



Community Adaptation Action Planning in Embu County, Kenya



Findings on vulnerability to climate change and community adaptation action planning in Iria-Itune, Kamarandi, Mutwabare and Ntharawe communities, Mbeere North and South, Embu, Kenya 2015-2016.

Table of Contents

BACKGROUND AND INTRODUCTION	4
OVERVIEW OF THE PROCESS	4
PART I: SITUATIONAL ANALYSIS	7
1.1 Livelihood profile.....	7
<i>Community resources.....</i>	<i>7</i>
<i>Livelihood activities</i>	<i>9</i>
<i>Wealth profiles.....</i>	<i>9</i>
<i>Key institutions.....</i>	<i>11</i>
<i>Gender roles in livelihoods.....</i>	<i>12</i>
<i>Trends and drivers of change.....</i>	<i>12</i>
1.2 Climate Vulnerability and Adaptive Capacity	14
<i>The climate.....</i>	<i>14</i>
<i>Climatic shifts and future projections</i>	<i>14</i>
<i>Local climate hazards and trends: More drought, more floods</i>	<i>15</i>
<i>Impacts and vulnerability: a vicious cycle between climate hazards, coping strategies and</i>	
<i>Ecosystem degradation.....</i>	<i>15</i>
<i>Differential vulnerability.....</i>	<i>17</i>
<i>Adaptation strategies.....</i>	<i>17</i>
<i>Climate knowledge and information</i>	<i>18</i>
PART II: COMMUNITY ADAPTATION ACTION PLANS IN IRIA-ITUNE, KAMARANDI, MUTWABARE AND NTHARAWA	18
2.1 Overview of the process.....	19
2.2 Community Adaptation Action Plans	21
2.2.1 Mutwabare CAAP, June 2016.....	21
2.2.2 Kamarandi CAAP, July 2016.....	26
2.2.3 Iria-Itune CAAP, August 2016	30
2.2.4 Ntharawe CAAP, August/ September 2016	36
2.3 Implementation to date.....	47
PART III: ANALYSIS AND LEARNING ON COMMUNITY ADAPTATION ACTION PLANNING	50
PART IV: ANNEX 1 AND 2 ON LIST OF PARTICIPANTS FROM KAMARANDI COMMUNITY AND SUB-COUNTY AND COUNTY OFFICIALS	54

ACKNOWLEDGEMENTS

This report was written by Agnes Otzelberger with inputs from Emma Bowa, Josephine Kawira, Anne Mbugua, Peterson Mucheke, Philip Oyoo, Nicola Ward and Salome Mwirabua. It draws on reports prepared by Anne Mbugua, Josephine Kawira, Ayub Were, Stanley Mutuma (CVCA), and Pamela Kimkung (CVCA)], as well as consultations with: Community members from Kamarandi Community, and Sub-County and County officials in Embu County, Mbeere North and South Sub-county. See Annex 1 and 2, pages 54 and 55.

Adaptation Learning Programme, 2017

ACRONYMS

ALP	Adaptation Learning Programme (for Africa)
ASDSP	Agriculture Sector Development Support Programme
CAAP	Community Adaptation Action Plan
CBA	Community-based adaptation (to climate change)
CDF	County Development Fund
CIDP	County Integrated Development Plan
CVCA	Climate Vulnerability and Capacity Assessment
FGD	Focus group discussion
GCVCA	Gender-sensitive Climate Vulnerability and Capacity Assessment
KCEP	Kenya Cereal Enhancement Programme
KEFRI	Kenya Forest Research Institute
KII	Key informant interview
KMD	Kenya Meteorology Department
KMS	Kenya Meteorological Services
NDMA	National Drought Management Agency
PSP	Participatory Scenario Planning

BACKGROUND AND INTRODUCTION

Climate change is not a distant, future threat, but a present challenge for the livelihoods of people depending on land, water and weather for their livelihoods in dryland areas such as the rural communities of Kenya's Embu County. Ongoing changes in temperature, rainfall and seasonal patterns, and increased frequency and severity of both droughts and floods are already complicating people's efforts to grow food, keep livestock and live healthy lives. The longer-term trends are set to increase the challenge. In response, demand for and investment in adaptation programs and policies are increasing across Africa, where some of the worst climate induced impacts are felt. But despite the challenges being visible, communities, their leaders and local decision-makers often lack clarity on practical steps to take in adapting to climate change.

Building the resilience of vulnerable communities will not happen through isolated actions in adaptation, disaster risk reduction (DRR), early warning systems (EWS), social protection, ecosystems management or development. A coordinated response which works together to achieve resilience over the long term is essential and is more likely to result in multiple wins across adaptation, development, food security, risk reduction and mitigation. CBA provides an effective, practical and integrated approach which strengthens adaptive capacity, and supports planning and implementation of DRR and climate resilient development, informed by knowledge of climate information and risks. It seeks to address broader underlying causes of vulnerability which, if left unchallenged, would prevent the achievement of resilient outcomes.

Working with communities, government institutions and civil society in the drylands in Ghana, Kenya, Mozambique and Niger since 2010, the Adaptation Learning Program (ALP) for Africa has been developing and testing practical community-based adaptation (CBA) approaches with communities in the drylands, including farmers and pastoralists, and promoting their integration into local and national government systems and programmes, and into those of other African countries. At the heart of these practical approaches, at community level, is a participatory planning process – Community Adaptation Action Planning or CAAP – which consists of steps to 1) generate a good understanding, among community representatives and local leaders, of climate change vulnerability and adaptive capacities present in the area and 2) prioritise challenges and develop an action plan to address them. Step-by-step guidance on this process can be found in Practitioner Brief 1: "Adaptation Planning with Communities"¹. This report provides an overview of the findings, results and learnings from these exercises as they were conducted in four communities in Embu in 2015 and 2016.

OVERVIEW OF THE PROCESS

Having worked in Garissa between 2010 and 2015, ALP began its work in Embu in October 2015, in four communities: Iria Itune, Kamarandi, Mutwabare and Nthaware, which are located in the Mbeere North and Mbeere South Sub-counties, in an area characterized by high poverty rates and vulnerability to climate change impacts. Situated to the southeast of Mount Kenya, the area counts a number of rivers and streams, and receives an average annual precipitation of up to 1200mm, although in the ALP sites this average can be as low as 640mm. The area is hit increasingly hard by both drought and floods, and water access and soil erosion are key challenges for local smallholder farmers and livestock keepers, who make up around 70% of Embu County's overall population.

ALP's approach to CBA in the four communities has focused, to a large extent, on Community Adaptation Action Planning, which entails a situational analysis process called "Gender-sensitive Climate Vulnerability and Capacity Assessment" (GCVCA) as well as a process to design the Community Adaptation Action Plans themselves. Its wider effort to strengthen community capacity to adapt to the above climatic and environmental changes includes other steps toward increased local institutional and government capacity to support communities in the face of climate change. This section presents a brief overview of the process. It is followed by the conclusions drawn from the GCVCA exercises and the outcomes of the Community Adaptation Action Planning exercises conducted in the four communities.

Community Adaptation Action Planning entails a number of steps that help the community gain an understanding of their own context, challenges, strategies, and changing trends over time.

1) Gender-sensitive Climate Vulnerability and Capacity Assessment (GCVCA): Following a launch clarifying the purpose, process and stakeholders involved, the community adaptation action planning was grounded in a participatory and gender-sensitive analysis of vulnerability and adaptive capacity to climate change. This is an interactive process that combines community knowledge and perceptions, and scientific data to help generate an initial assessment of different social groups' vulnerability to climate change impacts, including a range of tools and questions to facilitate analysis of how gender dynamics interact with climate vulnerability. Instead of extracting information from communities and then analysing and summarising the data in their absence, the participatory methods employed in a GCVCA are intended to guide a conversation that helps people in communities analyse, articulate and understand their own vulnerabilities and capacities in the face of climate change and natural disasters. The results provide the foundation for the identification of adaptation strategies, and for ensuring that these strategies would reach the appropriate groups and are based on an inclusive and affirmative decision-making process. This process is expected to amplify the needs and priorities of those groups who are most vulnerable to climate change impacts and natural disasters.

The GCVCA exercise in Embu County was conducted as part of ALP Kenya's baseline, immediately after the initial community entry meetings in the County. The participants – a total of 185 (110 men; 85 women) – were drawn from the four ALP extension communities (Iria-Itune, Ntharawe, Kamarandi and Mutwabare) and local government departments (NDMA, NEMA, ASDSP, Min. of Agriculture and the Kenya Meteorological Department). 168 people (88 men; 80 women) participated in focus group discussions, while 17 (12 men; 5 women) took part in key informant interviews. Focus group discussions were the main method of data collection, and tools included wealth ranking, hazard mapping, a vulnerability matrix, and a seasonal calendar tool. These were complemented by key informant interviews (KIIs), observation and secondary data review. Four FGDs (young men, elderly men, young women and elderly women) and key informant interviews were held in each community, to ensure that diverse perspectives on climate vulnerability from within the communities were captured. The purpose was help locate and understand differential (vulnerability) and the entrenched drivers of vulnerability from a gender perspective.

As such, the GCVCA process provided a framework and tools for dialogue within communities, as well as between communities and local government partners concerned with livestock, farming, drought management, planning and meteorology. It helped community members discuss and understand how climatic hazards, such as changing rainfall, drought or floods

affect people's lives and livelihoods in the four communities, and what conditions either make people more vulnerable to these impacts or allow them to adapt and prepare better.

2) Designing Community Adaptation Action Plans (CAAPs): The GCVCA process formed the basis of the community adaptation action planning – or CAAP – process which, in part, entails further steps to deepen the understanding, by the facilitators and community members, of problems, opportunities, factors affecting the problems/ opportunities, trends and possible strategies. In addition to that, however, CAAP is a visioning and planning exercise helping community representatives to identify and prioritise problems and opportunities, and devise an action plan in response to and/ or to take advantage of these.

The basic process of planning at the community level involves analysing information, identifying actions and prioritising and operationalizing them. These are critical skills that underpin adaptive capacity, enabling people to learn and use their knowledge and experiences to manage the risks and uncertainty associated with climate change. Participation is key to the CAAP process, with community members and local stakeholders at its centre.

The CAAPs process in Embu took place between June and September 2016. Each exercise involved 48 community members in four focus groups from each community (some of whom had participated in the GCVCA and some not), chiefs and assistants, the selected community monitors and recorders, as well as ward administrators, MCA / MP representatives, and local government partners from the Agriculture Sector Development Support Programme (ASDSP) of the State Department of Agriculture and Kenya Meteorological Services.

3) Linkages with local government and strengthening decision-making and planning processes: Creating an enabling environment for the implementation of a CAAP goes beyond each individual community: it involves the integration of community adaptation priorities into local development planning, and strengthening systems and institutions whose support and adaptive capacities are critical for successful outcomes of adaptation planning. In Embu, there is no process or mechanism guaranteeing the systematic integration of CAAPs into local development planning, more specifically the County Integrated Development Planning (CIDP) process in its five year iterations and yearly operational planning. However, a formal process of community participation allows for a degree of integration of specific, relevant community priorities, and some of these in county development planning, and local government leaders have participated in CAAPs processes, leading to institutional support and budgets for some of the strategies identified by communities (particularly strategies related to meteorology, agriculture, disaster risk reduction and water). Also, the Participatory Scenario Planning process installed in Embu facilitates linkages between community planning and local government: the process brings together representatives – and strengthens relationships between – local government departments, civil society and community groups to review and plan for responses to predicted and past seasonal rain forecasts, issuing advisories with recommendations for e.g. farming and livestock keeping. This helps ensure that community priorities are communicated to key technical offices and, in turn, has facilitated the uptake of recommended strategies in the CAAP process.

PART I: SITUATIONAL ANALYSIS

1.1 Livelihood profile

The area is characterized by high poverty rates among its population making them even more vulnerable to climate change impacts. Mutwabare and Iria-Itune are slightly more arid than Kamarandi and Ntharawe. The entire area, however, is among the hardest hit by drought and water is not easy to get. The vegetation in the area can be described as grasslands, shrub, stones and thorny thickets. One of the four communities, Mutwabare, has a tarmac road going through its main centre, providing it with the easiest access to markets for crops, livestock and handicraft products. The other three communities are at a distance of 17- 40km from nearest tarmac road. All four have access to health centres, schools, as well as formal and informal financial institutions such as banks, savings and loans groups, [Shylocks-People in the community who loan money to others at interest] and mobile phone banking. Mutwabare also has access to a year-round river, and boreholes.

The main livelihood activities in ALP's four community-based adaptation localities include crop and livestock farming, charcoal burning, sand harvesting, small businesses and casual labour. Local farmers grow various rain-fed crops – including both single season crops (millet, sorghum, cow peas, green grams, cucumber and maize) and two season crops (pigeon peas, green grams).

Community resources

The communities' most valued natural resources, on the whole, are land and water. Some community members also mentioned trees or forests, and dams. In terms of physical resources, key infrastructure such as roads, schools, and health centres are noted. Notable human resources feature people with traditional skills and knowledge, teachers, doctors and nurses, as well as government officers and people with particular handicraft skills such as carpenters, welders, blacksmiths, masons, etc. In terms of financial resources, most communities highlight financial services enabling transactions (such as M-PESA and marketplaces) or loans (savings groups, bank agents); residents of Kamarandi however primarily highlighted income as their key financial resource. As for social resources, community level organisations such as women's, youth or church groups, as well as producer organisations appear to be key. Some communities also make specific mention of projects or organisations providing particular services or support, such as the Kenya Forest Research Institute's tree planting initiatives, the various kinds of support provided by the ASDSP, the National Drought Management Agency's regular bulletins and, not least, various institutions facilitating table banking or savings groups.

Table 1: Resources that are considered key by representatives of each community:

Resources	Iria Itune	Kamarandi	Mutwobare	Ntharawe
Natural	Land, rivers, dams, sand	Land, rivers, forests	Land, Tana river, trees, Kiambere dam	Land, rivers, hills, streams
Physical	Schools, dispensary, roads, dams, chief camp, cattle dip, bridges, vehicles, electricity, solar panels, market	Roads Schools Health facilities	Posh mills, roads, hospital, churches, schools, motor bikes	Electricity, roads, dispensaries, churches, schools, motor bikes, chief's camp, dam
Human	Traditional knowledge, beehive curving, traditional herbalists, teachers, doctors, nurses, agriculture extension officers, veterinary officer, builders	Teachers, nurses, government officials, blacksmiths, masons, carpenters, brick makers	Welding, salon, carpenters, traditional doctors	Carpenters, traditional doctors
Financial	Mobile money (M-PESA), bank agents, market, self-help groups, table banking, merry-go-rounds	Cash inflow from sale of produce, livestock and trades as well as income earned.	Bank agents, savings groups, M-PESA	M-PESA, market
Social	Women's, farmer, youth, and church groups, community-based organisations, NGOs. E.g. Ndamuke women's group, Iria Itune charcoal producer association		Women's groups, church groups, boda association groups, farmers' association	Women's groups, church groups, boda association groups, merry-go-rounds, youth groups, Nyumba kumi initiative

Livelihood activities

Crop and livestock farming are the primary livelihood activities across the four communities. They are practiced by all households regardless of wealth, however alternative, off-farm livelihood activities are on the increase. The communities grow various rain-fed crop, specifically millet, sorghum, green grams, maize, and cow peas. In Ntharawe, *miraa* (a stimulant better known by the name of khat) has become increasingly important as a cash crop. Livestock farmed in the area are mainly cattle, goats, sheep and chicken.

Increasingly, people are also resorting to other livelihood activities: they are engaging in setting up small businesses, charcoal burning, sand harvesting, and providing casual labour. There is a mix of reasons for this –the adverse impacts of drought and other water-related problems on yields and livestock herds being a prominent one. **Iria Itune** mentions a growing entrepreneurial culture among communities, an increasing need for additional and more continuous income to meet household needs; and improved transportation due to boda boda (motorbikes), as well as the emergence of fora for businesspeople to exchange ideas as factors behind these changes in livelihood activities. According to the **Kamarandi** focus group, an increased availability of financing/ loans has also fuelled this. In **Ntharawe** in particular, *miraa* has become an important pillar of people's livelihood.

People are selling vegetables, household wares, and charcoal; harvesting sand, providing casual labour on farms – especially *miraa* farms –, fetching water and firewood and digging toilets. Bee keeping, an activity mentioned in Kamarandi, and charcoal burning, are alternative livelihood activities already on the decline, due to the diminished tree cover (caused by excessive charcoal burning).

Livelihood activities, access to and control over resources, vulnerability to climate change and adaptive capacity are dependent on a number of factors including, prominently, wealth status and gender.

Wealth profiles

Communities use similar, but slightly variable terms and parameters to categorise households into wealthy, middle class and poor. Generally, parameters used to perform wealth ranking include: size of land, education level, number of livestock, and other assets such as buildings, vehicles, motor bikes and other possessions. Permanent houses such as stones or brick houses, large herds, land sizes of 10-20 acres and above, cars, higher levels of employment and larger business are usually associated with wealthier households; where children attend private education. Middle class households typically own under 10 acres of land, they live in semi-permanent housing and their herd sizes, businesses are of smaller scale. Some of their children are in private, but mostly in public education. Poorer households typically occupy grass thatched huts, engage in petty trade and casual labour, own no or less than 1 acre of land, and no or no more than a couple of goats. When they own no land of their own they provide casual labour on wealthier families' farms. Children tend to be in public education or not go to school at all.

Across the communities, more men than women tend to be classified as wealthy; and old people still appear wealthier on average, though there is an increasing trend of older people dropping down in wealth ranks while younger people, especially younger men but also women, are on the ascent thanks to informal or formal employment.

Table 2. Terminology used to describe different wealth groups

	Iria Itune	Kamarandi	Mutwobare	Ntharawe
Wealthy	Gitonga	Gitonga	Gitonga	Gitonga (very rich) Mundu winakindu
Middle class	Muthini	Muthini or mundu mwivoti	Muthini	Mundu wa kawaida
Poor	Mukea	Ngia Ngia mukeu (very poor)	Ngia	Muthini

Table 3. Typical characteristics of wealth, by community

	Land	Livestock	Assets	Education and employment
Iria-Itune	Ownership of 20 acres and above is considered rich	Ownership of more than 5 cows, 50 goats and 30 sheep is considered wealthy while owning less than 2 cows, 5 goats and 3 sheep is considered poor	Big businesses such as shops, hotels makes one wealthy while businesses such as hawking considered for the poor	Permanently employed in civil service with steady income while the poor engage in casual employment if wealthy families homes and businesses
Kamarandi	A rich man owns more than 10 acres, average own slightly less than ten while the poor owns 1 acre or less	The wealthy own over 10 cows and over 50 goats while those with few cows and goats are considered poor	Gitonga own cars, plots and shops and live in permanent or brick houses, while Muthini cannot afford this and live in thatched houses	A wealthy person is well educated and with a secure job
Mutwabare	20 acres of land and above is considered rich while 2 acres and below is poor	A rich person owns more than 20 cows and has other livestock like goats and sheep while the poor own none	The wealthy own plots, have permanent houses, develop the community, provide employment, support community members support, offer donations, can adopt children. The poor cannot	Well educated to college/university level the poor are mostly uneducated The rich can afford to marry many wives

			afford the above mentioned	
Ntharawe	A rich person has more than 10 acres while the poor has no land, an average person can own up to 3 acres	A rich person has 10 cows, 80 goats and 30 sheep while a poor man owns none	Measured in terms of cars and property. A rich man has 2 or more cars, permanent house, owns motor bike, buys livestock from the poor and later sells back to them while the poor lives in mud houses and cannot afford assets	The children from the rich are educated to university level, an average person can take their children up to form four while the poor cannot afford to educate their children

Key institutions

Key local institutions mentioned by focus groups include women's group savings and loans groups, popularly known as table banking (Ngumbato), peace committees (including nyumba kumi, a neighbourhood watchdog system), as well as school, church and water committees. Community development committees are formed in an ad hoc manner around temporary issues like roads projects, or key government processes such as the Community Development Fund which involve the communities in a limited manner.

In terms of local government support, community representatives particularly mentioned

- Kenya Forest Research Institute which works with the community on planting trees
- Agriculture Sector Development Support Programme (ASDSP) working on value chains, social inclusion and climate change issues
- The ASDSP thematic working group which also oversees and implements the Participatory Scenario Planning process and advisories development in the County
- the National Drought Management Agency who issues regular bulletins on food security
- the County Steering Group which manages crises and disasters
- Kenya Meteorological Services
- an army worm monitoring committee in Kamarandi (which has ceased to exist)
- the Upper Tana Development initiative which has built several dams

The NGOs working in the area are mainly foreign based organisations, including CARE, Diakonia, Caritas, Embu diocese, Compassion international, Trocaire, the Anglican Development Services Christian Aid and specifically a local NGO SITE(Supporting Indigenous Technology and Education project which is training communities in better farming practices).

There are community radios present, formal and informal financial institutions and good access to mobile phones and the internet. Young people have a platform on social media coordinated by the MCA.

Gender roles in livelihoods

Men and women of different age groups are all involved in crop farming related activities from ploughing to planting, digging, weeding and harvesting. However there is a gendered division of roles. Women, young and old, generally undertake the more labour intensive activities as compared to men. For example, in crop farming, men do the ploughing using oxen while women mainly do the planting, weeding and harvesting. Selling of the produce is a bargaining exercise between men and women. Men and women make consultative decisions on what to plant, what to eat. Produce is sold by women, but men have more leverage in making decisions on sales, especially sales that yield more significant amounts of cash.

In livestock, men own bigger livestock such as cows although its women who do the grazing, while women mainly own chicken. Women are gradually entering livestock buying and selling, although to date this remains a mainly male domain.

While many casual jobs are mainly undertaken by younger men (such as brick making), more and more women are also engaging in casual work (e.g. charcoal burning, weeding, fetching water) and small businesses – in part because of increased resources available from table banking, but also because of necessity; women need to step up more and more to complement or replace their husbands' incomes.

Women and men make independent decisions on which alternative income providing activities to engage in. Still, it is mostly men who make key economic decisions – e.g. on selling charcoal, or livestock. And although women's decision-making powers are increasing, men still hold decision power over most productive resources, or they take decision-making power back when a resource becomes scarce: In **Ntharawe**, for example, focus groups mentioned that men have taken back total control of trees that have become more scarce and valuable.

Trends and drivers of change

Land fragmentation and fertility decline: Average land ownership has been decreasing over the past 20 years. Alongside a general shift from communal to individual land ownership, families have sold off and subdivided more and more land, such that the normal plot size for an average household has decreased from around 10-20 acres to around 3 to 5 acres. Today, only the very rich own land larger than 20 acres, and anyone owning over 10 is considered wealthy. This reduction in land sizes has contributed to overproduction and overgrazing which, along with other aggravating factors such as loss of tree cover, drought and erosion has resulted in reduced land fertility. Miraa farming, and the more drought resistant green gram and sorghum and goats are becoming more popular.

Changes in the socioeconomic makeup: as agriculture alone is becoming less and less viable as a livelihood and education levels, population size and transportation infrastructure have been on the rise, so has the number of people in employment. Especially younger men, and some younger women, too, are rising in social status as they access jobs and other income generating activities from boda boda and miraa farming to sand harvesting, charcoal and brick burning.

Older men and women on the other hand are finding their relative wealth declining. It is said that this is because older people cannot take up new activities like the younger people, and older women bear the burden of educating and taking care of extended family members; they often have to sell assets to meet their needs.

The fact that herd size is no longer seen as the key indicator of a person's or household's wealth is symptomatic of these changes in the socio-economic makeup: herd sizes have been shrinking as cattle are particularly vulnerable to drought, and wealth is increasingly accumulated in other financial assets and through employment rather than agriculture.

Changes in gender relations: The profound changes in people's livelihoods have also been shaking up traditional gender-related norms and barriers. During drought especially, many women are left with their children while the men leave in search of employment. The women left behind carry out all the chores that are carried by both men and women. Kenya's Constitution, education and income from e.g. savings and loans schemes have given women more power to be involved in household decision-making. Women across the four locations are increasingly taking up traditionally male roles including livestock grazing. More and more women are engaging in sand harvesting, and, unlike other activities such as farming, they have total control of their earnings from this. There has also been significant shift from cotton farming to Miraa (the stimulant also known as *khat*) which is much more profitable and has more steady demand. Miraa is grown in a small part of the areas targeted by ALP, mostly around Ntharawe, where most poor households now work as casual labourers on Miraa farms. They are mostly women, earning between Kshs. 150 – Kshs 300 per day.

Women are increasingly taking on active roles in community leadership and advocating for inclusion and representation in community groups (such as the water users association). Nowadays, women and men engage in disaster management activities such as digging trenches to drain floodwaters, cultivation of drought tolerant crops among others. There are now also women elders, which was not traditionally permitted, but men are increasingly absent, more and more women have been accepted in these roles.

On the whole, women seem better off with their emerging decision-making powers and sources of income. But, while these changes in gender dynamics and power relations have contributed to adaptive capacity in some ways, they have also undermined it in other ways: As evidenced by the daily calendars and discussions, women's empowerment has also meant a further increase in their already disproportionate workload, adding income earning for household requirements, grazing of livestock and in some cases burning of charcoal. Although not completely unheard of, it is still rare that men take over some of women's traditional roles in the household. Some men have started carrying water – a traditional women's task – however they use donkey carts whereas women normally carry the water on their backs.

In some ways, what appears as "women's empowerment" may, in fact, be an indicator of increasing poverty: As more and more women are getting involved in sand harvesting, it is questionable whether this is really an achievement of "women's empowerment" or, perhaps more likely, a sign of people running out of other options.

Deep power imbalances, in fact, prevail: Key resources such as land and cattle remain controlled by men, and women continue to be held back by the work burden they shoulder. At the county level, institutions enforce the National Constitutional provision for the 1/3

gender representation in committees and other management and oversight organs. However, no evidence was provided on the effects of the 1/3 gender representation (women's voices) on the County's development, adaptive capacity and resilience. Also, when a more equally resource becomes scarce, power is taken back by men. Trees for example have become so scarce and valuable that men have taken back total control over them and they alone decide whether any tree can be cut or not.

Also, changes in gender dynamics do not come without friction. Many men, and especially older people, feel that women's empowerment is breaking families apart. In part, it is said, this is because women are not always happy to disclose their earnings from their new sources of income, because they are determined to retain control over their earnings. Other men are seeing the benefits of empowerment and report improving relationships.

1.2 Climate Vulnerability and Adaptive Capacity

The climate

Kenya's climate shows significant variations across the country's area. Hotter temperatures are experienced in the lowlands and the coastal zone, with cooler temperatures in the highlands. The average temperature in the coastal region is 29°C, compared with 15°C in the central highlands region. Temperatures are fairly steady throughout the year, dropping by about 2 degrees between June and September.

Along the south-eastern border with the Indian Ocean is a narrow coastal band with a relatively wet climate. To the west are Lake Victoria, the East Africa Rift valley, and the highlands, which are the wettest and most fertile part of the country. In between and stretching to the north is an expanse of low-lying, arid and semi-arid lands (ASALs), which comprises approximately 80% of Kenya's total land area. There is considerable variability in the timing, duration and intensity of rainfall, from location to location, from season to season and from year to year. The semi-arid regions receive between 400 and 1250 mm. More than 70% of the total annual rainfall occurs during the season of long rains in March to May, with another 20% falling in the short rains in October to December. Inter-annual rainfall variability is influenced by the El Niño Southern Oscillation (ENSO), with El Niño episodes bringing above average rainfall and La Niña bringing drier conditions. The high variability in rainfall in Kenya means that drought and flood events occur relatively frequently. Records show that moderate droughts have typically occurred every 3-4 years, with a major drought occurring every ten years on average.

Climatic shifts and future projections

Kenya's mean temperatures have steadily increased since the 1960s by approximately 1°C, with the exception of the coastal areas which have shown a cooling trend.² There is evidence of increasing trends in the frequency of hot days and nights along with decreases in the number of cold days and nights. Temperature increases have occurred most rapidly in March, April and May, with slower changes in the June to September period. Rainfall patterns also vary significantly across the country, and they have become more unpredictable, more irregular and more extreme. Since 2000, both prolonged droughts and floods have become more common.³ According to the Ministry of Environment and Natural Resources, "some regions experience frequent droughts during the long rainy season while others experience

severe floods during the short rains”.⁴ The Ministry estimates that drought and flood cost Kenya about 2.4% of its GDP each year via damage to infrastructure, economic losses, food insecurity and, sometimes, famine. It has been estimated that these events cost about 2.4% of Kenya’s GDP each year.

It also states that climate projections suggest that the trend of rising temperatures and increasing frequencies of hot days and nights will continue; rainfall models suggest that average annual rainfall, rainfall variability, and the frequency of heavy downpours, will increase dramatically. ENSO, however, creates uncertainty in climate projections in the East Africa region.⁵

Local climate hazards and trends: More drought, more floods

The overall picture of climate change across Kenya, as emerging from scientific observation and forecasts, matches the reports from ALP’s extension communities in Embu, where droughts, floods and strong winds were identified as the main climate change-related hazards. Droughts in particular have been changing in frequency and duration, happening more often and lasting longer. More dynamic and unpredictable rainfall patterns have also been observed and felt by community members, the changes in the onset and distribution of rainfall being key; in addition to droughts there has been an increase in heavy downpours destroying crops.

The onsets of the two rainy seasons have moved to April and November respectively, and the rains are of shorter duration; among other things it has become difficult to differentiate between the short and long rains. The beginning of the cold season used to be in July but can now be anytime from June to August. The dry season, which previously took place in January/February, now tends to be more expansive, from December to March.

The high variability of climate and in particular rainfall across Kenya makes it difficult to estimate how future, national level climate projections will affect specific parts of the country, including Mbeere North and Mbeere South. The government is working to downscale climate change projections using Regional Climate Models.

Impacts and vulnerability: a vicious cycle between climate hazards, coping strategies and ecosystem degradation

The climatic hazards identified have been having a series of knock-on effects on the local population’s key resources, livelihoods and wellbeing, which, in part, lead to a series of unsustainable coping strategies that further exacerbate the problems.

Changes in rainfall have exacerbated soil erosion, both during the dry and wet seasons. The main water sources being mainly seasonal – mostly rivers and rainwater, with the exception of boreholes in Mutwobare – water availability is also affected. For example, the seasonal rivers communities have depended upon currently dry up for more than 3 months per year, as opposed to 5 years ago when they were dry for only a month. Sand harvesting – an increasingly popular livelihood activity, has contributed to this drying tendency. There has also been an increase in flooding and heavy rain, which is destructive for crops and property. Pests and diseases have also increased.

Climatic shifts are thus hitting land and water – the resources most highly valued by the four communities – particularly hard. These changes in land and water, along with other, dynamic factors affecting local people's resources and capacity, are having adverse knock-on effects on crop production and livestock, the two primary livelihood activities in the area. Millet, pumpkin, green grams, cucumber and maize are becoming less and less viable. Maize yields in particular have been hit hard by reducing rainfall, so it is grown less and less. Some crops such as pumpkin have even become extinguished. More resilient crops such as cowpeas are unpopular, as they require fertilizer, which makes them more expensive to grow.

Livestock numbers are generally reducing in the area; mass deaths of livestock due to droughts have affected many households. Some have too little land and so cannot keep too many animals. Destocking causes farmers huge losses as they find themselves forced to sell at very cheap prices. For example, a goat that is supposed to sell at Kshs 6,000 is sold at only Kshs 2,000. Many refuse to sell their animals through the governments destocking programme, as the price offered is considered too low. Overall, goats are becoming more popular. They are more resilient in dry seasons than cattle, however this has negatively affected household supplies of dairy.

Given the challenges around rainfall and rivers, access to water, sanitary and hygiene problems have also become greater challenges during both the dry and wet seasons, especially in the dry season, community members – mostly women – have to walk for hours to get water. Floods have led to disease breakouts, especially among children consuming contaminated water. Soil erosion, aside from its consequences for agriculture, has not only damaged the ecosystem but also roads.

Coping strategies include an increasing uptake of unsustainable livelihood activities such as sand harvesting and burning of charcoal, which, in turn, exacerbate the state of the areas water and land resources. The erosion and drying up of the area's seasonal rivers are being accelerated by more and more people resorting to sand harvesting to make a living. Excessive charcoal burning minimizes the tree cover in many areas, affecting water retention and contributing to soil erosion, made worse by strong winds. Bee keeping has become less popular as entire species of trees (mugaa, muthigira and murindu, which are crucial for bee keeping) are disappearing, including due to charcoal burning. In Ntharawe, people report that even charcoal burning is no longer an option as the area is running out of trees. Stripped for cash and unable to sustain their herds, people sell livestock at low prices, or borrow cash at high interest rates. All these developments paint the picture of a vicious cycle between climatic shifts, livelihood struggles, and ecosystem deterioration.

The challenges well known to Mbeere North and Mbeere South reflect a national trend: According to the Kenya National Climate Change Response Strategy (NCCRS), "the adverse impacts of climate change are compounded by local environmental degradation [...] which have among others further aggravated deforestation and land degradation. Forest cover in Kenya, for instance, has fallen from 12% in the 1960 to less than 2% at present."⁶ Further, increasing land fragmentation contributes to the reduction of some livelihood activities, for example cattle herding. According to community members of Iria Itune for example, in the past, households used to own large parcels of lands with at least 10-20 acres per household. Due to population growth, land sub-divisions and selling, this has decreased to 3-5 acres or less per household. Land is over-utilised and its productivity thus reduced.

Differential vulnerability

Vulnerability to these climatic hazards, and adaptive capacity, are unevenly distributed across locations and social groups in Embu County. These differences in vulnerability and adaptive capacity are linked to social status and differential access and control over resources. The population relying on farming and livestock as its main livelihood is both highly exposed and sensitive to climatic impacts, but some people have more resources to respond and adapt than others.

The wealth ranking exercises revealed that those considered wealthy by the community have permanent jobs and/ or their own businesses and these were also the people found to be less affected by, and more resilient to climate change. These individuals are more likely to be men; women's incomes, on the other hand, are worse affected on average, as women are more reliant on agriculture as their main livelihood.

During droughts, well off families have the option of buying water. At Kshs.50 per 20litres, this is not an option for income poor households. Their women, and increasingly also men, spend up to 7 hours looking for water from distant wells.

The climatic impacts also affect dietary diversity of vulnerable households, putting children, people with disabilities and elderly people at particular risk of malnutrition. As poor household's resources are getting squeezed, requiring more hands on deck to provide an alternative income from agriculture, more and more boys in Mutwabare are reportedly dropping out of school to engage in charcoal burning and sand harvesting.

Women have high capacity to cope and adapt, but have many people dependent on them and thus their resources are stretched thin. There are incidences of men who are addicted to miraa and alcohol and so the women have little support at home from the men.

Adaptation strategies

More adaptive strategies include off-farm, income generating activities such as creating small businesses with the help of savings groups, selling salt lick sales in markets, boda boda (motor cycles), or brick making. As mentioned earlier, in Ntharawe, where charcoal burning is no longer very common due to the decline in local tree species, there has been significant shift from cotton farming to Miraa farming which is more profitable and in demand. Women of most poor households there now work as casual labourers in Miraa farms, earning between Kshs. 150 – Kshs 300 per day.

Goats, sorghum and green grams in particular are also becoming more popular as cattle and maize are suffering greatly under the drought. Some ecosystem regenerating practices are also being adopted; local farmers across the four communities engage in land terracing, building trenches and planting trees, water storage and irrigation techniques.

All these practices have potential for growth in usage, spread across different wealth groups and strengthening of local expertise. The reach of water and land management methods, new marketing skills and other sustainable livelihood practices, especially to less well-off households and social groups, could be strengthened. The presence of transport and communication systems in the area, such as roads and mobile communication networks, can facilitate growth of businesses as well as financial transactions through M- PESA.

At the County level, stakeholders are aware of climate change and its impacts on livelihoods. The County government has established structures for coordination of Disaster management and climate change activities through relevant Government Departments such as National Environmental Management Authority (NEMA), National Drought Management Authority (NDMA), and Special Programmes Directorate. Embu County has an institutional framework on climate governance and is developing a strategy for climate change adaptation, but it lacks adequate resources to effectively implement the desired initiatives. A number of institutions in the area already offering support to the communities, but institutional partnerships could be strengthened. The government is offering drought resistant varieties of crops and the Catholic Church has constructed goat dips in Kamarandi. In Mutwabare, SITE is training communities in better farming practices, the Upper Tana Development and KENGEN have supported the construction of several dams, and the Ministry of Agriculture is supporting access to drought resistant crops. Iria Itune, for example, would benefit from collaboration between CARE and other NGOs, TARDA, Catholic Diocese of Embu, KEFRI, EWASCO and government departments such as agriculture and livestock.

Climate knowledge and information

Communities increasingly make decisions on their strategies based on climate information; access is however limited to those who use radio, phones and barazas, or participate in savings and loans groups. While access to and use of scientific climate information is increasing thanks to the advisories produced through the Participatory Scenario Planning process spearheaded by the National Drought Management Authority and ASDSP, this too needs strengthening as a wide segment of the population rely exclusively on traditional climate forecasting strategies (such as observing the behaviour of bees and of tree species such as Mugaa and Muramba, which are in decline). Older people in particular are more likely to trust and rely on these traditional methods, while young women and men, and those better off, mostly get their information from new media and, in turn, lack the know-how to interpret traditional forecasts. Some community members still have a strong feeling that the meteorological forecasts are not accurate, and vice versa.



PART II: COMMUNITY ADAPTATION ACTION PLANS IN IRIA-ITUNE, KAMARANDI, MUTWABARE AND NTHARAWA

The CAAP exercises were facilitated between June and September 2016. The participants included County level representatives (KMS and ASDSP), Sub-County representatives of Mbeere North and Mbeere South (Agriculture and Livestock), community members, ward administrators, as well as representatives from the offices of the MP and the MCA .

The Community Adaptation Action Planning exercises were conducted to support the communities in:

- analysing trends in access to and control over their key resources over time
- analysing their vulnerability to climate change and adaptive capacity
- identifying and prioritising problems as well as opportunities
- developing a Community Adaptation Action Plan with selected strategies to address the problems

2.1 Overview of the process

In preparation for the CAAPs exercises in the four communities, ALP

- Trained CAAPs facilitators: ALP conducted two facilitator's trainings for county and sub-county staff and community monitors and recorders. These partners joined ALP staff in planning and facilitating the FDGs in all the field sites.
- Mobilised the community to participate in the exercise with support from chiefs and community monitors.
- Invited the ward level leaders (ward administrator, MCA and their reps, MP Representatives) to take part in the process in order to guide the participants by providing them with information on what services they can access from their offices.

The CAAPs process itself entailed a set of steps followed over 6 days in each community, assisted by participatory rural appraisal (PRA) tools. Community representatives worked in four groups – young and older women and men, to ensure that the different considerations of these groups could be taken into account. The 6 days or steps unfolded as follows:

- (1) **Trend analysis:** The first day was spent analysing resource trends over time (20 years back to present), including access to and control over resources between various groups in the community.
- (2) **Institutional analysis:** The second day focused on analysing the role of institutions both internal and external to the community, and community interactions with these institutions, using a Venn diagramme.
- (3) **Visioning:** Day three was about imagining the future and an ideal vision for the community, followed by identifying the key problems/ barriers getting in the way of this vision, and listing possible solutions to address them.
- (4) **Feasibility analysis:** On day four, participants screened the identified solutions against a number of financial, environmental, socio-cultural and technical criteria to ensure, for example, their contribution to climate change adaptation (as opposed to maladaptation) or their likelihood to create or maintain social cohesion.

- (5) **Action planning:** Day five eventually focused on the formulation of an adaptation action plan by each focus group based on the previous steps.
- (6) **Consolidating the action plan:** On the final day, participants from all groups came together to merge their four plans into one, consolidated Community Adaptation Action Plan.

Table 4. Overview of CAAP participants

Name of Community	Date of CAAPs exercise	FGD Participants	Number of Facilitators	seed distribution beneficiaries
Mutwabare	June 2016	52 (M-27;F-25)	5	12(M-5,F-7)
Kamarandi	July 2016	58 (M-31; F-27)	6	15(F-9, M-6)
Iria Tune	August 2016	58 (F-24; M-34)	6	17(M10,F7)
Ntharawe	August/ September 2016	55 (M-29; F-26)	6	12(M6,F6)
TOTALS		223 (M-111; F-112)	23	56(M-27,F-29)

The Community Adaptation Action Plans from each community are listed on the following pages. The strategies prioritised are very similar across the different CAAPs: By and large, communities hope to improve irrigation and wider water access through dams, boreholes, rainwater harvesting and the installation of water pipes; address soil fertility issues and erosion through tree planting, land terracing and other soil management techniques; improve their general health, transportation and education infrastructure, and intervene on social relations and attitudes in multiple ways.

2.2 Community Adaptation Action Plans

2.2.1 Mutwabare CAAP, June 2016

PROBLEM	Possible solution	Where	Resource required	Who to provide	When	How will it be done	Success impact indicator	Follow up	assumption
1.DROUGHT	1.Planting trees 2.Planting drought resistant crops 3.Pest and disease control 4.Capacity building on: conservation agriculture skills, livelihood diversification such as income generating activities, fodder conservation) 5. Existing community groups to come together and form Sacco's which will; support farmers financially to plant trees, dig terraces in farms, loan members money to start IGA activities and sell	Individual farms Schools River banks Markets Churches Community land(demonstration farms)	Nurseries Potting materials Farm tools Manure Human labour Tree seedlings Chemicals to spray the crops Increasing the number of extension officers at the ground Members contributions for registration of Sacco society Business premises Finances to lease a building to house Sacco Human resources to work in the Sacco Capacity building for Sacco	Community groups Individuals Ken Gen TARDA Churches Care Intl AGROVETS CDF County government	August 2016 TO DEC 2018	Training through community groups Training workshops facilitated by agri extension officers Chief barazas sensitization	Increased vegetation cover Reduced soil erosion Increased water retention Improved harvests Reduced drought frequency Improved crop yields Reduced pest and diseases Increased agricultural skills and knowledge Reduced poverty levels	Group monitors Forest officials Agric officers Individuals sponsors	Resources will be available Community will be willing to participate

PROBLEM	Possible solution	Where	Resource required	Who to provide	When	How will it be done	Success impact indicator	Follow up	assumption
	produce on behalf of members		members on business development Training materials Trainers Finances to cater for the workshops held						
	Soil conservation	Individual farms Schools Churches	Farm tools	Youth groups Individuals KENGEN TARDA MCA office	August 2016	Group work Individuals	Reduced soil erosion Increased yields Reduced drought frequency	Group monitors Individuals Agriculture officers	Availability of resources Community participation
	Irrigation water	River banks Individual farms Around earth dams	Earth dams Water pumps Pipes Jembes Fuel	Youth groups Individual MCA office Well wishers	From August 2016	Individuals Community Use of machines	Increased farm produce Increased income Improved standards of living	Individuals Community monitors MCA Agriculture officers	Availability of resources Community participation
	Early warning preparedness	Kindaruma	Technical expertise Information	Traditional knowledge Forecast by KMD, CARE,NDMA	Seasonal forecast	PSP dissemination Barazas Planning CFS	Food storage Healthy livestock Reduced hunger	Chiefs office Monitors and rain gauge recorders	Support by relevant bodies with climate information
2.Human diseases	Proper diet training on proper human diet	Homes Schools	Food Fruits Clean water	Parents schools	July 2016-continuu s	Individual homes School committee government	Good health Population increase Reduced mortality Reduced crimes	Individuals Health dept	Enough food supply Reduced diseases Availability of clean water

PROBLEM	Possible solution	Where	Resource required	Who to provide	When	How will it be done	Success impact indicator	Follow up	assumption
	Construction of health facilities	Village level, Markets Institutions such as schools	Land Human resource Capital	Community County govt Development organizations -Care Kenya KENGEN TARDA KPLC	Nov 2016	County govt Individuals Masons	Improved health Reduced death rates Maternity care	Community leaders County govt Development partners	Resources will be available
3.Youths unemployment	Kindaruma sub-location	Youth development fund Water for irrigation Training on IGAs Entrepreneurship skills	Finances Human resource Water for irrigation	Youths County government Development partners Agriculture officers	Sep 2016	Trainings Provisions of loans and grants	Reduced unemployment Improved income Reduced crimes	MCA Community Monitors Youth officers Agricultural officers	Youth participation Resource availability
4.Water storage	Construction of earth dams(all groups)	Kinyaga ,kibiro, kirurini and karura villages	Drilling machines Labour	County government Community groups KENGEN CARE INTL CDF	AUG 2016-DEC 2017	Community mobilization Capacity building on water conservation Construction of water storage facilities	Increased water supply Increased food produce through irrigation] Improved living standard's	Community members MCA Dept of water officers Community monitors	Care kenya and other organizations will support the initiative Community members will agree to form groups
	Digging boreholes(all groups)	Gituuri, kerangi and Giatugu villages	Land Drilling machines Water pumps Labour management committee	Office of MCA Care Kenya Community to provide land	Sept 2016	Proposal writing Feasibility study Survey Drilling of boreholes	Increased water availability Increased livestock yields Increased income	MCA MP Community monitors	Community participation
	Water harvesting(young	Individual houses	Tanks Gutters	MCA INDIVIDUAL	Sept 2016-sep	Community sensitization	Increased farm produce	Agriculture officers'	Willingness of

PROBLEM	Possible solution	Where	Resource required	Who to provide	When	How will it be done	Success impact indicator	Follow up	assumption
	women and old women)	Schools Health facilities	Construction materials	S GROUPS	2018	Proposal development Individual	Increased family income	Community members	community to participate Availability of finances
	Borehole drilling	Gatete Kathenge Rutumbi Gituumbi Kiruri	Labour Funds Expertise	County government KENGEN Community to provide land	July 2016- July 2018	Done in three phases: one is mobilization of resources, two survey and three implementation (drilling)	Number of boreholes in the area More water to the village	Water committee Chief Community monitors	Availability of community land Water table is high enough and viable for drilling of boreholes Water will be safe for human consumption
5.ANIMAL DISEASES (capacity building on animal management)	1.Vaccination of animals	All villages	-Livestock personnel -Vaccines and drugs -Cattle dips -Means of transport for officers	-County government -Community	SEP 2016-SEP 2018	Vaccination to be conducted in all villages	Improved livestock productivity Reduction in animal diseases Reduced livestock deaths	Livestock officers Community monitors Local administration	Animal diseases will be reduced drastically Finances will be available to undertake the initiative There will be an increase in stock
6.POOR ROADS	Opening new roads Marram of other finder roads Repair and	Karura to Gachina to St.Kizito to Ikomeni to Mutwobare to	Funds Labour Expertise engineers	County government CDF community	July 2016 to July 2019	Y1-resource mobilization Y2-Y3 actual construction of new roads and	Surveyor starting to measure roads Farm produce being taken to the market with ease	Community committee CDF Ward development	County government will avail funds

PROBLEM	Possible solution	Where	Resource required	Who to provide	When	How will it be done	Success impact indicator	Follow up	assumption
	maintenance of old existing roads	Ciuria cia Mbugi Kiruriri to Shauri market Karura to Ishako				repair/maintenance of existing roads	Improved access to basic facilities like hospitals and schools Good transport business	committee	
7. LACK OF HEALTH FACILITIES	Additional health facilities Equipping existing facilities Upgrading mutwobare dispensary to health centre	Gatete St.Kizito Equip Karura and Gachina	Funds Land Employing new personnel Drugs and equipment's for hospital use	CDF Ministry of health County government KENGEN community	July 2016- July 2020	Resource mobilization Implementation of project	Reduced congestion in dispensaries Reduced distance to seek medical health	Health committee Community monitors Ward development committee	Funds availability and willingness of county government to support
8.LACK OF ELECTRICITY	Power connection	Schools- Kathege, Kiruriri,Kerangi Homes- Kindaruma Shopping centres	Funds Community Lands	KPLC CDF	July 2016 July 2019	2 phases Connection to institutions Application for installation to homes	Lights in homes and institutions	Monitors Ward development committee	Resource availability

2.2.2 Kamarandi CAAP, July 2016

Problem	Activities to address the problem	Where	When	Institutions/ offices involved	How will we know that we are successful? Indicators of Success
Livestock diseases	Routine vaccination	-Individual farms -Cattle crushes	-According to Ministry of Livestock Routine vaccination Schedule	-Community -Ministry of Livestock	-Improved animal health -Increased animal production -Improved income -Reduced animal diseases -Increased number of healthy animals
	Training of community health workers	-Kamarandi location -	Jan 2017	-Community -Ministry of Livestock -NGOs	-Number of trainees -Improved number of healthy livestock -Availability of animal health workers in the community
	Revive cattle dips	Kamarandi	Sep 2016	-Community -Ministry of Livestock	-Healthy livestock -Reduction in number of livestock diseases.
	Increase number of livestock officers	Kamarandi	Sep 2016	-Ministry of Livestock -CDF -County Government -Community	-Number of farmers accessing services -Number of livestock officers working in the area
	Capacity building on Livestock production	Farmer Groups in Kamarandi	Sep 2016 Continuous	-Community -Ministry of Livestock	-Healthy livestock -Number of farmers implementing lessons learnt.
Poor farm yields	Less dependency on rain fed agriculture	-Individual farms	May 2017	-Community -Ministry of Agriculture	-Improved crop yields -Improved income -Improved nutrition -Improved climatic conditions -Reduced crime rates
	Use of soil conservation measures	-Individual farms -Public land -Institutions lands -Hills	August 2016 Continuous	-Community -Individuals -Administration(Chief) -Terrace markers	-Improved soil fertility -Increased number of acreage conserved -Better crop yields -Reduced soil erosion -High rate of water retention in soils
Inadequate water/Water	Planting of trees	-Individual farms -Along River banks	Sep 2016- March 2017	-Community -CARE	-Survival rates of planted seedlings -Reduced rate of soil erosion

Problem	Activities to address the problem	Where	When	Institutions/ offices involved	How will we know that we are successful? Indicators of Success
shortage and Drought		-Hills -Schools -Churches -Hospitals	OND 2016 Continuous	-FBOs -KFS -County government -Ministry of Agriculture -Chief	-Increase water retention in soils -Improved micro-climate conditions -Reduced negative impact of strong winds -Increase water levels in rivers -Increased income -Increase pasture/farm produce due to more rainfall as a result of increased tree cover. -Increased tree cover
	Installation of Irrigation/piped water	-Individual farms -Ndenderu And Muthandara	July 2017-July 2020. In phases August 2016- August 2019 August 2016- August 20121	-Community -Chiefs office -Ministry of Agriculture -Ministry of water and irrigation -NGOs -County government -Local administration -CDF WRMA -Area MP	-Number of farmers practicing irrigation -Increased food production -Number of livestock in healthy conditions -Increased income -Reduced crime rate -Improved hygienic conditions -Enough water for irrigation -Crop diversification -Number of farm acreage under irrigation -Intake constructed -Formation of Water resource users association Hectares of land under irrigation
	Rain water harvesting/ On farm water harvesting	-Individual homes -Schools -Dispensaries -Chiefs office	July 2017-July 2018 August 2016- August 2019	-Community -Administration -Individuals -County government -Women groups -MCA -Ministry of Agriculture -Individuals	-Presence of water tanks -Number of people accessing clean drinking water -Reduction of water borne diseases -Number of tanks bought and installed -Kitchen gardens established -Time reduced looking for water -Improved nutrition -Adequate clean water in homesteads -Reduced human and livestock diseases -Increase crop/livestock yields
	Borehole construction	24 villages in Kamarandi	July 2017-July 2020	-Community -County government -CDF, -WDF	-Number of community members accessing clean drinking water -Availability of clean drinking water

Problem	Activities to address the problem	Where	When	Institutions/ offices involved	How will we know that we are successful? Indicators of Success
	Fodder establishment and conservation	Individual farms Kamarandi	Sep 2016 Continuous	-Community -Ministry of Agriculture -Embu County Government -Local administration for mobilization	-Improved livestock production -Reduced livestock migration -Reduced livestock death due to drought -Improved family incomes from sell of healthy livestock
	Improved livestock production	-Individual farms in Kamarandi	-August 2016- August 2020	-Community -Ministry of Livestock -CARE -MCA	-Increased number of livestock breeds -Reduced livestock diseases/outbreak -Increased livestock yields/production -Increased livestock incomes
Food Insecurity	Planting of Traditional High Value Crops(T.H.V.C)	-Individual farms -Farmer groups -Common Interest Groups	Sep 2016	-Community -Ministry of Agriculture	-Improved food security -Number of farmers with food in their stores -Increased food production per acre
	Capacity building on Agricultural activities i.e. Soil conservation technologies e.g. Zaipit Technology	-Farm groups -Individual farms	Sep 2016 Continuous	-Community -Ministry of Agriculture	-Number of farmers implementing technologies -Improved crop yields -Improved food production
	Irrigation farming	-Individual farms	July 2017- 2020 in Phases	-Community -Ministry of water -County government	-Number of farmers farming with irrigation water -Improved food security -Increased crop production
Low Income	Capacity building on income generating activities, Business development skills, access to development funds, value addition and marketing	Kamarandi	Sep 2016 Continuous	-Community -CARE -Ministry of Gender and Social services -CDF -Ministry of Trade and Industrialization	-Improved living standards -Number of women with income generating activities
Soil Erosion/Drought	Capacity building on soil conservation	Kamarandi Individual farms -Public common land Hills -Kiburu	Sep 2016 Continuous	-Community -Ministry of Agriculture -KFS	-Improved soil fertility -Number of conservation structures -Number of farms conserved -Number of hills protected

Problem	Activities to address the problem	Where	When	Institutions/ offices involved	How will we know that we are successful? Indicators of Success
		-Ndenderu -Kamarandi -Kiangugi -Kiambitu -Karima Keru -Muvuro -Kiandondo -Along River banks			
	Community policing/Empowerment to reduce destruction of environment	River banks -Kangote, Rwambiti -Gitondo, Kamwita -Mwania Mbiti Hills -Kiburu, Kamarandi -Ndenderu, Kiamitu -Kiangugi, Kail -Miambiri -Karima Keru, Kiandoto -Individual farms	August 2016 Onwards	-Community -NEMA -County Government for enforcement	-Increased sand in Rivers -Increased water in Rivers -Increased number of trees and tree cover
Family conflicts	Capacity building seminar to reduce family conflict	Kamarandi location families Facilitation: Ministry of gender, youth, culture and sports.	August 2016 continuous.	-Men -Women -Chief -Counsellors as facilitators Both men and women will contribute kshs.100 to facilitate seminar	-Reduced family conflicts -Number of people attending seminar -Number of successful completed projects.

2.2.3 Iria-Itune CAAP, August 2016

PROBLEM	POSSIBLE SOLUTION and activities to be implemented	LOCATION	WHEN-TIMELINE	INSTITUTION TO SUPPORT	IMPACT INDICATORS
DROUGHT	1. <i>Irrigation water system using river ENA</i> : community mobilization, formation of irrigation committee, proposal development, survey and design of the project (BQ), digging trenches and piping	Iria-Itune and Ngoce sub-locations	Jan 2017- Jan 2020	1. WRMA- water permit 2. UTaNRM- Kamitari FDA – Funding IFAD 3. MOA –capacity building 4. MOW &I- Design and survey 5. KMD- forecast for planning 6. CARE K- Capacity building and linkages 7. KFS/NEMA- Environment impact assessment 8. County govt- funding 9. CDF-funding 10. Chief- community mobilization 11. DOE/CARITAS- Community mobilization and linkages	Establishment of project committee -number of members registered for the irrigation project -number of members connected and using irrigation water -improved crop yields and diversification of crops -improved livestock productivity -increased family income
	2. <i>Tree planting: Community mobilization, capacity building on nursery management and establishment, sourcing for seedlings, nursery establishment and planting, transplanting during the rainy season</i>	Individual farms	OCT-DEC 2016	COUNTYGOVERNMENT -KFS -Ministry of youth, gender and sports -MOAL	-Number of trees planted and surviving -Number of farmers who have planted trees -Improved micro-climate in the area

PROBLEM	POSSIBLE SOLUTION and activities to be implemented	LOCATION	WHEN-TIMELINE	INSTITUTION TO SUPPORT	IMPACT INDICATORS
	<i>Rain water harvesting: community mobilization, capacity building on water conservation practices, gutter fixing /installation, construction of base for the tanks</i>	Individual households	Sep 2016-sep 2018	-Ministry of water -county government -CARE INTL -CDF Ministry of youth and gender -Upper Tana board -Ward development fund	-Number of homesteads with tanks -Reduction in number of water borne diseases -Number of people trained and undertaking water conservation measures
	<i>Planting drought tolerant crops and upgrading of animals to better breeds: Community mobilization, capacity building on livestock and agricultural production; A.I; para vets, introduction of drought tolerant crops and breeds, setting up of demonstration farms</i>	Individual farms	Sep 2016 and continuous	-KALRO -CARE -CARITAS -COUNTY GOVT -MOAL	-Number of farmers trained on drought resistant crops and breeds -number of farmers upgrading their livestock to better breeds -improved agricultural production in the area -Acreage with drought resistant crops planted and doing well -number of demonstration plots constructed
POOR/INAD EQUATE MEDICAL SERVICES	<i>Equip existing medical facility: increase the number of existing staff, equip the hospital with necessary drugs and vaccines, equip the laboratory Identify the site to construct new dispensary</i>	Kiogogo and Ruthari dispensary Construction of a new dispensary at Kabubo ka Nyama	SEP 2016-SEP 2018	-MOH -COUNTY GOVT -W.D.F -CDF -COMMUNITY	-number of personnel employed -presence of laboratory services -drugs and vaccines available at the dispensary -increased number of patients visiting the health facility -reduced deaths

PROBLEM	POSSIBLE SOLUTION and activities to be implemented	LOCATION	WHEN-TIMELINE	INSTITUTION TO SUPPORT	IMPACT INDICATORS
POOR ACADEMIC PERFORMANCE	<i>Employment of teachers:</i> conducting BOM meeting, advertise for recruitment	Kirigo, Kamigua, Mugwa Njogu, Mutiria Iguru, Kamwaa, Ngoce, Ngaruereri, Katheru	Sep 2016-dec 2017	-BOM of respective schools -PARENTS -MOE -TSC	-number of employed teachers -improved performance in schools
	<i>Establish school feeding programs:</i> mobilize parents, call for BOM meeting, parents to contribute food stuffs, linking schools to existing feeding programs.	Mugwa Njogu Mutiria-Iguru Katheru	SEP 2016 – CONTINUOUS		-Number of schools with feeding programs -increase in number of pupils in school -improved performance
	<i>Introduction of polytechnic:</i> lobby for polytechnic by local development committee, site identification, community sensitization and mobilization, sourcing for funds from relevant stakeholders	Kiogogo and Kauraciri	Jan 2017-Dec 2018	-Community -County government -CDF -MOE -World Vision	Establishment of vocational training facility in the community -number of children enrolled in the polytechnique
DRUG AND SUBSTANCE ABUSE	<i>Introduce rehabilitation centre:</i> community mobilization, site identification, sourcing for funds, construction works	Kiogogo	June 2017-2020	-MOH -CDF -COUNTY GOVT - COMMUNITY CHURCH -LOCAL ADMINISTRATION -NACADA	-Establishment of rehabilitation centre -Number of addicts rehabilitated -number of clients receiving counselling -reduction in family conflict cases reported to the chief

PROBLEM	POSSIBLE SOLUTION and activities to be implemented	LOCATION	WHEN-TIMELINE	INSTITUTION TO SUPPORT	IMPACT INDICATORS
WATER SHORTAGE	<i>Rain water harvesting: community mobilization, capacity building on water conservation practices, gutter fixing /installation, construction of base for the tanks</i>	Individual households	Sep 2016-sep 2018	-Ministry of water -county government -CARE INTL -CDF Ministry of youth and gender -Upper Tana board -Ward development fund	-Number of homesteads with tanks -Reduction in number of water borne diseases -Number of people trained and undertaking water conservation measures
	<i>Installation of piped water: Community mobilization, Registration of committees (CBO'S), Consultation, Assessment, Bush clearing and Excavation, sourcing for funds, Installation of pipes ,Back filling and Testing</i>	Kiatuamb to Kamucogo Mukororia to Ngarwereri and Katheru	Sep 2016-sep 2017	1. MCA'S office-community clearing and excavation 2. CDF-Provide pipes 3. Ward administrators office 4. Upper tana-funding 5. Care-capacity building 6. Women Rep office 7. EWASCO- Consultation 8. Community committee coordination	1. Number of homestead connected with piped water 2. Kitchen gardens 3. Functional water kiosks 4. Improved hygiene 5. Reduced water borne diseases 6. Reduced livestock deaths 7. Increased family income
	EARTH DAM / SAND DAM CONSTRUCTION: Community mobilization, Identification of site, Consultation with land owners, consulting ministry of water, Construction works	Kavurokaro Kanyuagati Kivingo Ikururu Karumba Kathuri Karauki	Sep 2016-sep 2018	1. Community mobilization 2. Project committee/chief's office to consult land owners 3. County government to avail machinery and funding 4. Public health-inspection 5. Agricultural officers to ensure farming is being practiced around the dams	1. Reduced number of livestock death 2. Green vegetation around dam areas 3. Increased livestock production and prices 4. No of dams constructed

PROBLEM	POSSIBLE SOLUTION and activities to be implemented	LOCATION	WHEN-TIMELINE	INSTITUTION TO SUPPORT	IMPACT INDICATORS
Poor roads	<u>Tarmac roads</u> 1. Community mobilization 2. Form 3. Formation of development committees 4. Identifying the road	Ishiara to Kiambere	Sep 2016-sep 2018	1. Community development committee 2. Ministry of roads 3. National county government 4. Care- capacity building 5. Administration to mobilize the community	1.Kilometer's tarmacked 2.Improved transportation 3.Improved business 4.Number of roads opened 5.Easy transport
	<u>Opening new roads</u> 1. Community mobilization 2. Identify the roads-priority	Kirigo to kauraciri Mutirieguru to ngoce Kauraciri to Ruthari Kirigo to Nguthi	Sep 2016 – Sep 2017	6. Kenya lands to identify the roads 7. Ward development fund 8. County government(MCA)	
Lack of capacity in Agriculture /livestock skills	Capacity building training on agriculture skills and knowledge: 1.Field days 9 one per sub location) 2.Exchange tours-at least 2 3.Demonstration on both Agriculture and livestock -7	Sub locations Iriaitune and Ngoce Kitui and Machakos(KAL RO) Iriaitune and Ngoche in individual farms	Sep 2016 to July 2017	1. Care- facilitation 2. Agricultural office to give capacity building 3. Administration to mobilize the groups 4. Caritas –provision of skills	1. Improved crop/livestock production per unit area 2. Number of people trained 3. Number of field days held 4. Number of exchange tours conducted 5. Number of demonstration farms set up
ENVIRONM ENTAL DEGRADAT ION	<i>SOIL CONSERVATION IN GROUPS AND INDIVIDUAL FARMS:</i> construction of gabions and terraces along rivers and roads, Clearing of bushes and making terraces	Iriaitune location	SEP 2016 TO April 2017	1. MOA 2. UTANRMP 3. DOE/CARITAS 4. CARE K 5. CHIEF	1. Reduces soil erosion 2. Improved soil fertility- high yields 3. Regeneration of vegetation cover

PROBLEM	POSSIBLE SOLUTION and activities to be implemented	LOCATION	WHEN-TIMELINE	INSTITUTION TO SUPPORT	IMPACT INDICATORS
ILLITERACY	Start adult classes	Ngoce Kabugua Kauracre Nganwereri	Jan 2017 to 2019	Ministry of education- provide facility and trainers Chiefs County gov't	Number of adult classes Number of adult learners taking national exams
	Nursery classes	Kamwaa Gituro Ngoce Mutireguru Kiringo Kauraceri	Jan 2017 to December	Ministry of education County gov't	Number of nursery classes constructed Number of teachers employed Number of pupils enrolment

2.2.4 Ntharawe CAAP, August/ September 2016

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
	OLD MEN				
Inadequate water for domestic and farming	Installation of piped water	-Registered members Ntharawe Sub-location(homes, Schools, Dispensary, churches)	October 2016- October 2017	-Community -Interior(Chie) -MCA(Fund) -CDF(Fund) -EWASCO(Survey to give water) -Ministry of water(Funds and provide skilled labour)	-Water committee in place -Piped water in schools, churches
	Construction of earth dams	-Ciandue -Kamatha -Kamuguongo -King'ore	October 2016- October 2020	-Community(Unskilled labour) -WRMA -Ministry of water -MCA -CDF -Upper Tana Natural resources Management project(Uta NRM) -Ministry of Agriculture	-Earth dam committee in place -Construction of earth dams -Presence of water in dams -Reduction of water borne diseases in human and livestock
	Rehabilitation of existing water boreholes	-Muiru -Miranguti -Ntharawe	September 2016- September 2018	-Community -Ministry of Land -MCA -CDF	-Committee in place -Water is available -Improved human and livestock health -Functional boreholes with usable water -Tree nurseries -Kitchen gardens

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
					-Water availability for use by the community
	Water Harvesting	Ntharawe homes	September 2016- September 2018 -OND 2016 Season	-Community -Ministry of lands -Ministry of Agriculture -Upper Tana Natural resources Management	-Tanks and gutters constructed on buildings like schools, churches, individual houses -Plots for kitchen gardens projects at home, schools, churches e.t.c -Availability of clean water for domestic and household consumption.
Drought	Tree planting	-Individual farms -Dispensary -Churches -River banks	October 2016-April 2017	-Individuals -Community -Ministry of Agriculture -Kenya Forest Service -KENGEN -Upper Tana -KENGEN -TARDA	-Green Tree cover -Increase in amount of rainfall -Increase in fruit products -Improved human health -Reduction of wind speed
Low Crop and Livestock production	-Capacity building in crop and livestock production	-Individual farms -Group farms	September 2016 OND season	Individual/community -CARITAS -Ministry of Agriculture and Livestock -ACK -CARE -ASDSP	-Increase in crop yields -Rise of income -Improved health of livestock -Reduce in crimes -Reduction of livestock diseases
Poor Roads	Rehabilitation of the existing 5 drift	-Ngambari-Ntharawe	September 2016-	-Community -MCA	-Good roads -Increase in more vehicles

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
	and bridges	-Kirimu-KagO -Ntharawe school- Thura -Kirate-Tamaka -Ciakiruri- Ngambare	September 2026	-KURA	-Decrease of fare -Good condition of vehicles -Good transport
Low education levels	Change of attitude	-Ntharawe -Ngambare -Kamuguongo	September 2016- September 2017	Community/Parents -Ministry of Education -Ward Administrator -Chief -MCA -CDF -Churches	-Increase in schools -Good results -Improvement in the level of education -Increase in the number of pupils in primary and secondary schools
	Employment of teachers/purchase of books	-Ntharawe -Ngambari -Kamuguongo -Ntharawe Secondary	September 2016- September 2018	-Parents -Ministry of education -County Government -Churches	-Number of teachers employed -Good performance in schools -Increase of literacy levels/levels of education in schools -Increase in pupil/student enrolment
	Construction of polytechnics	Ngambari	January 2016- January 2020	-Community -Catholic Diocese -Ministry of Gender, Culture and Social Services -Chief -CDF Ministry of Education	-Elected polytechnic Committee -Enrolment of students in polytechnics -Polytechnic buildings

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
Lack of Health Facility	Completion of health facility/Dispensary	Ntharawe	September 2016- September 2017	-Community -Ministry of health -County Government -CDF -MCA -Chief	-Number of patients attending dispensary -Reduced cases of infection -Presence of nurses -Presence of staff houses -Fenced hospital compound
	Increase Community Health Workers numbers in Ntharawe	Ntharawe	From December 2016	-Department of Health -APHIA Plus -WDF -MCA	-Distribution of drugs, counselling of patients in the community increased -Increased community sensitization on health issues -Number of CHWs in the community
	Increase in health facilities	-Tamaka -Ngambari	January 2017- January 2021	-Ministry of health -CDF -WDF	-Number of health personnel working in the area -Quick and efficient services -More employment opportunities. -Number of operational health facilities -Reduction of diseases.
OLD WOMEN NTHARAWAWE					
Drought	Tree planting	Sep 2016 Continuous -OND season	October 2016- October 2018	-Community -Groups -Schools -Churches -Dispensaries -Individual homes -KENGEN -TARDA Kamugu Project	-Number of surviving trees -Acreage covered with trees in Ntharawe -Increased forest cover -Increased number of tree nurseries -Reduced soil erosion -Increase in rainfall

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
				-KFS -MCA -UTA-NRM	
	Soil and water conservation(Construction of terraces)	-Individual farms	August 2016- August 2018 Sep 2016 continuous	-Community -Ministry of Agriculture -KFS -Site -Farm Concern International	-Improved yields -Reduced soil erosion and surface run-off -Number of farms with terraces -Increased food production -Visible terraces
	Access of use and certified seeds	-Individuals farms	Sep 2016- Sep 2017	-Groups -CARE -County Government -Ministry of Agriculture -	-Improved yields
	Use of appropriate Agricultural Technology	-Individual farms	August- Sep 2017 to August/Sep 2018	-Community -Ministry of Agriculture	-Improved yields -No of farmers practicing the technology
Water Scarcity	-Construction of earth dams	-Ciandue -Rwanguu -Kyangi -Ciagambugu -Gitorangwe -Tamaka -Rwanguu	- September 2016- September 2021 -To be constructed	-Community -CDF -Upper Tana Natural resources -CDF -WDF -Ministry of water and	-Number of dams constructed -Reduced livestock death -Increased crop yields due to irrigation -Improved micro climate of the area -Number of dams constructed -Improved micro climate -Green vegetation

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
		-Ciakiruri Rwagiri	d in phases from Oct 2016-Oct 2020	lands (County Government)	-Increased farming activities
	Piped water	Kirathe-Ntharawe -Rwagiri Village -Central Village -Rwanguu Village -Ciakiruri Village -Kiangunguru Village -Ngambari Village -Tamaka Village	Sep 2016- July 2017 October 2016- October 2018	-Community -EWASCO -WDF -CDF -Ministry of water and lands(County government) -Action AID	-Number of homes with piped water -Number of water kiosks -Reduced water borne diseases -Improved sanitation and hygiene -Distances travelled to fetch water reduced -More farming as a result of irrigation water -Beneficiaries accessing water -Reduced water vending by donkey riders -Water taps -Green Vegetation -Improved micro-climate -Number of peoples connected to water
	Borehole Construction	-Rwagiri -Kiangunguru -Ngambari -Tamaka -Muiru -Ciakiruri -Rwanguu -Nguuri -Tamaka -Muiru	Septembe r 2016- December 2021 To be constructe d in phases Oct 2016- Oct 2020	-CDF -Upper Tana Natural Resources -Ministry of Water -Water Trust Fund -MCA -WDF	-Number of boreholes drilled and operational -Increased water access -Reduced water borne diseases -More healthy women -Improved sanitation and hygiene -Green Vegetation -Increased farming activities
	Water pan	-Individual homes	August	-Community groups	-Number of water pans constructed in the

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
	Construction		2017-December 2018	-Ministry of Agriculture	community -The number of kitchen gardens -Improved nutrition -Improved income
	Roof water harvesting/ Water storage tanks	-Individual homes -All primary and secondary schools -Dispensaries -Chiefs camp -Markets	September 2016-September 2018	-Kenya women -Upper Tana -Groups -Youth fund -Women Trust fund -Uwezo fund -WDF -CDF -Upper Tana	-Number of homes with tanks having water - Increased water access -Reduced water borne diseases -Healthy women -Improved hygiene -Number of water tanks -Reduction of water borne diseases and improved hygiene -Improved micro climate
Insecurity	Strengthen Nyumba Kumi Initiative	Ntharawe	Continuous	-Community -Administration -Ministry of Interior and Co-ordination of National Government -Churches -Schools	-Crime reduction -Number of cases solved -Number of Nyumba Kumi Chairman Trained -Reduced conflicts
	Self Help Groups	Ntharawe	September 2016-Continuous	-Community -Ministry of Gender and social services -Chief office	-Number of groups formed and active -Reduced crime rate -Improved livelihoods
	Construction of police post	Ntharawe Assistant Chiefs camp	September 2016-Dec 2021	-Community -CDF -WDF	-Operational police post -Crime reduction -Increased Development

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
				-National Government(Ministry of Interior)	
	Establishment of Polytechnic	Ngambari	Sep 2016-Sep 2021	-CDF -WDF -Ministry of education -Community	-Number of operational polytechnics -Number of trained people
	Functional Nyumba Kumi Initiative	-Chiefs camp -Ntharawe	Sep 2016 Continuou s	-Ministry of Interior and Co-ordination	-Active Nyumba Kumi -Reduced theft cases in the community -Improved security in Ntharawe
Poor Roads	Grading and murraming	-Ntharawe – Ngambari -Ntharawe-Kirimu -Ntharawe-Nguri -Ntharawe- Kathiga ka Nyonga -Ntharawe— Karambari -Ntharawe-Tamaka -Ntharawe-Nguuri	Sep 2016-December 2018	-Community -Ministry of public works -WDF	-Number of roads constructed -Reduced accidents -Improved transport -Reduced cost of vehicle maintenance. -Reduced break down of vehicles/boda bodas -
	Road repair	Ntharawe-Tamaka Road -Ntharawe-Kathiga ka nyonga -Ngambari-Ntharawe Road	Phase 1: Ntharawe-Tamaka Road Phase 2: Ntharawe-Kathiga ka	-CDF -WDF -NYS	-Reduced potholes

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
			Nyonga Phase 3: Ntharwe- Ngambari		
	Construction of all-weather roads	Ntharawe-Tamaka -Ntharawe – Kambari -Ntharawe – Kiambere(new site)	In phases J January 2017- January 2021	-Ministry of Roads(National Government) -CDF -WDF -County Government	-Number of roads constructed -Reduced transport cost -Reduced time to move from one point to another -Increase access of people and goods to market
Low levels of Education	-Creating awareness on drug and substance abuse	Ntharawe	Sep 2016 to Continuu s	-Local Administration -Hospitals -Schools -Churches -Community -NACADA	-Number of children in schools -Reduced number of depressed people -Number of people with skilled labour
	Construction of more schools	-Kiangunguru -Tamaka -Ciakiruri -Ngambari secondary	Sep 2016- December 2021	-Community -Ministry of education -CDF -WDF -Churches	-Number of schools constructed -Number of children attending school -Improved education levels
Few Primary and Secondary Schools	Employment of more teachers	Tamaka -Ciakiruri -Miranguti -Kiangunguru	January 2017- January 2027	-Ministry of Education -CDF -WDF -Community	-Reduced illiteracy -Increase in development and reduction in crime rates -Reduced Poverty
Inadequate	Access agricultural	-Ntharawe	Sep 2016	-Community	-Number of farmers trained and accessing

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
agricultural and Livestock Technical Knowledge and skills	knowledge and information		to continuou s	-Churches -Schools -Ministry of Agriculture	knowledge -Improved agricultural practices -Increased crop and livestock production -Improved income
	Farmers Field days and Tours	-Machakos -Ntharawe	Sep 2017- Sep 2018 Also Dec and June every year	-Community -Ministry of Agriculture -County Government	-Number of tours and field days -No of people who attended -Improved production -Number of people practicing acquired agricultural skills
	Hire and train Agricultural staff	Ntharawe	Sep 2016 Continuou s	-Community -County Governments -Administration -Churches -Schools -Agricultural Institutions -Extension staff	-Number of agricultural staff employed -Number of people attending agricultural institutions
	Capacity building	-Chiefs public Barazas -Farmers and women groups -Demonstration farms	Sep 2016 to be continuou s	-Ministry of Agriculture -SITE -KALRO	-Improved livestock production -Improved crop yields -Reduced poverty
	Increase in qualified personnel in agriculture and livestock	Ministry of Agriculture offices Kiambere Ward	January 2017- January 2019	Ministry of Agriculture and Livestock(County Government)	-Increase in food production -Number of increased Agriculture and Livestock officials

Problem	Solution	Where	When	Institutions/ offices involved and why?	How will we know that we are successful?
Land issues	-Title deeds issuance	-Individual land -Schools -Churches -Health Centres -Chiefs camp -Pubic land -	January 2017 Continuou s	-Ministry of lands department both County and National -MCA -Chiefs Office -WDF -CDF	-Title deeds issuance -Reduced land disputes -
	Capacity building on land issues	Ntharawe Chiefs Camp	January 2017 Continuou s	-CARE -GoK Lands Department -MCA -WDF -Local administration	-Increased knowledge on land issues -Reduced cases of land grabbing
High Poverty Levels	Family planning	-Individual family	Sep 2016 Continuou s	-Ministry of Health -APHIA Plus	-Birth rate Reduced -More healthy children in the community
No technical Institution	-Construction of technical institutions and employment of technical staff	-Ntharawe Chiefs camp	January 2017- January 2020	-CDF -WDF -County Government	-Complete and operational technical institutions -Number of trained personnel -Employment creation -Reduced crime rates
Lack of markets for farm produce	Construction of market in Ntharawe	Ntharawe -Tamaka	January 2017-Jan 2018	CDF -WDF -County Government Department of Trade	-Number of operational markets -Improved prices of food commodities -Creation of jobs/employment -Reduction of distance covered to markets.

2.3 Implementation to date

The mechanisms and processes for implementing the CAAPs require strengthening. While, during the CAAPs exercise, participants identified individuals to serve on an executive committee with the mandate to lead the CAAP implementation for each community, these committees lack capacity in various aspects and have not reported any progress to date. Providing them with capacity building is, therefore, a priority on ALP's agenda for the coming months.

People have, however, reported that the implementation of some of these strategies – those requiring low inputs or no external support – has already begun. These strategies are common across all the four sites. The CAAP process, and better access to useful climate information services, appears to have motivated people make collective investments in certain strategies, as illustrated by the example of a Village Savings and Loans Group in Kamarandi (see box 1 below).

Table 5. Adaptation strategies implemented following the CAAP exercise

Sector	Strategy
Agriculture	• Soil and water conservation- e.g. terracing, contour ploughing, use of organic manure • Use of certified seeds/selection of right variety for the season • Early planting and growing of drought tolerant crops • Tree seedlings preparation and planting
Livestock	• Fodder conservation and storage • Destocking of animals • Buying each other goats through savings and loans groups
Water	• Purchase of water storage tanks through savings and loans groups

These adaptation strategies have been taken up either by households acting individually, or by community groups – mostly savings and loans groups – organising themselves to finance equipment such as water tanks for rainwater harvesting, or goats, together.

Some of these groups have also been organizing to seek financial and technical support from external bodies. Community groups have reported directly approaching the ward leadership for support in allocating funds toward irrigation projects, bursaries, construction of school facilities and road upgrades. In part, this is a result of skills and knowledge they acquired during the CAAP process, and of improved relationships between communities and local government resulting from their participation in the CVCA and CAAP exercises as well as Participatory Scenario Planning. As the outcome of the CAAP exercise was shared with the wider communities on various occasions from the validation meeting to barazas and various informal encounters, community groups not directly involved in ALP's activities have also been getting organized to seek external support.

Examples of community efforts to organize, request support or technical assistance to implement adaptation strategies:

- Witethie women group in Kamarandi has written a proposal to Compassion International, an NGO working in Mbeere North, to access irrigation water.
- Members of Wendo women groups and Tumaini Self Help are using group savings to buy each other water tanks in Kamarandi.

- Kamarandi community is planning to start poultry production and is seeking technical advice from livestock officers in the ward.
- The MCA has promised to allocate funds for upgrading of roads and ensuring completion of Ntharawe dispensary.
- In Mutwabare, the Community Development Fund has pledged and allocated funds for opening of a feeder road from the Gituuru complex to Karura market; digging of trenches for water pipes from Kiambere (new site) to Mutwabare market; constructing a science lab at Karura secondary school and a dormitory in Mutuobare primary school.
- The sub-county agriculture and livestock officers at ward level have been supporting communities in strategies related crop and livestock management.
- Farmers across the four communities have also registered with the Kenya Cereals Enhancement Project (KCEP). KCEP is a joint project with the county department of agriculture and Equity Bank, promoting farming of orphaned crops (especially sorghum). Through this project, the community has established six demonstration farms for learning purposes.
- The participation of ward level leaders (ward administrator, MCA and their reps, MP Representatives) in the CAAP process is bearing fruits in that Iria-Itune community has reported being supported by ward development fund in a domestic water project. The fund, it was reported had allocate KES 12 million to the project and further bought pipes worth KES 6 million.
- Communities in Kamarandi and Iria-itune have held initial consultations with EWASCO on establishing a domestic piped water supply.

It was also reported that community members base their decisions on which strategy to apply when on climate information. Roughly three quarters of the local population are receiving weather or seasonal forecasts through the advisories resulting from the county level Participatory Scenario Planning process led by ASDSP and the National Drought Management Authority, or through radio, twitter hashtag #pmurimi –A farmer, famous in Embu County who disseminates information through his twitter account .[He sends the information when needed and that's why at times his twitter account isn't active; text messages, church gatherings, traditional forecasters, or newspapers.

Box 1. Women working together to adapt

Until not long ago, drought meant incredible hardship for older women in particular, who had to take care of their families during drought, when the men would leave the village in search of work. Now, the women's situation is improved thanks to their Village Savings and Loans Association. The group savings have made it possible to buy 210 litre water tanks to harvest rainwater which, in turn, enables water access during the dry season for vegetable gardening.

Rafaela Ngere Njeru, member of a VSLA group of older women, explains that ALP provided them with drought resistant seeds and better access to climate information services. "We are now better prepared for the season, we know what and when to plant. This has given us food security and even a surplus of food to sell, the income from which went into group savings from which we buy water tanks and other items for each other. We are eagerly awaiting this season's harvest: the crops have done very well."

Kamarandi's community monitor Penina Mbura emphasises the importance of knowledge and information: "Thanks to being educated about climate change, people now know what to do. Climate information is particularly helpful: people did not use to be able to do much with the rainfall data distributed via the radio, but the advisories from Participatory Scenario Planning are different. The meteorological services now come with accurate forecasts and useful advice. People know what to plant, when to plant it."

She also highlights the role played by the multi-stakeholder process, and the relationships and learning emerging from it: "The CAAPs have opened people's eyes. People weren't making use of the agricultural services but they are now, seeking help with e.g. land terracing, soil conservation, manure, and planting drought resilient trees. [...] The CVCA was an eye opener for women in the sense that they could see that they, too, can work to support themselves and their families. They used to have low self esteem but now have an improved sense of worth and status in their families and community."

As Rafaela puts it, "the women of Kamarandi know themselves better, empower each other. Many of us used to run away as we were able to sustain ourselves and our families, but it is no longer necessary. When drought hits now, instead of being desperate about our situation, on top of being fine ourselves we are in a position to help others."

PART III: ANALYSIS AND LEARNING ON COMMUNITY ADAPTATION ACTION PLANNING

The experiences from Embu County documented in this report provide a practical demonstration of the value of the community-based adaptation process itself – from its analytic to its more planning-oriented elements – beyond identifying specific adaptation strategies.

Community representatives participating in the CAAPs process identified a range of technologies and livelihood strategies such as e.g. installing irrigation systems, setting up rain water harvesting, improving access to health and education services or strengthening the infrastructure for markets as critical for adaptation to climate change. But successfully addressing the local impacts of climate change requires more than the implementation of a set of strategies identified at one point in time. Living with the uncertainty and variability climate change is surrounded by requires community mobilisation, capacity to anticipate and plan ahead, an ongoing process of continuous adjustment, and informed decisions on the part of community members and actors involved in local planning and decision-making. The community planning process in Iria-Itune, Kamarandi, Mutwabare and Ntharawe, strengthened – and was strengthened by – these capacities in a number of ways:

- **An “eye opener”:** Various aspects of the adaptation planning process have been deemed an “eye opener” for both community members and local government providing support to them, especially with a view to understanding the dynamics of poverty, vulnerability, climate change impacts and possible strategies to address them. None of them can be viewed in isolation in Embu, and climate change, while a key threat and driver of livelihood change, cannot be singled out as a problem or driver. The GCVCA exercise, and elements of the CAAP process, heightened awareness of climate change, poverty and vulnerability dynamics, and provided opportunities to make sense of how these challenges and problems interact and reinforce each other, and how they affect particular social groups.
- **Agency and confidence:** The CAAPs process, in turn, provided a framework for systematically identifying, prioritising and addressing key challenges facing the community. Awareness of number of challenges existed among communities before the CBA planning process, but, as local representatives from Kamarandi asserted, they “did not know where to begin” addressing them. Since the CAAP exercises, a number of locally grown initiatives have taken proactive steps to implement some of the identified adaptation strategies, such as rainwater harvesting and the acquisition of goats. It appears that the CBA planning process served as a catalyst mobilizing existing community groups into action, and triggering the set-up of new groups. Where strong leadership from chiefs and community monitors (designated CBA champions) is present, community members appear to have more confidence to take matters in their own hands, at least in relation to a number of smaller, more affordable steps toward better-adapted livelihoods.
- **Trust and relationships:** The interplay between Community Adaptation Action Planning, and Participatory Scenario Planning, a process running in parallel with this at the county level, has improved the relationships and information flow between communities and local government services whose support is vital for community development and adaptation. Both processes are designed to bring together multiple stakeholders representing the population, local government and community-based organisations. Trust in and demand for local services have increased, and

so has, thus, the use of information and advice provided by them. This concerns agricultural and livestock extension services but also, in particular, the Kenya Meteorological Department, whose services are now seen as meaningful and fundamental for planning and decision-making.

- **Informed and anticipatory decision-making:** In Embu – as in other sites ALP has worked in – community vulnerability analysis, adaptation action planning, and Participatory Scenario Planning complement each other well. The interplay between different elements and products of the CBA planning process is strengthening people’s ability –in terms of both information access and skills – to make more forward-looking and anticipatory livelihood decisions. This can serve as the basis for a multiplier effect of incremental benefits observed in other sites where these processes have been underway for longer: people, over time, learn to apply a number of autonomous and externally supported adaptation strategies flexibly, in response to changing circumstances and forecasts. For many, especially younger people, this learning is accelerated by the rapidly increasing access to information via mobile phones and data.

Alongside these benefits and drivers of success, there are also a number of issues that are proving challenging for successful Community Adaptation Action Planning. These are a mixture of factors inherent to the design of the process, and of factors inherent to the context the planning is embedded in. It would be wrong to describe these contextual challenges as “*context-specific*”; in fact, they are very familiar and long-standing challenges for those implementing similar initiatives elsewhere. As such, they provide opportunities for learning and improving the design of participatory planning processes not only in Embu but beyond, as well as beyond the field of adaptation to climate change.

- **The longer-term benefits of “software” vs. the immediate benefits of “hardware”:** The success of participatory action planning, or indeed Community Adaptation Action Planning, is limited in areas of high poverty and vulnerability when the process is implemented without providing more immediate and tangible benefits. As a number one issue that makes the planning process challenging, community members and local stakeholders appear to be in agreement that it is hard to keep up motivation and momentum of collective planning and action if the initiative does not also entail some form of handout (e.g. seeds) or other material benefit. According to local leaders and extension officers, this is in part a problem of attitude and expectations – more specifically, a “project mind-set” cultivated by previous initiatives whereby a project signifies “receiving things”. However, the participation in time-intensive processes does present a sizeable opportunity cost, in particular for the poorest households whose members need to sell their labour for food or cash.
- **Acting on differential vulnerability:** While Community Adaptation Action Planning process entails various initial steps revealing how different social groups are affected by climatic and livelihood trends, and who is most vulnerable and why, these nuances seem to disappear further down the line when the planning process focuses on identifying strategies. The first steps of action planning in the four communities took place in four gender- and age-segregated groups (younger and older women and men), before one collective plan per community was agreed.

However, this and a wealth ranking exercise revealing the community socio-economic make-up earlier in the process, do not seem sufficient to ensure that the realities and needs of the most vulnerable groups are reflected in the outcome; many of the chosen strategies require significant external input or a minimum of household assets. According to government partners at the county and sub-county levels, this gap between practical realities and proposed adaptation choices for very poor and vulnerable groups is even wider in the advisories resulting from Participatory Scenario Planning: the farming, livestock and other strategies recommended in these advisories are mostly relevant to households of moderate or higher wealth.

- **Implementing and gaining support for the CAAPs:** Action on the strategies so far has been taking place in a more ad-hoc than a systematic way, both in terms of action at the community level and support by local government, and there are question marks as to how the implementation of the CAAPs will be secured. There are a number of interrelated issues underpinning this challenge:
 - *Lack of finance:* As mentioned before, not all households can afford implementing the strategies recommended by advisories and noted in the CAAPs, and projects that would bring substantial improvements such as dams and domestic water supply require significant external financial support.
 - *Need for linkage with local development planning:* The CAAP approach, in theory, foresees the integration of CAAPs into local government planning such as, in this case, the County Integrated Development Plan. This is challenging in particular in the face of political change.
 - *Lack of community capacity:* In the CAAP process, each community established an executive committee with the mandate to lead and oversee the implementation of the CAAPs. These committees, however, as well as the various local community groups taking matters relating to particular adaptation strategies into their hands, often lack fund raising skills, leadership skills and time. Strong community leadership in particular has been instrumental for community organization, self-reliance and empowerment – including women’s empowerment – but such leadership skills appear to be the exception from the norm.
 - *Barriers for women’s groups and youth:* Both women and young people are enjoying improvements in their economic situations due to a number of changing livelihood and social trends, but they continue to be under-represented in community leadership and local government, which may be a hindrance when it comes to gaining support for their priorities.
 - *Provisions for a sustained planning effort:* As climate change adaptation is not a one-off exercise but an ongoing process, Community Adaptation Action Planning, too, requires continuity to deliver sustained successes. The question emerged how the CAAPs might best be reviewed in a time-efficient way whereby, rather than repeating the entire process, key elements are revisited and updated.

- **Flexible learning approach vs. stakeholder expectations:** Community-based Adaptation Action Planning in Embu has been implemented in the context of a rather emergent, flexible learning programme which takes a “learning-by-doing” approach and, as such, often changes tack when circumstances demand it. While this agility is an asset, in particular in dealing with the new and uncertain business of adapting to climate change, it has also been a challenge for local partners in Embu who, for their own planning purposes, may wish for more predictability in form of more concrete plans at an earlier stage. Agility in responding to changing circumstances risks to be seen as a lack of transparency.

As demonstrated by the changing livelihood trends and the number of existing and planned adaptation strategies identified throughout the CVCA and CAAP process, the communities of Mbeere North and South have a range of skills, existing strategies and ideas for adapting to climate change, however this adaption potential needs strengthening in various ways – within the community and through external support, especially to enable more vulnerable groups to improve their situation in the face of climatic and other hazards.

In light of some of the above-mentioned challenges around capacity, motivation and addressing highly vulnerable groups, shifting resources away from planning processes to quick-win strategies – more handouts, etc. – may seem tempting. The comparative successes of some of Embu’s communities in relation to others with Community Adaptation Action Planning, however, indicate that social, human and institutional assets – leadership skills, education, trust, relationships, collaboration skills and mechanisms – can be more significant in determining livelihood outcomes than physical and financial assets. ALP has learned that in contexts of high poverty and vulnerability, balancing the trade-offs between responding to basic development challenges and adaptation to climate change is not about choosing one or the other, but about combining them. And “adaptive capacity strengthening has been initiated in response to the impacts and uncertainties of climate change, but once gained, it can be applied in all life contexts, not only climate change.”⁷

PART 1V: ANNEX 1 AND 2 ON LIST OF PARTICIPANTS FROM KAMARANDI COMMUNITY AND SUB-COUNTY AND COUNTY OFFICIALS

Annex 1 : LIST OF PARTICIPANTS-SUB COUNTY and COUNTY Level meeting held with Agnes on 7th December, 2016 at Izaak Walton Inn, Hotel, Embu

1. John Nguyo, CDMS, Embu County
2. Alvan Gatumo-ASDSP
3. B.K Njeru- Ward Agriculture officer, Evurore Ward, Mbeere North Sub-County
4. Peter Kinyua- Agriculture officer, Mbeere North, Evurore Ward
5. Timothy Ireri- Agriculture officer, Mbeere North, Evurore Ward
6. D.M Mwangi-Livestock Officer, Mbeere North, Evurore ward
7. Harrison Nyaga-Ward Agriculture Officer, Kiambere ward, Mbeere South Sub-County
8. Eliud Gitari- KMD ,Embu County
9. Crispine Ireri-Livestock officer, Mbeere South
10. Alfred Kanyue-KMD, Embu County

CARE STAFF

11. Anne Mbugua
12. Josephine Kawira
13. Samuel Shena
14. Ayub Were
15. Philip Oyoo
16. Agnes-Consultant

Annex 2: LIST OF PARTICIPANTS-Community Level Meeting Held at Kamarandi Community with Agnes 6th December, 2016.

1. John Nguyo, CDMS, Embu County
2. Alvan Gatumo-ASDSP
3. Boniface Njeru Gitonga-Chief, Kamarandi
4. Nephath Kithaka Buuru-Assistant Chief, Ndenderu
5. Jackson N. Nguru-Assistant Chief, Muthandara
6. Jeremiah Kathoka-Monitor
7. Peninah Wambura-Monitor
8. Jeremy Nyaga-Recorder
9. Salavina Wambui-Recorder
10. Benjamin Mugo
11. Gideon Karioki
12. Raphaela Njeru
13. Dorothy Igoki Njeru
14. Calistus Muthoni Njue
15. Sicily Mbura
16. Zabed Kamene
17. Charity Kawira Ngundu
18. Magdalene Kagendo
19. Virginia Kayugu
20. Teresia Kayoka
21. Gladys Kareia Kirugi

CARE STAFF

22. Anne Mbugua
23. Josephine Kawira
24. Samuel Shena
25. Philip Oyoo
26. Ayub Were
27. Agnes-Consultant

SOURCES

1. ALP 2015. Adaptation Planning with Communities. Practitioner Brief 1. ALP 2015 Adaptation Planning with Communities. Practitioner Brief 1.
2. CARE International Kenya 2015. Gender-sensitive Climate Vulnerability and Capacity Assessment. Embu County – Kenya.
3. Government of Kenya 2010. National Climate Change Response Strategy.
4. Government of Kenya 2013. National Climate Change Action Plan 2013-2017.
5. The following internal, unpublished documents by CARE International Kenya:
 - CAAPs and CAAP process reports for Kamarandi, Iria-Itune, Mutwabare, Ntharawe
 - CAAPs Validation Field Activity Report
 - CVCA Enumerators data
 - Community Profiles for Kamarandi, Iria-Itune, Mutwabare, Ntharawe
 - Transcripts from focus group discussions in Kamarandi, Iria-Itune Mutwabare, Ntharawe
 - Monitor and recorder profiles

¹ ALP 2015 Adaptation Planning with Communities. Practitioner Brief 1.

² NCCRS

³ Source and more details: ALP CVCA report Garissa

⁴ NCCRS p.3.

⁵ NCCRS pp.3f.

⁶ NCCRS Executive Summary, p.9

⁷ AC Brief, p. 22.



The Adaptation Learning Program (ALP) for Africa aims to increase the capacity of vulnerable households in sub-Saharan Africa to adapt to climate change and climate variability. Since 2010, ALP has been working with communities, government institutions and civil society organisations in Ghana, Kenya, Mozambique and Niger to ensure that community-based adaptation approaches and actions are integrated in development policies and programmes. This is achieved through the demonstration and dissemination of innovative approaches for CBA, supported by practical tools, methodologies and evidence of impact. ALP is also working to create an enabling environment for CBA by working with civil society groups to influence national and international policy frameworks and financing mechanisms for adaptation.

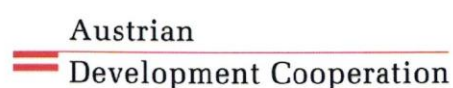
The programme is implemented by CARE International. Financial support to ALP has been sourced from: UK Aid from the Department for International Development, the Ministry of Foreign Affairs of Denmark, the Ministry of Foreign Affairs of Finland and the Austrian Development Cooperation.

Contact us:

Adaptation Learning Programme
CARE International
P.O Box 2039 - 00202 KNH, Nairobi, Kenya
Tel: +254 2807000 /730 113 000
alp@careclimatechange.org

www.careclimatechange.org/our-work/alp/

ALP is supported by



Danida

