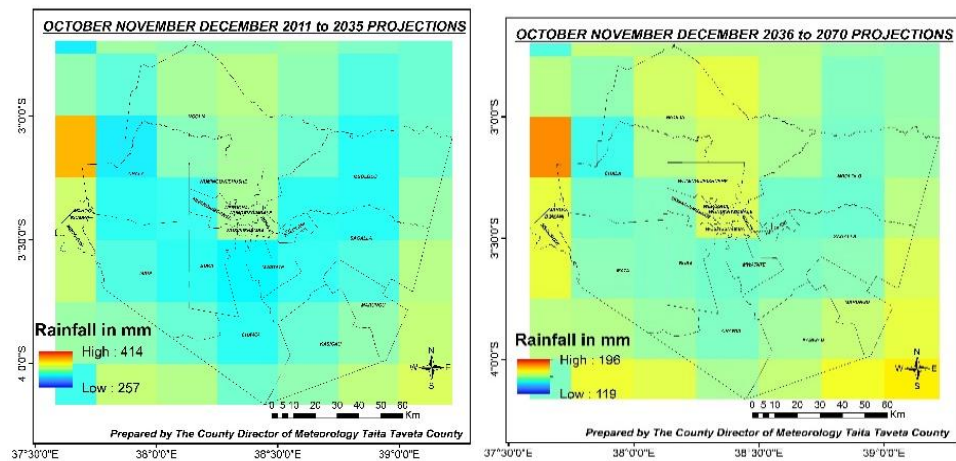


Figure 9. OND Rainfall Projections

CHAPTER FOUR: ANALYSIS OF EXISTING RESILIENCE / ADAPTATION STRATEGIES TO CURRENT AND FUTURE CLIMATE RISKS

4.0. Overview of existing adaptation/resilience strategies and their effectiveness to current climate risks

Table 1.6: Overview of existing adaptation/resilience strategies and their effectiveness to current climate risks

| Risk/hazard | Livelihood/economic system | Climate resilience strategies | Stakeholder group applying the strategy | Gender and social inclusion information |
|----------------|----------------------------|---|--|---|
| Drought | Agriculture | Food aid/assistance | Red Cross, World Vision, Department of Special Programs at National and County levels, Ministry of Agriculture (National level and County levels), Action Aid, FAO, WFP, Compassion, Inua Jamii | Men, women, children, youth, old age and PLWD |
| | Agriculture | Drought tolerant crops and livestock breeds | FAO, County Department of Agriculture and Livestock, Ministry of Agriculture and Livestock, KALRO, Kenya Seeds, SNV, ASDSP, MESPT, CRS, ICRISAT, WB | Men, women, youth, old age and PLWD |
| | Water and environment | Water infrastructure development | County Department of Water and Sanitation, NDMA, Action Aid, World Vision, Red Cross, JICA, Ministry of Water, Water Services Trust Fund (WSTF), Coast Water Works Development, Wildlife Works, NPS Water Protection Unit, KEWASNET, CDA, EU, NGCDF, WB, WSP | Men, women, children, youth, old age and PLWD |
| | Agriculture | Livestock off take | County Department of Agriculture and Livestock, Ministry of Agriculture and Livestock, Kenya Climate Smart Agriculture Project, KCEP CRAL, KALRO, KMC, FAO, | Men, women, youth, old age and PLWD |

| | | | | |
|--|-----------------------------|------------------------------------|---|---|
| | | | NDMA, Red Cross, AFC, NGAO | |
| | Meteorological | Early warning system | KMD, FAO, KALRO, Red Cross, NDMA, County Department of Agriculture and Livestock, Ministry of Agriculture, ICRISAT, NGAO, | Men, women, children, youth, old age and PLWD |
| | Livestock and Agriculture | Pasture farming and fodder storage | County Department of Agriculture and Livestock, FAO, ASDSP, SNV, TTWCA, KCB, Coop Bank, Mngama Cooperative | Men, women, youth, old age and PLWD |
| | Agriculture and livestock | Diversification of livelihoods | County Department Agriculture and livestock, FAO, ASDSP, SNV, Nature Kenya, Action Aid, NDMA, Kenya Red Cross, World Vision, Social Services, TTWCA | Men, women, aged, PLWD |
| | Community capacity building | Cash transfers | Action Aid, World Vision, Labour and Social Protection, Department of Social Services, Red Cross, FAO, Compassion, Wildlife Works, carbon credit, KNSP | Men, women, children, youth, old age and PLWD |
| | Water and irrigation | Irrigation systems | Ministry of Agriculture, County Department of Agriculture and livestock, NDMA, Action Aid, Coast Water, Kenya Water Towers Agency, WRUAS, NPS water unit, NIA, CRS, IWUA, World Vision, Red Cross, WB, CDA | Men, women, youth, old age and PLWD |
| | Forestry | Afforestation | County Department of Environment, Climate Change and Natural Resources, County Department of Water and Sanitation, Nature Kenya, KFS, KEFRI, NEMA, KWS, TAITA TAVETA YOUTH ALLIANCE, Wildlife Works, TTWCA, Teita Sisal Estate, MESPT, Red Cross, learning institutions, Town | Men, women, children, PLWD, aged |

| | | | | |
|--|----------------------|-----------------------------------|--|---|
| | | | committees and Municipal Boards, Self Help Groups, AWF, WCK | |
| | Lands/Agriculture | Land management | Department of Lands and Physical Planning, Ministry of Lands, Agriculture, FAO, World Vision, NDMA, Red Cross, Department of Water, Sanitation, Department of Environment and Climate Change, Action Aid, NLC, NEMA, NGAO, TTHRW, Land Control Boards, Community Land Committees, KLA, Kituo cha Sheria, Judiciary, TTU | Men, women, youth, old age and PLWD |
| | Water and irrigation | Boreholes | County Department of Water and Sanitation, NDMA, Kenya Red Cross, World Vision, Wildlife Works, Action Aid, MESPT, NPS water unit, CRS, CDA | Men, women, youth, old age and PLWD |
| | Social services | Community education and awareness | Department of Gender Sports and Culture, Red Cross, NDMA, World Vision, Wildlife Works, FAO, WFP, learning institutions, KMD, Department of Children, Action Aid, Nature Kenya, KLRO, Department of Livestock and Agriculture, media, NGAO, County Administration, TTHRW, CRS, TAITA TAVETA YOUTH ALLIANCE, Sauti ya Wanawake, CHVs, Council of Elders | Men, women, children, youth, old age and PLWD |
| | Trade and industry | Value chain development | KALRO, MESPT, Department of Livestock and Agriculture, Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, KMC, | Men, women, PLWD and the aged |

| | | | | |
|--|-----------------------------|--------------------------------|--|---|
| | | | Gemology Ctr., EASSI, SETA | |
| | Trade and industry | Functional markets | County Department of Trade, Ministry of Trade, FAO, County Department of Agriculture, Ministry of Agriculture, KCPB, Kenya Dairy Board, KMC, Chamber of Commerce, KIE, EASSI, Jua Kali Associations, SMEs | Men, women, PLWD and the aged |
| | Agriculture and environment | Nature based interventions | County Department of Agriculture, Ministry of Agriculture, Ministry of Tourism, Department of Trade and Tourism, Nature Kenya, AWF, WWF, Wildlife Works, KWS, Equity Bank, KCB Bank | Men, women, PLWD, the aged |
| | Education | School feeding programme | Action Aid, World Vision, Shake Foundation, Teita Sisal Estate, Qwetu Sacco, KCB Foundation, Red Cross, County Department of Special Program, Primary and Secondary schools, CRS, Youth 4 Charity, NDMA, | Children |
| | Peace and security | Conflict resolution committees | NGAO, County Administration, DCI, NPS County Steering Peace Committee, Community Policing, NCIC, UNDP, NPS, Judiciary, | Men, women, PLWD, and the aged |
| | Disaster response | Water trucking | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at National and County Levels, Action Aid, FAO, WFP, Teita Estate, KWS, County Department of Public Works, PPP, KFS | Men, women, PLWD, children and the aged |
| | Law | Policy and regulation | Red Cross, NGAO, County Department of Special Program, World Vision, FAO, WFP, | Men, women, PLWD and the aged |

| | | | | |
|--------|------------------------|---|---|---|
| | | | Action Aid, County Department of Health, Ministry of Special Programs, County Assembly, UN Habitat, GIZ, UNDP, Nature Kenya, AWF, NEMA, Enforcement, KFS | |
| Floods | Disaster response | Evacuation plan | Red Cross, NGAO, World Vision, NYS, Department of Health, learning institutions, NPS, Action Aid, Ministry of Health, Wildlife Works, Compassion, Teita Estate, Safaricom, Shake Foundation, KCB Foundation, Special programmes, FBOs, DSWT. TTWCA, | Men, women, children, youth, old age and PLWD |
| | Disaster response | Relief food | Red Cross, World Vision, Department of Special Programs at National and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, NDMA, CRS, USAID, FBOs, PPP, | Men, women, children, youth, old age and PLWD |
| | Disaster response | Water trucking | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at National and County Levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, Teita Estate | Men, women, children, aged, youth and PLWD |
| | Disaster response | Drinking water safety (facilitation and training) | Red Cross, Tavevo, County Department of Health, World Vision, County Department of Water and Sanitation, CHVs, NEMA, NGAO, County Administration | Men, women, children, aged, youth and PLWD |
| | Emergency preparedness | Early warning system | KMD, FAO, KALRO, Red Cross, NDMA, County Department of Agriculture and Ministry of Agriculture, Local Resource | Men, women, children, aged, youth and PLWD |

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| | | | Persons | |
| | Resource use | Land management | Department of Lands and Physical Planning, Ministry of Lands and Survey, KEFRI, KEPHIS, KALRO, KFS, nature KENTA, FAO, World Vision, NDMA, Red Cross, Department of Water, Sanitation, Department of Environment Climate Change and Natural Resources, TTWCA, NEMA | Men, women, aged, youth and PLWD |
| | Capacity building | Community awareness and sensitization | Department of Gender Sports, Department of Social Service, Red Cross, NDMA, World Vision, Wildlife Works, FAO, WFP, learning institutions, KMD, Department of Children, Action Aid, Nature Kenya, KALRO, Media, NGAO, County Administration, CFAs, CBOs | Men, women, aged, youth and PLWD |
| | Flash floods | Storm water management | Department of Lands and Physical Planning, Department of Water and Sanitation, Town committees and Municipal Boards, Public Works, NYS, Kenya Rainwater Harvesting Authority | Men, women, youth, PLWD, aged |
| | Disaster resilience | Flood resistant infrastructure | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | Men, women, youth and aged |
| | Disaster resilience | Site and location of critical facilities to consider flood risk | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA | Men, women, youth, aged and PLWD |

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| | Disaster resilience | Enforcing building codes and standards | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement, Public Health, Administration, | Men, women, youth, PLWD and the aged |
| | | Resettlement to safer zones | National Land Commission, Ministry of Lands and Survey, Department of Lands and Physical Planning, Kenya Red Cross Society, NDMA, World Vision, World Bank, | Men, women, children, aged, youth and PLWD |
| | Disaster preparedness | Opening of drainage channels | NYS, Ministry of Agriculture and Irrigation, County Department of Public Works, Town committees and Municipal Boards Boards, World Vision, County Department of Environment Climate Change and Natural Resources, County Department of Water and Sanitation, NIA, PPP, OOP | Men, women, youth, PLWD and the aged |
| | Physical planning | Land use planning/spatial planning | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards Boards, NEMA, NCA, County Directorate of Enforcement, SNV, FAO, TTWCA, Wild Life Works, KWCA, AWF, UN Habitat, TTU, | Men, women, youth, PLWD and the aged |
| | Law | Policies and regulation | Red Cross, NGAO, County Department of Special Program, World Vision, FAO, WFP, Action Aid, County Assembly | Men, women, youth, PLWD and the aged |
| | Community resilience | Cash transfer | County Department Agriculture and Livestock, FAO, ASDSP, SNV, Nature Kenya, Action Aid, NDMA, Kenya Red | Men, women, youths and the aged |

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| | | | Cross, World Vision | |
| | Education | School feeding program | Action Aid, World Vision, Shake Foundation, Teita Sisal Estate, Qwetu Sacco, KCB Foundation, Red Cross, County Department of Special Program. | Children |
| Human wildlife conflict | Crop and animal security | Provision of thunder flashes | KWS, TTWCA, Tsavo Conservation Area, AWF, Flora and Fauna International, County Department of Agriculture, KCEP CRAL, Wild Life Works, | Men, women, youths |
| | Crop and animal security | Use of flash lights | KWS, TTWCA, Tsavo Conservation Area, AWF, Flora and Fauna International, County Department of Agriculture, KCEP CRAL, NDMA, | Men, women, PLWD youths |
| | Crop protection and security | Early warning systems through community scouts | KWS, TTWCA, Tsavo Conservation Area, AWF, Flora and Fauna International, County Department of Agriculture, KCEP CRAL, CFAs, Nature Kenya | Men, women, PLWD and youth |
| | Crop protection and security | Planting of unfriendly crops like pepper, thorn sunflower and citrus fruits | KWS, TTWCA, Tsavo Conservation Area, AWF, Flora and Fauna International, County Department of Agriculture, KCEP CRAL, KALRO, KEPHIS, | Men, women, youth, PLWD and the aged |
| | Crop protection and security | Bee keeping | Nature Kenya, Kenya Red Cross, ICIPE, KWS, TTWCA, Tsavo Conservation Area, AWF, Flora and Fauna International, County Department of Agriculture, KCEP CRAL, KALRO, KEPHIS, Save the Elephants, | Men, women, youth and aged |

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| | | | WWF, | |
| | Human wildlife conflict | Enhancing ground and aerial patrols of game rangers | KWS, AWF, Wildlife Works, DSWT, | Men, women and youth |
| | Human wildlife conflict | Construction of water pans and animal water drinking points inside the park | Wildlife Works, NEMA, TTWCA, KWS, AWF | Men, women and youth |
| | Human wildlife conflict | Electric fencing of parks and digging of trenches | KWS, AWF, Wildlife Works, NEMA, TTWCA, WWF, AWF | Men, women and youth |
| | Human wildlife conflict | Security lighting | KWS, AWF, Wildlife Works, NEMA, TTWCA | Men, women, youth and the aged |
| | Human wildlife conflict | Fast track human wildlife compensation mechanism | KWS, County Department of Agriculture and Livestock, NGAO, County Department of Environment, Climate Change and Natural Resources, Public Works, ministry of Tourism and Wildlife, County Wildlife Conservation Committee | Men, women, youth and aged |
| Land slides | Disaster preparedness | Early warning system | KMD, Red Cross, County Department of Devolution and Administration, media, NGAO, Special Programs | Men, women, children, PLWD, and the aged |
| | Disaster response | Emergency response | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at National and County levels, Ministry of Agriculture | Men, women, children, PLWD and the aged |

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| | | | (national level and County levels), Action Aid, FAO, WFP, Teita Estate, NYS, Public Works, County Directorate of Fire | |
| | | Soil conservation structures (fanya juu), planting of nappier and vertiva grass | Department of Lands and Physical Planning, Ministry of Lands, Agriculture, County Department of Agriculture, FAO, World Vision, NDMA, Red Cross, Department of environment, water, sanitation, Department of Environment and Climate Change, SNV, NEMA, KFS, KEFRI, Nature Kenya, CFAs, CBOs, KALRO | Men, women, youth and the aged |
| | | Regulated settlements | County Department of Lands and Physical Planning, Department of Public Works, administration of Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement, WRA | |
| | | Riveting of rocky terrain to prevent further cracking | Public works, Department of mining, World Vision, Red Cross, NEMA | Men, women and youth |
| Pest and diseases | Crop and livestock protection | Implement regular surveillance and monitoring program | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, AFC, Farmers, | Men, women, youth, PLWD and the aged |
| | Livestock protection | Impose strict quarantine measures | Department of Livestock and Agriculture, County Department of Environment Climate Change and Natural Resources, FAO, WFP, | Men, women, youth, PLWD and the aged |

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| | | | Wildlife Works, Kenya Dairy Board, ICIPE, Ministry of Interior, KALRO | |
| | Risk management | Deploy targeted treatments | County Department of Agriculture and Livestock, KCEP CRAL, KCSAP, FAO, ICIPE, KALRO, | Men, women, youth, PLWD and the aged |
| | Surveillance | Establish dedicated response teams | County Department of Agriculture and Livestock, KCEP CRAL, KCSAP, ICIPE, FAO, WFP, | Men, women, youth, PLWD and the aged |
| | Farming practices | Promote crop rotation and diversification | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, | Men, women, youth, PLWD and the aged |
| | Agricultural practices | Implement integrated pest management practices | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, | Men, women, youth, PLWD and the aged |
| | Sustainable practices | Promote good agricultural practices | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board | Men, women, youth, PLWD and the aged |
| | Sustainable practices | Promote use of tolerant varieties | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment Climate | Men, women, youth, PLWD and the aged |

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| | | | Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision | |
| | Science and research | Investing in research and innovation | KALRO, KEPHIS, KEFRI, MESPT, ICIPE, TTU, Department of Livestock and Agriculture, Nature Kenya, County Department of Environment and Climate Change | Men, women, youth, PLWD and the aged |
| | Farmer capacity building | Provide education and training programs | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, | Men, women, youth, PLWD and the aged |
| | Community resilience | Develop climate change adaptation strategies | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, | Men, women, youth, PLWD and the aged |
| | Food security | Food preservation | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, | Men, women, youth, PLWD and the aged |
| Forest fires | Institution capacity building | Formation of CFA and PFMP | County Department of Environment, Climate Change and Natural Resources, Nature Kenya, KFS, NEMA, TTWCA, ICIPE, JICA, Red Cross, MESPT, | Men, women, youth, PLWD and the aged |
| | Emergency management | Mobilization of CFAs for fire fighting | County Department of Environment, Climate Change and Natural Resources, CFAs, Nature Kenya, KFS, NEMA, TTWCA, ICIPE, JICA, | Men, women, youth, PLWD and the aged |

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| | | | Red Cross, MESPT, | |
| | Fire management | Create fire breaks / clearing forest boundaries/fire management practices | County Department of Environment, Climate Change and Natural Resources, Ministry of Lands and Survey, County Department of Livestock and Agriculture, CFAs, County Department of Public Works Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, | Men, women, youth, PLWD and the aged |
| | Disaster preparedness | Activating early warning systems | County Department of Environment, Climate Change and Natural Resources, CFAs, Nature Kenya, KFS, NEMA, TTWCA, ICIPE, JICA, Red Cross, MESPT, | Men, women, youth, PLWD and the aged |
| | Capacity building | Provision of firefighting equipment and training | County Department of Environment, Climate Change and Natural Resources, CFAs, County Department of Public Works, Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, | Men, women, youth, PLWD and the aged |
| | Capacity building | Awareness and sensitization | County Department of Environment, Climate Change and Natural Resources, CFAs, County Department of Public Works, Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, Wildlife Works, KWS, AWF, TTWCA, Taita Taveta Youth Alliance, media | Men, women, youth, PLWD and the aged |
| | Capacity building | Recruiting of forest rangers | County Department of Environment, Climate Change and Natural Resources, KFS, KWS | Men, women, youth, PLWD and the aged |
| | Afforestation | Collaboration of sector agencies and the communities in | County Department of Environment, Climate Change and Natural Resources, KFS, KWS, TTWCA, Taita Taveta Youth Alliance, CFAs, Nature Kenya, KEFRI, | Men, women, youth, PLWD and the aged |

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| | | tree growing | | |
| | Forest boundaries | Survey and boundary delineation of public forests | County Department of Environment, Climate Change and Natural Resources, Ministry of Lands and Survey, CFAs, County Department of Public Works Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, KEFRI, | Men, women, youth, PLWD and the aged |
| | | Activating early warning systems | KMD, County public works, JICA, KFS, KWS, AWF, Nature Kenya, County Department of climate change and natural resources | Men, women, youth, PLWD and the aged |
| | Research and technology | Research on forest fire regimes/ history and predictions | KFS, KEFRI, TTU, Nature Kenya | Men, women, youth, PLWD and the aged |
| | Legal instruments | County forest policy and regulation | County Department of Environment, Climate Change and Natural Resources, CFAs, County Assembly, County attorney, KFS, NEMA, TTWCA, JICA, Red Cross, KEFRI, | Men, women, youth, PLWD and the aged |

4.2 Effectiveness of adaptation/resilience strategies to future climate risks

Table1.7: Effectiveness of adaptation/resilience strategies to future climate risks

| Risk/ hazard | Livelihood /economic system | Climate resilience strategies | Stakeholder group applying the strategy | Gender and social inclusion information | Effectiveness (scale 1-5, where 1 is the least effective and 5 the |
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| | | | | | most effective) |
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| Drought | Agriculture | Food aid/assistance | Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP | Men, women, children, youth, old age and PLWD | 4 |
| | Agriculture | Drought tolerant crops and livestock breeds | FAO, County Department of Agriculture and Livestock, Ministry of Livestock and Agriculture, KALRO, Kenya Seeds, SNV, ASDSP, MESPT, | Men, women, youth, old age and PLWD | 4 |
| | Water and environment | Water infrastructure development | County Department of Water and Sanitation, NDMA, Action Aid, World Vision, Red Cross, JICA, ministry of Water, Water Sector Trust Fund, Coast Water development, Wildlife Works ,Tavevo | Men, women, children, youth, old age and PLWD | 5 |
| | Agriculture | Livestock off take | County Department of Agriculture and livestock, Ministry of Agriculture and livestock, KCEP CRAL, KALRO, KMC, | Men, women, youth, the aged and PLWD | 3 |
| | Meteorological | Early warning system | KMD, FAO, KALRO, Red Cross, NDMA, County Department of Agriculture and Ministry of Agriculture | Men, women, children, youth, old age and PLWD | 4 |
| | Agriculture and | Pasture farming and fodder | County Department of Agriculture and livestock, | Men, women, youth, old age and PLWD | 4 |

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|--|-----------------------------|--------------------------------|--|---|---|
| | livestock | storage | FAO, ASDSP, SNV, | | |
| | Agriculture and livestock | Diversification of livelihoods | County Department Agriculture and livestock, FAO, ASDSP, SNV, Nature Kenya, Action Aid, NDMA, Kenya Red Cross, World Vision | Men, women, aged, PLWD | 5 |
| | Community capacity building | Cash transfers | Action Aid, World Vision, labour and social protection, Department of social services, Red Cross, FAO, compassion, Wildlife Works, carbon credit | Men, women, children, youth, old age and PLWD | 3 |
| | Agriculture and livestock | Medical supplies | Ministry of Agriculture and livestock, Department of Agriculture and livestock, NDMA, | Men, women, youths, aged, PLWD | 4 |
| | Water and irrigation | Irrigation systems | Ministry of Agriculture, County Department of Agriculture and livestock, NDMA, Action Aid, Coast Water, Kenya Water Towers Agency, WRUAS, NPS water unit, | Men, women, youth, old age and PLWD | 5 |
| | Forestry | Afforestation | County Department of Environment, Climate Change and Natural Resources, County Department of Water and Sanitation, Nature Kenya, KFS, KEFRI, NEMA, KWS, Taita Taveta Youth Alliance, Wildlife Works, | Men, women, children, PLWD, aged | 5 |

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|--|--------------------------|---|--|---|---|
| | | | TTWCA, Teita Sisal Estate, MESPT, Red Cross, learning institutions, Town committees and Municipal Boards | | |
| | Lands/Agric ulture | Land management | Department of Lands and Physical Planning, ministry of lands, Agriculture, FAO, World Vision, NDMA, Red Cross, Department of Environment and Climate Change | Men, women, youth, old age and PLWD | 4 |
| | Water and irrigation | Boreholes | County Department of Water and Sanitation, NDMA, Kenya Red Cross, World Vision, Wildlife Works, Action Aid, MESPT, NPS, | Men, women, youth, old age and PLWD | 4 |
| | Social services | Community education and awareness | Department of gender sports and culture, Red Cross, NDMA, World Vision, Wildlife Works, FAO, WFP, learning institutions, KMD, Department of children, Action Aid, Nature Kenya, KALRO, Department of Livestock and Agriculture, media, NGAO, County Administration | Men, women, children, youth, old age and PLWD | 3 |
| | Water and Agriculture | Water harvesting infrastructure | County Department of Water and Sanitation, Agriculture and irrigation, | Men, women, youths, aged and PLWD | 5 |

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| | | (roof top harvesting, water pans, sand dams, farm ponds, mega dams, water pipeline extension) | Ministry of Agriculture and irrigation, NDMA, FAO, World Vision, JICA, Coast Development Authority, Action Aid, Red Cross, water and irrigation board NPS water unit, | | |
| | Trade and industry | Value chain development | KALRO, MESPT, Department of Livestock and Agriculture, Department of environment, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, KMC | Men, women, PLWD and the aged | 3 |
| | Trade and industry | Functional markets | County Department of trade, ministry of trade, FAO, County Department of Agriculture, national Department of Agriculture, KCPB, Kenya Dairy Board, KMC | Men, women, PLWD and the aged | 4 |
| | Agriculture and environment | Nature based interventions | County Department of Agriculture, Ministry of Agriculture, Ministry of Tourism, Department of Trade and Tourism, Nature Kenya, | Men, women, PLWD, the aged | 4 |
| | Education | School feeding | Action Aid, World Vision, | Children | 4 |

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| | | program | Shake Foundation, Teita Sisal Estate, Qwetu Sacco, KCB foundation, Red Cross, County Department of special program, | | |
| | Peace and security | Conflict resolution committees | NGAO, County Administration, Department of Environment and Climate Change, DCI, County Department of Agriculture, WRUAS, Kenya Water Towers Agency, NPS water unit, County Steering Peace Committee | Men, women, PLWD, and the aged | 5 |
| | Disaster response | Water trucking | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, Teita Sisal Estate | Men, women, PLWD, children and the aged | 5 |
| | Legal framework | Policy and regulation | Red Cross, NGAO, County Department of special program, World Vision, FAO, WFP, Action Aid, County Assembly | Men, women, PLWD and the aged | 5 |
| Floods | Disaster response | Evacuation plan | Red Cross, NGAO, World Vision, NYS, Department of Health, learning institutions, NPS, Action Aid, ministry | Men, women, children, youth, old age and PLWD | 5 |

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|--|------------------------|---|--|--|---|
| | | | of health, Wildlife Works, Compassion, Teita Estate, Safaricom, Shake Foundation, KCB foundation, Special programmes, | | |
| | Disaster response | Relief food | Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, NDMA | | 5 |
| | Disaster response | Water trucking | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, Teita Estate | Men, women, children, aged, youth and PLWD | 5 |
| | Disaster response | Drinking water safety (facilitation and training) | Red Cross, Tavevo, County Department of health, World Vision, County Department of Water and Sanitation | Men, women, children, aged, youth and PLWD | 4 |
| | Emergency preparedness | Early warning system | KMD, FAO, KALRO, Red Cross, NDMA, County Department of Agriculture and Ministry of Agriculture | Men, women, children, aged, youth and PLWD | 5 |
| | Resource | Land | Department of Lands and | Men, women, aged, youth and PLWD | 5 |

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| | use | management | Physical Planning, ministry of lands and survey, Agriculture, KEFRI, KEPHIS, KALRO, KFS, nature kenta, FAO, World Vision, NDMA, Red Cross, Department of Water and Sanitation, Department of Environment Climate Change and Natural Resources, TTWCA, NEMA | | |
| | Capacity building | Community awareness and sensitization | Department of gender sports and gender, Red Cross, NDMA, World Vision, Wildlife Works, FAO, WFP, learning institutions, KMD, Department of children, Action Aid, Nature Kenya, KALRO, Department of Livestock and Agriculture, media, NGAO, County Administration | | 5 |
| | Flash floods | Storm water management | Department of Lands and Physical Planning, Department of Water and Sanitation, Town committees and Municipal Boards, | Men, women, youth, PLWD, the aged | 5 |
| | Disaster resilience | Flood resistant infrastructure | County Department of Lands and Physical Planning, Department of Public Works, Town | Men, women, youth and the aged | 5 |

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| | | | committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | | |
| | Disaster resilience | Site and location of critical facilities to consider flood risk | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA | Men, women, youth, aged and PLWD | 5 |
| | Disaster resilience | Enforcing building codes and standards | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | Men, women, youth, PLWD and the aged | 5 |
| | Risk management | Resettlement to safer zones | National land commission, ministry of lands and survey, Department of Lands and Physical Planning, Kenya Red Cross society, NDMA, World Vision | Men, women, children, aged, youth and PLWD | 4 |
| | Disaster preparedness | Opening of drainage channels | NYS, Ministry of Agriculture and irrigation, County Department of Public Works, administration of Town committees and Municipal Boards, World Vision, County Department of | Men, women, youth, PLWD and the aged | 5 |

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| | | | environment climate change and natural resources, County Department of Water and Sanitation | | |
| | Physical planning | Land use planning/spatial planning | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | Men, women, youth, PLWD and the aged | 5 |
| | Law | Policies and regulation (County disaster management policy and act) | Red Cross, NGAO, County Department of Special Program, World Vision, FAO, WFP, Action Aid, County Assembly | Men, women, youth, PLWD and the aged | 5 |
| | Community resilience | Cash transfer | County Department Agriculture and livestock, FAO, ASDSP, SNV, Nature Kenya, Action Aid, NDMA, Kenya Red Cross, World Vision | Men, women, youths and the aged | 3 |
| | Education | School feeding program | Action Aid, World Vision, Shake Foundation, Teita Sisal Estate, Qwetu Sacco, KCB foundation, Red Cross, County Department of special program, | Children | 5 |
| Human wildlife conflict | Crop and animal security | Provision of dunder flashes | KWS, TTWCA, tsavo conservation area, AWF, flora and fauna international, County | Men, women, youths | 5 |

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| | | | Department of Agriculture, KCEP CRAL | | |
| | Crop and animal security | Use of flash lights | KWS, TTWCA, tsavo conservation area, AWF, flora and fauna international, County Department of Agriculture, KCEP CRAL | Men, women, PLWD youths | 4 |
| | Crop protection and security | Early warning systems through community scouts | KWS, TTWCA, tsavo conservation area, AWF, flora and fauna international, County Department of Agriculture, KCEP CRAL | Men, women, PLWD and youth | 4 |
| | Crop protection and security | Planting of unfriendly crops like pepper, thorn sunflower and citrus fruits | KWS, TTWCA, tsavo conservation area, AWF, flora and fauna international, County Department of Agriculture, KCEP CRAL, KALRO, KEPHIS | Men, women, youth, PLWD and the aged | 4 |
| | Crop protection and security | Bee keeping | Nature Kenya, kenya Red Cross, ICIPE, KWS, TTWCA, tsavo conservation area, AWF, flora and fauna international, County Department of Agriculture, KCEP CRAL, KALRO, KEPHIS | Men, women, youth and aged | 4 |
| | Human wildlife conflict | Enhancing ground and aerial patrols of | KWS, AWF, Wildlife Works | Men, women and youth | 4 |

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| | | game rangers | | | |
| | Human wildlife conflict | Construction of water pans and animal water drinking points inside the park | KWS, AWF, Wildlife Works, NEMA, TTWCA | Men, women and youth | 5 |
| | Human wildlife conflict | Electric fencing of parks and digging of trenches | KWS, AWF, Wildlife Works, NEMA, TTWCA | Men, women and youth | 5 |
| | Human wildlife conflict | Security lighting | KWS, AWF, Wildlife Works, NEMA, TTWCA | Men, women, youth and the aged | 4 |
| | Human wildlife conflict | Fast track human wildlife compensation mechanism | KWS, County Department of Agriculture and livestock, NGAO, County Department of Environment, Climate Change and Natural Resources, public works | Men, women, youth and aged | 5 |
| Land slides | Disaster preparedness | Early warning system | KMD, Red Cross, County Department of devolution and administration | Men, women, children, PLWD, and the aged | 4 |
| | Disaster response | Emergency response | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, Teita Estate | Men, women, children, PLWD and the aged | 5 |

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| | | Soil conservation structures (fanya juu), planting of nappier and vertiva grass | Department of Lands and Physical Planning, ministry of lands, Agriculture, County Department of Agriculture, FAO, World Vision, NDMA, Red Cross, Department of environment, water, sanitation, Department of Environment and Climate Change, SNV, NEMA, KFS, KEFRI, Nature Kenya | Men, women, youth and the aged | 4 |
| | | Regulated settlements | County Department of Lands and Physical Planning, Department of Public Works, administration of Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | Men, women, children, PLWD, and the aged | 4 |
| | | Riveting of rocky terrain to prevent further cracking | Public works, Department of mining, World Vision, Red Cross, NEMA | Men, women and youth | 3 |
| Pest and diseases | Crop and livestock protection | Implement regular surveillance and monitoring program | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of environment climate change and natural resources, FAO, | Men, women, youth, PLWD and the aged | 5 |

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| | | | WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, | | |
| | Livestock protection | Impose strict quarantine measures | Department of Livestock and Agriculture, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Kenya Dairy Board, ICIPE | Men, women, youth, PLWD and the aged | 4 |
| | Risk management | Deploy targeted treatments | County Department of Agriculture and livestock, KCEP CRAL, KCSAP, FAO, ICIPE, | Men, women, youth, PLWD and the aged | 5 |
| | Surveillance | Establish dedicated response teams | County Department of Agriculture and livestock, KCEP CRAL, KCSAP, FAO, ICIPE, FAO, WFP | Men, women, youth, PLWD and the aged | 5 |
| | Farming practices | Promote crop rotation and diversification | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, | Men, women, youth, PLWD and the aged | 3 |
| | Agricultural practices | Implement integrated pest management practices | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, | Men, women, youth, PLWD and the aged | 5 |

| | | | | | |
|--|-----------------------|--------------------------------------|---|--------------------------------------|---|
| | | | Department of environment, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, | | |
| | Sustainable practices | Promote good agricultural practices | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board | Men, women, youth, PLWD and the aged | 4 |
| | Sustainable practices | Promote use of tolerant varieties | KALRO, MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, kenya cereals | Men, women, youth, PLWD and the aged | 4 |
| | Science and research | Investing in research and innovation | KALRO, KEPHIS, KEFRI, MESPT, ICIPE, TTU, Department of Livestock and Agriculture, Nature | Men, women, youth, PLWD and the aged | 4 |

| | | | | | |
|--|--------------------------|--|---|--------------------------------------|---|
| | | | Kenya, County Department of Environment and Climate Change | | |
| | Farmer capacity building | Provide education and training programs | KALRO,MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, kenya cereals | Men, women, youth, PLWD and the aged | 5 |
| | Community resilience | Develop climate change adaptation strategies | KALRO,MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, kenya cereals | Men, women, youth, PLWD and the aged | 5 |
| | Food security | Food storage and preservation | KALRO,MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of Environment, Climate Change and Natural | Men, women, youth, PLWD and the aged | 4 |

| | | | | | |
|--------------|-------------------------------|---|---|--------------------------------------|---|
| | | | Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, Kenya cereals | | |
| Forest fires | Institution capacity building | Formation of CFA and PFMP | County Department of Environment, Climate Change and Natural Resources, Nature Kenya, KFS, NEMA, TTWCA, ICIPE, JICA, Red Cross, MESPT, | Men, women, youth, PLWD and the aged | 4 |
| | Emergency management | Mobilization of CFAs for fire fighting | County Department of Environment, Climate Change and Natural Resources, CFAs, Nature Kenya, KFS, NEMA, TTWCA, ICIPE, JICA, Red Cross, MESPT, | Men, women, youth, PLWD and the aged | 5 |
| | Fire management | Create fire breaks / clearing forest boundaries/fire management practices | County Department of Environment, Climate Change and Natural Resources, Ministry of Lands and Survey, County Department of Livestock and Agriculture , CFAs, County Department of Public Works Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, | Men, women, youth, PLWD and the aged | 5 |
| | Disaster preparedness | Activating early warning systems | County Department of Environment, Climate Change and Natural Resources, CFAs, Nature Kenya, KFS, NEMA, | Men, women, youth, PLWD and the aged | 4 |

| | | | | | |
|--|-------------------|--|---|--------------------------------------|---|
| | | | TTWCA, ICIPE, JICA, Red Cross, MESPT, | | |
| | Capacity building | Provision of firefighting equipment and training | County Department of Environment, Climate Change and Natural Resources, CFAs, County Department of Public Works, Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, | Men, women, youth, PLWD and the aged | 5 |
| | Capacity building | Awareness and sensitization | County Department of Environment, Climate Change and Natural Resources, CFAs, County Department of Public Works, Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, Wildlife Works, KWS, AWF, TTWCA, Taita Taveta Youth Alliance, media | Men, women, youth, PLWD and the aged | 5 |
| | Capacity building | Recruiting of forest rangers | County Department of Environment, Climate Change and Natural Resources, KFS, KWS | Men, women, youth, PLWD and the aged | 5 |
| | Afforestation | Collaboration of sector agencies and the communities in tree growing | County Department of Environment, Climate Change and Natural Resources, KFS, KWS, TTWCA, Taita Taveta Youth Alliance, CFAs, Nature Kenya, KEFRI, | Men, women, youth, PLWD and the aged | 3 |
| | Forest | Survey and | County Department of | Men, women, youth, PLWD and the | 5 |

| | | | | | |
|--|-------------------------|--|--|--------------------------------------|---|
| | boundaries | boundary delineation of public forests | Environment, Climate Change and Natural Resources, Ministry of Lands and Survey, CFAs, County Department of Public Works Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, KEFRI, | aged | |
| | Research and technology | Research on forest fire regimes/ history and predictions | KFS, KEFRI, TTU, Nature Kenya | Men, women, youth, PLWD and the aged | 4 |
| | Legal instruments | County forest policy and regulation | County Department of Environment, Climate Change and Natural Resources, , CFAs, County Assembly, County attorney, KFS, NEMA, TTWCA, JICA, Red Cross, KEFRI, | Men, women, youth, PLWD and the aged | 5 |

CHAPTER FIVE: COUNTY CLIMATE STRATEGIC ADAPTATION INVESTMENT/ ACTION PRIORITIES

Table 1.8: County Climate strategic adaptation investment action priorities

| Risk/hazard | Livelihood/ Economic system | Climate resilience strategies | Target area /ward | Stakeholder group applying the strategy | Gender and social inclusion information |
|--------------------|--|--|---|---|--|
| Drought | Agriculture | Support Food aid/assistance programs | Bura ward, Mata ward, Chawia ward Mbololo ward, Wumingu Kishushe ,Sagalla ward Kasighau | Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP | Men, women, children, youth, old age and PLWD |
| | Agriculture | Promote Drought | All wards | FAO, County Department of Agriculture and livestock, ministry | Men, women, youth, old age |

| | | | | | |
|--|---------------------------|---|--|--|---|
| | | tolerant crops and livestock breeds | | of livestock and Agriculture, KALRO, Kenya seeds, SNV, ASDSP, MESPT, | and PLWD |
| | Water and environment | Support expansion of Water infrastructure development | Werugha, Wumingu Kishushe, Bura, Mata, | County Department of Water and Sanitation, NDMA, Action Aid, World Vision, Red Cross, JICA, ministry of water, Water Sector Trust Fund, Coast Water development, Wildlife Works, NPS water unit, | Men, women, children, youth, old age and PLWD |
| | Agriculture | Support Livestock off take programs | Mata, Wumingu Kishushe Chawia Mbololo, Kasighau, Sagalla, Bura | County Department of Agriculture and livestock, Ministry of Agriculture and livestock, climate smart Agriculture, KCEP CRAL, KALRO, KMC, | Men, women, youth, old age and PLWD |
| | Weather Information | Establish/Strengthen Early warning system | All wards | KMD, FAO, KALRO, Red Cross, NDMA, County Department of Agriculture and ministry of Agriculture | Men, women, children, youth, old age and PLWD |
| | Livestock and Agriculture | Promote Pasture farming and fodder conservation | All wards | County Department of Agriculture and livestock, FAO, ASDSP, SNV, | Men, women, youth, old age and PLWD |
| | Agriculture and livestock | Support/promote Diversification of livelihoods | All wards | County Department Agriculture and livestock, FAO, ASDSP, SNV, Nature Kenya, Action Aid, NDMA, Kenya Red Cross, World Vision | Men, women, aged, PLWD |
| | Community resilience | Enhance Cash transfers | Mbololo, Kishushe, Chawia, Sagalla, Bura, Mata | Action Aid, World Vision, labour and social protection, Department of social services, Red Cross, FAO, compassion, Wildlife Works, carbon credit | Men, women, children, youth, old age and PLWD |

| | | | | | |
|--|----------------------|--|---|--|---|
| | Water and irrigation | Initiate and Expand Irrigation schemes | Werugha,Bura,Wumingu Kishushe,Challa, Mboghoni, | Ministry of Agriculture, County Department of Agriculture and livestock, NDMA, Action Aid, Coast Water, Kenya Water Towers Agency, WRUAS, NPS water unit, | Men, women, youth, old age and PLWD |
| | Forestry | Undertake Afforestation and reafforestation programs | Werugha, Wumingu Kishushe, Sagalla, Kasighau,Mboghoni,Bura ,wusi kishamba | County Department of Environment, Climate Change and Natural Resources, County Department of Water and Sanitation, Nature Kenya, KFS, KEFRI,NEMA, KWS, Taita Taveta Youth Alliance, Wildlife Works, TTWCA, Teita Sisal Estate, MESPT, Red Cross, learning institutions, Town committees and Municipal Boards | Men, women, children, PLWD, aged |
| | Lands/Agriculture | Promote Sustainable Land management | All wards | Department of Lands and Physical Planning, Ministry of Lands, FAO, World Vision, NDMA, Red Cross, , Department of Environment and Climate Change | Men, women, youth, old age and PLWD |
| | Water and irrigation | Drill Boreholes | Kishushe,Chawia lower zones,Bura lower zones, Mbololo, Sagalla ,Kasighau, ronge | County Department of Water and Sanitation, NDMA, Kenya Red Cross, World Vision, Wildlife Works, Action Aid, MESPT, NPS water unit, | Men, women, youth, old age and PLWD |
| | Social services | Conduct Community education and awareness creation campaigns | All wards | Department of Gender Sports and Culture, Red Cross, NDMA, World Vision, Wildlife Works, FAO, WFP, learning institutions, KMD, Department of Children, Action Aid, Nature Kenya, KALRO, Department of Livestock and | Men, women, children, youth, old age and PLWD |

| | | | | | |
|--|-----------------------------|--|---|--|-----------------------------------|
| | | | | Agriculture, media, NGAO, County Administration | |
| | Water and Agriculture | Investments in Water harvesting infrastructure (roof top harvesting, water pans, sand dams, farm ponds, mega dams, water pipeline extension) | All wards | County Department of Water and Sanitation, Agriculture and irrigation, Ministry of Agriculture and irrigation, NDMA, FAO, World Vision, JICA, Coast Development Authority, Action Aid, Red Cross, Kenya Water and Irrigation Board NPS water unit, | Men, women, youths, aged and PLWD |
| | Trade and industry | Support Value chain development | All wards | KALRO, MESPT, Department of Livestock and Agriculture, County Department of Environment Climate Change and Natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, KMC | Men, women, PLWD and the aged |
| | Trade and industry | Functional markets Enhancement | Mwatate, Wundanyi-Mbale, Kaloleni, Mbololo bomeni, | County Department of Trade, Ministry of trade, FAO, County Department of Agriculture, National Department of Agriculture, KCPB, Kenya Dairy Board, KMC | Men, women, PLWD and the aged |
| | Agriculture and environment | Promote Nature based interventions | All wards | County Department of Agriculture, Ministry of Agriculture, ministry of tourism, Department of Trade and Tourism, Nature Kenya, | Men, women, PLWD, the aged |
| | Education | Support the establishment | Chawia, Mbololo, Kishushe, Mata, Bura, mwatate, ronge | Action Aid, World Vision, Shake Foundation, Teita Sisal Estate, | Children, |

| | | | | | |
|--------|--------------------|---|--|--|---|
| | | of a School feeding programme | | Qwetu Sacco, KCB foundation, Red Cross, County Department of Special Program, | |
| | Peace and security | Strengthen capacity of Conflict resolution committees | All wards | NGAO, County Administration, Department of Environment and Climate Change, DCI, County Department of Agriculture, WRUAS, Kenya Water Towers Agency, NPS water unit, County steering peace committee | Men, women, PLWD, and the aged |
| | Disaster response | Provide Water trucking services | Mwatate, ronge lower zones, Kishushe, Bura lower zones, Mbololo, Sagalla | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, Teita Estate | Men, women, PLWD, children and the aged |
| | Law | Develop a Policy, legal and regulatory framework | All wards | Red Cross, NGAO, County Department of special program, World Vision, FAO, WFP, Action Aid, Ministry of Special Programs, County Assembly | Men, women, PLWD and the aged |
| Floods | Disaster response | Develop a community Evacuation plan | Mboghoni ,Mata, | Red Cross, NGAO, World Vision, NYS, Department of health, learning institutions, NPS, Action Aid, ministry of health, Wildlife Works, compassion, Teita Estate, safaricom, Shake Foundation, KCB foundation, special programmes, | Men, women, children, youth, old age and PLWD |
| | Disaster response | Support provision of Relief food | Mata, | Red Cross, World Vision, Department of Special Programs at national and County levels, | |

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|--|------------------------|--|----------------|--|--|
| | | | | Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP | |
| | Disaster response | Provide Water trucking services | Mata | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, Teita Estate | Men, women, children, aged, youth and PLWD |
| | Disaster response | Provision of clean drinking water (facilitation and training on hygiene) | Mata, Mboghoni | Red Cross, Tavevo, County Department of health, World Vision, County Department of Water and Sanitation | Men, women, children, aged, youth and PLWD |
| | Emergency preparedness | Strengthen Early warning system | All wards | KMD, FAO, KALRO, Red Cross, NDMA, County Department of Agriculture and Ministry of Agriculture | Men, women, children, aged, youth and PLWD |
| | Resource use | Support the preparation of sustainable community Land Use Plans | All wards | Department of Lands and Physical Planning, ministry of Lands and Survey, Agriculture, KEFRI, KEPHIS, KALRO, KFS, nature , FAO, World Vision, NDMA, Red Cross, Department of Environment Climate Change and Natural Resources, TTWCA,NEMA | Men, women, aged, youth and PLWD |
| | Capacity building | Undertake Community awareness and sensitization | All wards | Department of gender sports and gender, Red Cross, NDMA, World Vision, Wildlife Works, FAO, WFP, learning institutions, KMD, | |

| | | | | | |
|--|---------------------|--|------------------------------|--|--|
| | | campaigns | | Department of children, Action Aid, Nature Kenya, KALRO, Department of Livestock and Agriculture, media, NGAO, County Administration | |
| | Infrastructure | Develop Storm water management plans and guidelines | Mata, Mboghoni, voi, mwatate | Department of Lands and Physical Planning, Department of Water and Sanitation, Town committees and Municipal Boards, | Men, women, youth, PLWD, aged |
| | Disaster resilience | Develop codes/guidelines for Flood resistant infrastructure | Mata, Mboghoni | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | Men, women, youth and aged |
| | Disaster resilience | Carry out an evaluation of Site and location of critical facilities to consider flood risk | Mata, Mboghoni | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA | Men, women, youth, aged and PLWD |
| | Disaster resilience | Strengthen the Enforcement of building codes and standards | All wards | County Department of Lands and Physical Planning, Department of Public Works, Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | Men, women, youth, PLWD and the aged |
| | Human safety | Initiate a Resettlement program to safer zones | Mata | National land commission, ministry of lands and survey, Department of Lands and Physical Planning, Kenya Red Cross society, NDMA, | Men, women, children, aged, youth and PLWD |

| | | | | | |
|-------------------------|-----------------------|--|---|--|--------------------------------------|
| | | | | World Vision | |
| | Disaster preparedness | Maintenance and improvement of drainage channels | All wards | NYS, Ministry of Agriculture and irrigation, County Department of Public Works, administration of Town committees and Municipal Boards, World Vision, County Department of environment climate change and natural resources, County Department of Water and Sanitation | Men, women, youth, PLWD and the aged |
| | Physical planning | Land use planning/spatial planning | All wards | County Department of land and physical planning, Department of Public Works, administration of Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | Men, women, youth, PLWD and the aged |
| | Law | Formulation of Policies and regulations | All wards | Red Cross, NGAO, County Department of special program, World Vision, FAO, WFP, Action Aid, County Department of health, ministry of special programs, County Assembly | Men, women, youth, PLWD and the aged |
| | Community resilience | Enhance Cash transfer programs | All wards | County Department Agriculture and livestock, FAO, ASDSP, SNV, Nature Kenya, Action Aid, NDMA, Kenya Red Cross, World Vision | Men, women, youths and the aged |
| | Education | Enhance and expand School feeding program | Mata | Action Aid, World Vision, Shake Foundation, Teita Sisal Estate, Qwetu Sacco, KCB foundation, Red Cross, County Department of Special Program, | Children |
| Human wildlife conflict | Crop and livestock | Provision of thunder flashes | Mata,Challa,Bura,Chawia, Mbololo,Kasighau | KWS, TTWCA, Tsavo Conservation Area, AWF, Flora | Men, women, youths |

| | | | | | |
|--|------------------------------------|--|--|---|--------------------------------------|
| | protection | Promote the use of flash lights and other deterrent techniques | Kishushe,Sagalla | and Fauna International, County Department of Agriculture, KCEP CRAL | |
| | | Develop Early warning systems through community scouts | All wards | KWS, TTWCA, Tsavo Conservation Area, AWF, flora and fauna international, County Department of Agriculture, KCEP CRAL | Men, women, PLWD and youth |
| | | Promote the Planting of unpalatable crops like chillies, thorn sunflower and citrus fruits | Mata, Challa, Mboghoni,Bura Chawia Mbololo sagala Kasighau Kishushe | KWS, TTWCA, Tsavo Conservation Area, AWF, Flora and Fauna International, County Department of Agriculture, KCEP CRAL, KALRO, KEPHIS | Men, women, youth, PLWD and the aged |
| | | Promote Bee keeping (Apiculture) | Mata Challa, Mboghoni, Bura Chawia Mbololo Kishushe kasigas Sagalla | Nature Kenya, Red Cross, ICIPE, KWS, TTWCA, Tsavo Conservation Area, AWF, Flora and Fauna International, County Department of Agriculture, KCEP CRAL, KALRO, KEPHIS | Men, women, youth and aged |
| | Human wildlife conflict mitigation | Enhancing ground and aerial patrols and construct security outposts | Mata Challa Mboghoni, Bura Chawia, Mbololo,Kishushe Sagalla Kasighau | KWS, AWF, Wildlife Works | Men, women and youth |
| | | Construction of water pans and | Parks | KWS, AWF, Wildlife Works, NEMA, TTWCA | Men, women and youth |

| | | | | | |
|-------------|-----------------------|---|---|--|--|
| | | animal water drinking points inside the park | | | |
| | | Electric fencing of parks and digging of trenches | Areas bordering the community | KWS, AWF, Wildlife Works, NEMA, TTWCA | Men, women and youth |
| | | Install Security lighting | At the boundaries with community | KWS, AWF, Wildlife Works, NEMA, TTWCA | Men, women, youth and the aged |
| | | Fast track human wildlife compensation mechanism | All affected wards | KWS, County Department of Agriculture and livestock, NGAO, County Department of Environment, Climate Change and Natural Resources, public works | Men, women, youth and aged |
| Land slides | Disaster preparedness | Enhanced Early warning system | Bura upper zones, Werugha, Wumingu ,ronge,Chawia upper zones, Sagalla upper zones | KMD, Red Cross, County Department of devolution and administration | Men, women, children, PLWD, and the aged |
| | Disaster response | An emergency response strategy developed | Bura upper zones, Werugha, Wumingu ,ronge,Chawia upper zones, Sagalla upper zones | County Department of Water and Sanitation, Tavevo, Red Cross, World Vision, Department of Special Programs at national and County levels, Ministry of Agriculture (national level and County levels), Action Aid, FAO, WFP, Teita Estate | Men, women, children, PLWD and the aged |
| | | Promote Soil and water conservation structures (fanya juu), | Bura upper zones, Werugha, Wumingu ,ronge,Chawia upper zones, Sagalla upper zones | Department of Lands and Physical Planning, ministry of lands, Agriculture, County Department of Agriculture, FAO, World Vision, NDMA, Red Cross, Department of | Men, women, youth and the aged |

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|-------------------|-------------------------------|---|---|---|--------------------------------------|
| | | planting of nappier and vertiva grass | | environment, water, sanitation, Department of Environment and Climate Change, SNV, NEMA, KFS, KEFRI, Nature Kenya | |
| | | Implement a resettlement plan for at risk settlements | Bura upper zones, Werugha, Wumingu ,ronge,Chawia upper zones, Sagalla upper zones | County Department of Lands and Physical Planning, Department of Public Works, administration of Town committees and Municipal Boards, NEMA, NCA, County Directorate of Enforcement | |
| | | Riveting of rocky terrain to prevent further cracking | Bura upper zones, Werugha, Wumingu ,ronge,Chawia upper zones, Sagalla upper zones | Public works, Department of mining, World Vision, Red Cross, NEMA | Men, women and youth |
| Pest and diseases | Crop and livestock protection | Implement regular surveillance and monitoring program | All wards | KALRO,MESPT, KCSAP KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, | Men, women, youth, PLWD and the aged |
| | Livestock protection | Impose strict quarantine measures | All wards | Department of Livestock and Agriculture, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Kenya Dairy Board, ICIPE | Men, women, youth, PLWD and the aged |
| | Risk management | Deploy targeted treatments | All wards | County Department of Agriculture and livestock, KCEP CRAL, KCSAP, FAO, ICIPE, | Men, women, youth, PLWD and the aged |

| | | | | | |
|--|------------------------|--|-----------|--|--------------------------------------|
| | Surveillance | Establish dedicated response teams | All wards | County Department of Agriculture and livestock, KCEP CRAL, KCSAP, FAO, ICIPE, FAO, WFP | Men, women, youth, PLWD and the aged |
| | Farming practices | Promote crop rotation and diversification | All wards | KALRO, MESPT, KCSAP, KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment Climate Change and Natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, | Men, women, youth, PLWD and the aged |
| | Agricultural practices | Implement integrated pest management practices | All wards | KALRO, MESPT, KCSAP, KEPHIS, ICIPE, Department of Livestock and Agriculture, County Department of Environment Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board, | Men, women, youth, PLWD and the aged |
| | Sustainable practices | Promote good agricultural practices | All wards | KALRO, MESPT, KCSAP, KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of environment climate change and natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, KCPB, Kenya Dairy Board | Men, women, youth, PLWD and the aged |
| | Sustainable practices | Promote use of tolerant varieties | All wards | KALRO, MESPT, KCSAP, KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of environment | Men, women, youth, PLWD and the aged |

| | | | | | |
|--|--------------------------|--|-----------|---|--------------------------------------|
| | | | | climate change and natural resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, | |
| | Science and research | Investing in research and innovation | All wards | KALRO, KEPHIS, KEFRI, MESPT, ICIPE, TTU, Department of Livestock and Agriculture, Nature Kenya, County Department of Environment and Climate Change | Men, women, youth, PLWD and the aged |
| | Farmer capacity building | Provide education and training programs | All wards | KALRO, MESPT, KCSAP, KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, | Men, women, youth, PLWD and the aged |
| | Community resilience | Implement climate change adaptation strategies | All wards | KALRO, MESPT, KCSAP, KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of Environment, Climate Change and Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, | Men, women, youth, PLWD and the aged |
| | Post harvest handling | Promote uptake of appropriate Food preservation techniques | All wards | KALRO, MESPT, KCSAP, KEPHIS, ICIPE, Department of Livestock and Agriculture, Department of environment, County Department of Environment, Climate Change and | Men, women, youth, PLWD and the aged |

| | | | | | |
|--------------|---------------------------------|---|--|--|--------------------------------------|
| | | | | Natural Resources, FAO, WFP, Wildlife Works, Action Aid, World Vision, | |
| Forest fires | Institutional capacity building | Formation and strengthening of CFAs and supporting the development of PFMPs | Werugha, Wumingu Kishushe, Sagalla, Bura, Chawia | County Department of Environment, Climate Change and Natural Resources, Nature Kenya, KFS, NEMA, TTWCA, ICIPE, JICA, Red Cross, MESPT, | Men, women, youth, PLWD and the aged |
| | Emergency Response | Equip CFAs with Fire fighting gear | All wards | County Department of Environment, Climate Change and Natural Resources, CFAs, Nature Kenya, KFS, NEMA, TTWCA, ICIPE, JICA, Red Cross, MESPT, | Men, women, youth, PLWD and the aged |
| | Fire Prevention and management | Create fire breaks / clearing of forest boundaries/ Training on fire management practices | All Wards with forest patches | County Department of Environment, Climate Change and Natural Resources, Ministry of Lands and Survey, County Department of Livestock and Agriculture, CFAs, County Department of Public Works Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, | Men, women, youth, PLWD and the aged |
| | Disaster preparedness | Develop Early Warning System | All wards | County Department of Environment, Climate Change and Natural Resources, CFAs, Nature Kenya, KFS, NEMA, TTWCA, ICIPE, JICA, Red Cross, MESPT, | Men, women, youth, PLWD and the aged |
| | Capacity building | Provision of firefighting equipment and training | All wards | County Department of Environment, Climate Change and Natural Resources, CFAs, County Department of Public Works, Nature Kenya, KFS, NEMA, | Men, women, youth, PLWD and the aged |

| | | | | | |
|--|--|---|---------------|---|--------------------------------------|
| | | | | TTWCA, JICA, Red Cross, | |
| | Capacity building | Conduct Awareness and sensitization campaigns | All wards | County Department of Environment, Climate Change and Natural Resources, CFAs, County Department of Public Works, Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, Wildlife Works, KWS, AWF, TTWCA, Taita Taveta Youth Alliance, media | Men, women, youth, PLWD and the aged |
| | Capacity building | Recruitment of of forest rangers | For all wards | County Department of Environment, Climate Change and Natural Resources, KFS, KWS | Men, women, youth, PLWD and the aged |
| | Afforestation | Establish a Multi-agency coordination mechanism for tree growing. | All wards | County Department of Environment, Climate Change and Natural Resources, KFS, KWS, TTWCA, Taita Taveta Youth Alliance, CFAs, Nature Kenya, KEFRI, | Men, women, youth, PLWD and the aged |
| | Integrity of Forest boundaries | Survey and undertake boundary delineation of community and County forests | All wards | County Department of Environment, Climate Change and Natural Resources, Ministry of Lands and Survey, CFAs, County Department of Public Works Nature Kenya, KFS, NEMA, TTWCA, JICA, Red Cross, KEFRI, | Men, women, youth, PLWD and the aged |
| | Integrating Research and technology in Fire management | Promote Research on forest fire regimes/ history and predictions | All wards | KFS, KEFRI, TTU, Nature Kenya | Men, women, youth, PLWD and the aged |
| | Policy, Legal and regulatory | Develop a County Forest | All wards | County Department of Environment, Climate Change and | Men, women, youth, PLWD and |

| | | | | | |
|--|-------------------|--|-----------|--|--------------------------------------|
| | Framework | policy, Law and regulations | | Natural Resources, CFAs, County Assembly, County Attorney, KFS, NEMA, TTWCA, JICA, Red Cross, KEFRI, | the aged |
| | Knowledge sharing | FFS Seminars and workshops Use of mobile apps Barazas Social media platforms TTU, CIT Helsinki Research center | All wards | All stakeholders listed above | Men, women, youth, PLWD and the aged |

CHAPTER SIX: CONCLUSION

6.0 Conclusion

Taita Taveta County fully supports Kenya's dedicated adaptation ambition by committing to bridging the implementation gaps through: enhancing the adaptive capacity and climate resilience across all the sectors of the economy while exploring innovative livelihood strategies for enhancing climate resilience of local communities through financing of locally led climate change actions. The central role of community structures, such as Ward Climate Change Planning Committees (WCCPCs), was crucial for ensuring that adaptation strategies align with local needs and priorities. These committees served as a bridge between communities and government institutions, facilitating participatory decision-making and implementation.

Integrating Indigenous Knowledge: Recognizing and integrating indigenous knowledge into climate change adaptation strategies is a powerful approach. Indigenous knowledge often holds valuable insights into local ecosystems, weather patterns, and traditional adaptation practices such as sighting of swallow bird indicate onset of rains, high precipitation signified by sighting of Egret bird, river frogs laying their eggs on the river banks at a specific distance from the water's edge, predicting the rising water levels etc. By combining this knowledge with scientific expertise, adaptation measures can be more contextually relevant and effective.

Community Structures:

Considering that the country's GDP relies on climate sensitive sectors such as Agriculture. Adaptation is thus the highest priority for Kenya, not only through preventing further losses and damage, but underpinning infrastructure and economic development, while safeguarding lives, livelihoods and social development in line with Kenya Vision 2030.

Enhanced risk-based approach to climate change adaptation at the County level through development and application of comprehensive climate risk management tools as outlined above would help in;

- a) Addressing and adaptively managing climate risks;

- b) Addressing residual climate change impacts, loss and damage especially in the productive sectors of the economy;
- c) Enhance generation, packaging and widespread uptake and use of climate information in decision making and planning across sectors and counties with robust early warning systems (EM/S);
- d) Enhance uptake of adaptation technology especially of women, youth and other vulnerable groups, incorporating scientific and indigenous knowledge;
- e) Institutional strengthening of the County Climate Change oversight, planning and implementation structures and community organizations;
- f) Strengthening tools for adaptation monitoring, evaluation and learning (MEL) at the County level.

To achieve the above, Taita Taveta intends to implement various priority actions, to attain the Triple Adaptation Dividend namely; avoided losses, economic benefits, social and environmental benefits. Some of these interventions may result in mitigation co-benefits.

Annex 1.



Figure 1.10 Sample pictures obtained from the PCRA exercise

Annex 2.



Figure 1.11: Sample hazard Maps obtained from the PCRA exercise

Annex 3

| HOUSE HOLD DECISION MAKING | | | |
|------------------------------------|------|--------|------|
| ACTIVITY | MALE | FEMALE | BOTH |
| 1- HOUSE CONSTRUCTION | | | ✓ |
| 2- NO. OF CHILDREN | | | ✓ |
| 3- UTENSILS | | ✓ | |
| 4- FURNITURE | ✓ | | |
| 5- IRRIGATION | | | ✓ |
| 6- DOWRY | ✓ | | |
| 7- LAND | | | ✓ |
| PURCHASE | | | ✓ |
| SALE | | | ✓ |
| INHERITANCE | | | ✓ |
| OWNERSHIP | | | ✓ |
| 8- DOMESTIC ANIMALS | | | ✓ |
| 9- PAYING SCH FEES | | | ✓ |
| 10- TAKING CHILDREN TO SCHOOL | | | ✓ |
| 11- TAKING CHILDREN TO HOSPITAL | | ✓ | |
| 12- SALE OF FARM PRODUCE | | | ✓ |
| 13- INVESTMENT (FARM) | | | ✓ |
| 14- DECISION MAKING ON INVESTMENTS | | | ✓ |

Figure 1.12: Sample household decision making data for Bura ward

Annex 4:

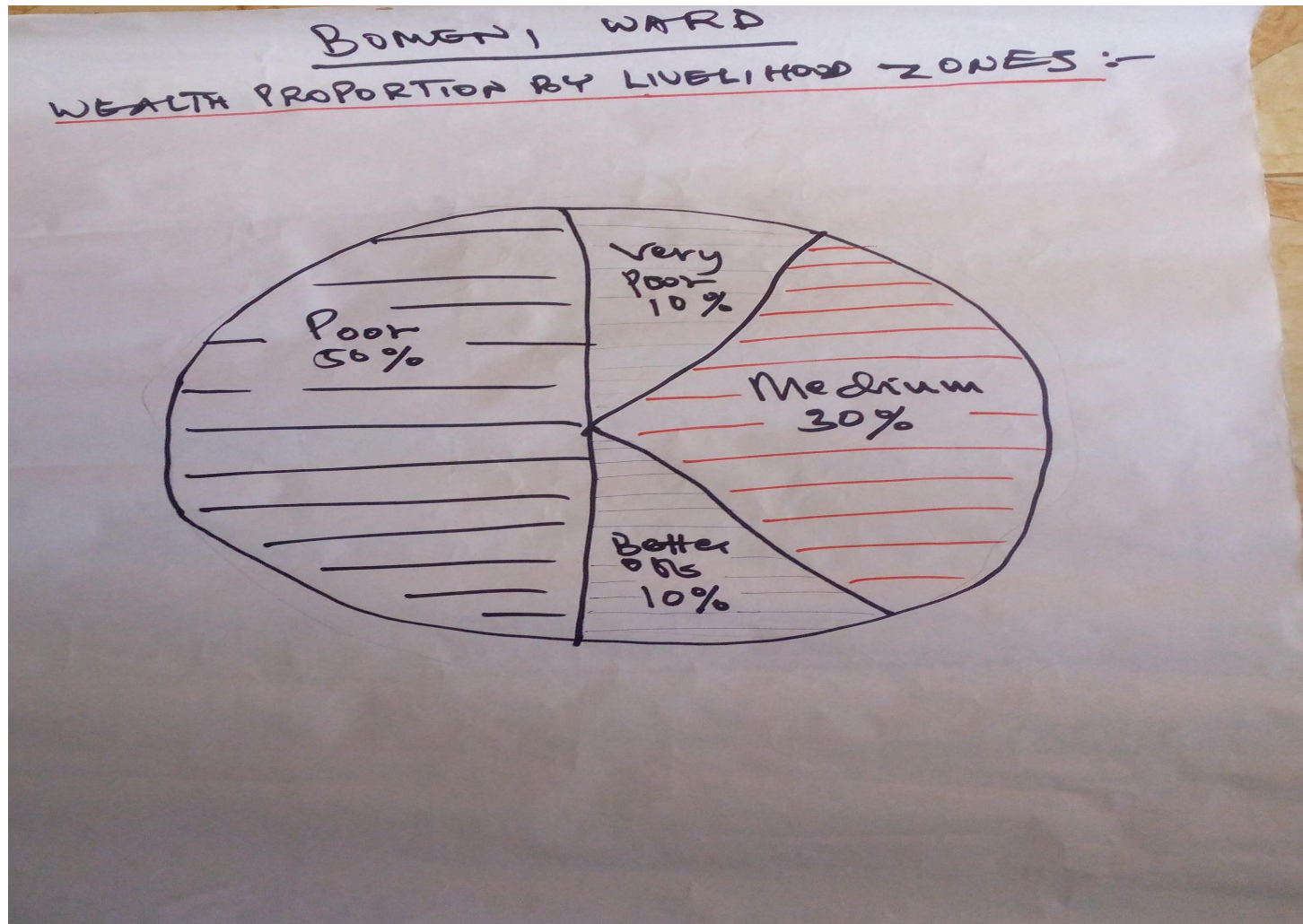


Figure 1.13: Livelihood analysis of Bomeni ward

Annex 5

| INTERNAL | | EXTERNAL | |
|--|-------|---|-------|
| NAME | SCORE | NAME | SCORE |
| County government | → 5 | * National drought management authority | 1 |
| ① Agriculture | → 1 | * Huduma Centre | 2 |
| ② Livestocks | → 1 | * National environmental management authority | 1 |
| ③ Health | → 1 | * National land commission | 1 |
| ④ Forest | → 1 | * Water resource authority | 2 |
| ⑤ Environment/climate change | → 5 | | |
| ⑥ Social services | → 2 | | |
| ⑦ County councils | → 1 | | |
| ⑧ Lands | → 5 | | |
| (i) Early childhood education | → 1 | | |
| J. Fisheries | → 1 | | |
| K. Water/Tawevo | → 3 | | |
| L. T. S. C. | → 4 | | |
| M. Office of the president | → 4 | | |
| N. Registration of birth and death | → 2 | | |
| O. Office of the M.P. | → 3 | | |
| P. Children department | → 3 | | |
| Q. Office of the member of county assembly | → 2 | | |
| R. Judiciary | → 5 | | |
| N.G.O.s | → 5 | | |
| 1. Inland vision | → 5 | | |
| 2. Red cross | → 5 | | |
| 3. Compassion International | → 3 | | |
| 4. T. C. A | → 1 | | |
| 5. Muthuri | → 2 | | |
| 6. Tabasamu plus outreach | → 4 | | |
| 7. Inland bank | → 4 | | |
| * CO-OPERATIVES | → 4 | | |
| ① Tataba | → 3 | | |
| ② Kurita/wa | → 3 | | |

Attachment 1: Drafting and Validation of the PCRA report, Attendance list



PCRA Report
Drafting Workshop At



PCRA Report
Drafting Workshop (2 Meeting Attendance L



PCRA Validation



REPUBLIC OF KENYA



WORLD BANK GROUP

MINISTRY OF FOREIGN AFFAIRS OF DENMARK
DANIDA INTERNATIONAL DEVELOPMENT COOPERATION



Financing Locally-Led Climate Action (FLLoCA) Program

FEBRUARY, 2023



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