REPUBLIC OF KENYA

nema
mazingira yetu | uhai wetu | wajibu wetu

National Implementing Entity –NEMA - KENYA

PROGRAMME PROPOSAL

PROGRAMME TITLE:

INTEGRATED PROGRAMME TO BUILD RESILIENCE TO CLIMATE CHANGE & ADAPTIVE CAPACITY OF VULNERABLE COMMUNITIES IN KENYA

Executing Entities:

KEFRI, TARDA, CDA, WORLD VISION KENYA, KENYA RED CROSS, VRED, NASURA WOMEN GROUP, CARITAS KENYA, ADRA KENYA, KENYATTA UNIVERSITY, HORN AID KENYA

SUBMITTED

TO

ADAPTATION FUND BOARD

ADAPTATION FUND

October 2013

LIST OF ACRONYMS

ADRA	ADRA Kenya
AFB	Adaptation Fund Board
ASALs	Arid and Semi-Arid Lands
ASDS	Agricultural Sector Development Strategy
ATDC	Agricultural Technology Development Centers
CA	Conservation Agriculture
CBNRM	Community-based natural resource management
CCB	Climate, Community, and Biodiversity
CCU	Climate Change Unit
CDA	Coast Development Authority
DFID	Department for International Development
GFSIT	Green Forest Social Investment Trust
EMCA	Environmental Management and Coordination
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
GFSIT	Green Forest Social Investment Trust
GIZ	German Agency for International Cooperation?
GoK	Government of Kenya
ICRMP	Integrated Coast Region Master Plan
ICZM	Integrated Coastal Zone Management
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
KMD	Kenya Meteorological Department
Kshs.	Kenya shilling
KU	Kenyatta University
LDC	Least Developed Countries
LDCF	Least Developed Countries Fund
LVCD	Local Value Chain Development

MEWMR	Ministry of Environment, Water and Natural Resources
MoA	Ministry of Agriculture
MDGs	Millennium Development Goals
MoCDM	Ministry of Cooperatives Development and Marketing
MoF	Ministry of Fisheries Development
MoE	Ministry of Energy
MoLD	Ministry of Livestock Development
MoR	Ministry of Roads
Mo WI	Ministry of Water and Irrigation
MPTS	Multipurpose Tree Species
MoU	Memorandum of Understanding
NAP	National Adaptation Plan
NAMAs	Nationally Appropriate Mitigation Actions
NAPA	National Adaptation Programme of Action
NC	National Communication
NCCACC	National Climate Change Activities Coordinating Committee
NCCRS	National Climate Change Response Strategy
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
NRM	Natural Resource Management
SIDA	Swedish International Development Cooperation Agency
SLM	Sustainable Land Management
TARDA	Tana and Athi Rivers Development Authority
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VIRED	Victoria Institute for Research on Environment and Development
VSLA	Village Savings and Loaning Approach

WB	World Bank

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DATE OF RECEIPT:

ADAPTATION FUND PROJECT/PROGRAMME ID:

ME INFORMATION **(For Adaptation Fund Board Secretariat Use Only)**

PROGRAMME PROPOSAL

COUNTRY:	**KENYA**
SECTORS:	**AGRICULTURE & FOOD SECURITY;** **WATER MANAGEMENT**
TITLE OF PROGRAMME:	**INTEGRATED PROGRAMME TO BUILD RESILIENCE TO CLIMATE CHANGE AND ADAPTIVE CAPACITY OF VULNERABLE COMMUNITIES IN KENYA**
TYPE OF IMPLEMENTING ENTITY:	**NATIONAL IMPLEMENTING ENTITY**
IMPLEMENTING ENTITY:	**NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY**
EXECUTING ENTITIES:	**KEFRI, TARDA, CDA, WORLD VISION, RED CROSS, VIRED, NASURA, CARITAS, ADRA, KU, HORN AID,**
AMOUNT OF FINANCING REQUESTED:	**USD 9,999,558.19**

PROGRAMME BACKGROUND AND CONTEXT

Brief Background on what Programme Aims To Solve

Kenya has a landmass of about 582,350 km² of which only 17percent is arable while 83% consists of semi-arid and arid land (GoK, 2012). Like other countries in the world, Climate change and climate variability pose major threats to the environment, economic growth and sustainable development. The negative effects from Climate Change experienced in Kenya include reduced agricultural production, food insecurity, increased incidences of flooding and droughts, widespread disease epidemics, and increased risk of conflict over scarce land and water resources. These impacts of climate change are further compounded by local environmental degradation caused by illegal encroachments, deforestation and unsustainable livestock grazing.

Climate Change affects various sectors in Kenya differently, with the most vulnerable being agriculture, livestock, water, health, fisheries and tourism. Agriculture is a major activity in Kenya, earning 60% of foreign exchange and 24% of the GDP as well as providing employment for 80% of the population (GoK, 2012). Over reliance on rain-fed agriculture and pastoral livestock production systems places Kenya as one of the high risks countries from the impacts of climate change. Changes in weather patterns like rise in temperature and unpredictable rainfall all have direct negative effects on agricultural activities thereby threatening food security and livelihoods of many communities in Kenya especially those from arid and semi-arid areas.

Arid and semi-arid lands (ASALs) areas in Kenya are characterized by fragile ecosystems that have suffered increased degradation due to climate variability. In particular, Kenya's ASALs experienced prolonged droughts during *La Nina* period of 1999-2001, January-March 2006 and2008-2009 (NEMA, 2007). This significantly caused crop failure and reduced yields compromising food security and leading to famine, human migration and displacements. There has also been a significant reduction of livestock production due to reduced pasture and water resources. In some instances extreme drought conditions occur which lead to death of animals affecting livelihoods and economic status of ASAL communities.

Further, Kenya is classified by the United Nations (UN) as a water-scarce country because of its annual renewable freshwater supply estimated at 647 m³ per capita that is significantly

below the 1,000 m^3 per capita set as the marker for water scarcity. The prolonged droughts which have been attributed to climate change, have severely affected freshwater availability. Major rivers including the Tana, Athi, Sondu Miriu, Ewaso Ngiro and Mara have experienced severe reduced volumes during droughts and many seasonal ones have completely dried up. In addition, water resources are unevenly distributed in both time and space in five drainage basins namely; Lake Victoria, Rift Valley, Athi River, Tana River, and EwasoNg'iro. This is compounded with low development of water resources harvesting infrastructure in the country. The loss of glacier in Mt. Kenya to about 92% of its ice mass, has also led to reduced river water volumes, transformation of permanent to seasonal rivers and in some cases complete drying of the rivers (NEMA, 2007).

On the other hand, other parts of the country that used to receive reliable rainfall are now experiencing sporadic rainfall causing floods. This has become a common phenomenon in areas like Budalangi along River Nzoia in Western Kenya arising from Cherangani Hills; Kano plains along Nyando River in Nyanza region arising from Nandi hills while Tana River floods due to poor land use practices in Mt. Kenya and Aberdares catchments areas (NEMA, 2007). These flooding events have caused severe socio-economic impacts including loss of life and livestock, damage to infrastructure, poor crop yield, and famine due to food shortage, human migrations and displacements, which are affecting livelihoods and posting negative economic performance.

Kenya's inland coastal and marine ecosystems which are a repository of rich natural resources that support local and national economies which include fisheries, terrestrial forests, mangroves, sea grass beds, and coral reefs are threatened by resource overexploitation, transformation and degradation of habitat, pollution, and now, climate change (NCCRS, 2010). Further the coastal zone is threatened by sea rise leading to human displacement and loss of property. The illustrated negative impacts of climate change in different sectors and ecosystems constrain the national budget to respond to food insecurity, settling displaced persons and climate change related disasters at expense of development expenditure that supports capital investments for economic growth and sustainability.

To respond to the above effects of climate change, Kenya has designed this programme to cover the following sectors; water resources, agriculture, livestock, agro forestry, coastal and mangrove ecosystems, energy and infrastructure, human health and gender in relation to

climate change. The programme proposes to develop and implement integrated adaptive mechanisms to increase community livelihood resilience to climate change as follows:

i. Adoption of drought tolerant crops, and promotion of value chain approaches
ii. Development of water harvesting assets/structures
iii. Promotion of forestry and agro forestry ecosystem-based strategies to enhance food security and resilience to climate change as well as water and soil conservation.
iv. Promotion of pastoral ecosystem-based adaptations that will increase resilience through use of pasture conservation and emergency fodder bank, storage and supply of water to improve social life of the people in the district.
v. Rehabilitation of mangrove ecosystem in the coastal area
vi. Promotion of institutional capacity, knowledge management and raising awareness on ecosystem based adaptations.

Relevant Climate Change Scenarios in Kenya

The Kenya Meteorological Department (KMD) has provided evidence of the country's temperature and rainfall changes over the last fifty years. From these results, the minimum and maximum temperatures have been increasing since 1960s, depicting warming of the earth (Table 1: Maximum and Minimum Temperature Trends Since 1960)[1]. The results also indicate an increase in intensity and frequency of rainfall over the coastal strip and the northern parts of the country in the months of September, October, November, December, January and February[2] (Ogutu, 2007). In addition, an increasing trend in the rise of temperature has been reported in the Mara Serengeti ecosystem from 1907 to 1998 (*Figure 1: Rising monthly means of temperatures in Kenya from 1907 to 1998 in the Mara-Serengeti ecosystem*).

[1] Kenya's National Climate Change Response Strategy 2010
[2] Ibid

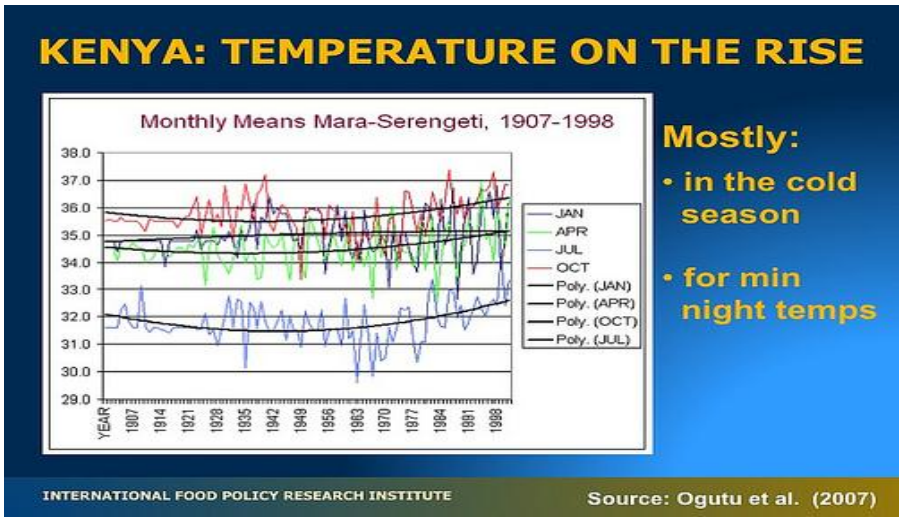


Figure 1: Rising monthly means of temperatures in Kenya from 1907 to 1998 in the Mara-Serengeti ecosystem

Average annual temperatures in Kenya have already increased by 1.0°C over the last 50 years and prolonged droughts have been experienced every year since the millennium. Projections from leading climate scenarios vary between an anticipated annual rises in temperature of an additional 1-5.0°C during the next 100 years. Existing scenarios suggest that by 2100 seasonal rainfall periods are likely to remain the same (i.e. both short and long seasons) but rainy seasons are likely to consist of greater volumes of rain, particularly in the short season (esp. October to December). Global climate models predict an increase of 40 per cent rainfall in northern Kenya, while regional models indicate greater rainfall may be experienced in western areas. Drought frequency is likely to remain similar but rising temperatures will make these more severe. Models diverge greatly over likely impacts upon El Niño events, which are closely tied to periods of extreme drought. Studies have shown that over 70% of the natural disasters in Kenya are related to extreme weather and climate. For instance, there have been recurrent droughts experienced in the years 2000, 2001, 2009, 2010, 2011 and 2012 worsening food security. Additionally, the frequency of floods and mudslides has also increased being experienced in the years 1997, 1998, 2006, 2007 and 2012.

Table 1: Maximum and Minimum Temperature Trends Since 1960

Minimum temperature trend		
Region	**Trend**	**Magnitude (°C)**
Western	Increase	0.8-2.9
Northern & North-eastern	Increase	0.7-1.8

Central	Increase	0.8-2.0
South Eastern districts	Increase	0.7-1.0
Coastal strip	Decrease	0.3-1.0
Maximum temperature trend		
Western	Increase	0.5-2.1
Northern & North-eastern	Increase	0.1-1.3
Central	Increase	0.1-0.7
South Eastern districts	Increase	0.2-0.6
Coastal strip	Increase	0.2-2.0

Results of another study by the Stockholm Environment Institute on the Economics of climate change in Kenya also revealed that the future economic costs of the impacts of climate change on market and non-market sectors may contribute about 3% of GDP per year by 2030 and about 5% of GDP per year by 2050 (Stockholm Environment Institute 2009).

An outline of the Economic Social, Development and Environmental context in which the project/programme would operate

2.1.1 Agriculture

Agriculture is the most affected by climate variability in Kenya. In the recent past Kenya has experienced successive seasons of crop failure, increasing food insecurity in the country. The famine cycles have reduced from 20 years (1964-1984), to 12 years (1984-1996), to 2 years (2004-2006) and to yearly 2007/2008/2009, necessitating the Government's distribution of 528,341.77 metric tonnes (MT) of assorted foodstuffs worth $.24 million over the last five years to feed a population of between 3.5 million and 4.5 million people annually. Past studies have shown that there is a relationship between GDP growth and drought index as shown in Figure 2 below.

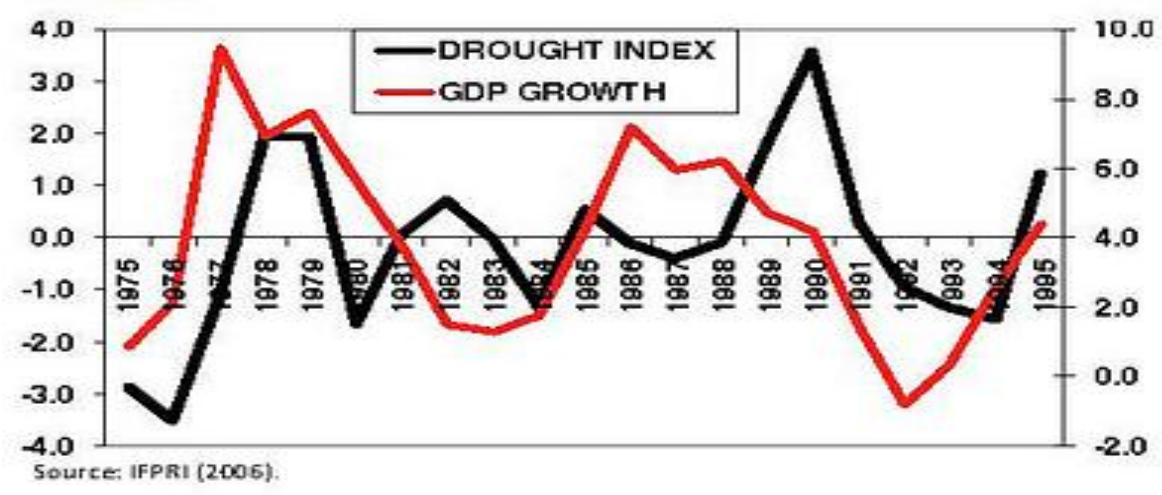


Figure 2: Relationship between drought events and GDP growth in Kenya over two decades (figure by IFPRI 2006).

This scenario of food deficits is experienced in all areas selected for programme implementation (Gwassi in Homabay, LowerYatta in Kitui County, Volta in Machakos County, Upper Tana catchment, Garrisa in Garissa County, Walda in Marsabit County, Loitoktok and Nasaru Kajiado County, Thome in Laikipia County, Nyando in Kisumu County and the Coastal Region). About80% of the population in these areas mainly depends on agriculture as the leading contributor to household income, food security and employment alongside fishing. However, thecommunities are vulnerable as a result of unpredictable weather conditions that lead to crop failure, hence livelihood insecurity. Drought is a frequent phenomenon occurring after every 5 years, thus impeding agricultural investments. These demands for appropriate interventions to support rural poor in improving food security and livelihoods. The need to promote drought tolerant crops, alternative and diversification of livelihoods, small scale irrigation agriculture and access to market among others to improve food security is therefore urgent and pressing.

2.1.2 Livestock, Rangelands and Wildlife Resources

Pastoralism is one of the major sources of livelihood for communities living in Arid and Semi-arid Lands (ASALs) of the country. This system has experienced the brunt of climate change manifested in the form of frequent, intense and long lasting droughts. The 2006 to 2009 droughts are testament to the devastation that climate change could cause to the livestock sector. In 2009, pastoralists lost more than half of their herds due to drought. As a

result, about 1.5 million people in the ASALs were dependent on relief food. In addition, outbreaks of diseases like Rift Valley Fever (RVF) and a myriad of others (Wildlife Conservation Society, 2008), have been linked to climate change. This has a great toll on livestock production as the industry loses local and export market. Kenya has been battling with a ban on the export of meat to the European Union (EU) market until 2010 for its failure to control RVF and foot and mouth disease, and this has led to loss of income. With estimated 10 million pastoralists and agro-pastoralist living in the rangelands, these lands are known to support approximately 34% of the country's population.

Rangelands form the largest habitat for wildlife and about 75% of the country's wildlife is found in these areas. This makes the country a key tourist attractions destination. Through tourism, wildlife is one of the country's major foreign exchange earners. However, the capacity for these lands to sustain human and wildlife habitation is gradually declining. This is due to extreme weather events such as intense and prolonged droughts and severe flooding, all associated with climate change. The majority of pastoralists are poor and their practice is weather dependent, therefore their adaptive capacity is low making them highly vulnerable to climate change. This is evident in Kajiado, Tana River, Garrisa, Marsabit, Wajir Counties among others.

2.1.3 Forestry and Agro forestry

Forests not only serve as water catchment resources and carbon sinks, but also provide ton-timber products to an estimated 80% of about 1 million of households living within forest boundaries (Ministry of Energy, 2002). However, the country's forest cover has declined over the years to as low as less than 4% cover falling way below the global recommended cover of 10%. The distribution of forests in Kenya is determined by rainfall, one of the factors most affected by climate change; thus resulting in reduced biodiversity and capacity to deliver important forest goods and services. Climate change has also affected the growth, composition and regeneration capacity of forests due to attacks by invasive species.

The projected rise in temperatures and long periods of drought has led to more frequent and more intense fires. Forest fires have in the recent past affected Kenya's major forests including the Mt. Kenya Forest. Indeed, Kenya has, over the past 20 years, lost more than 5,700 ha of forests per year due to forest fires, wreaking phenomenal economic damage. The programme activities will include agro forestry, tree nurseries, rehabilitation of degraded

areas by planting trees and improving production capacity of tree growers among others. This will improve resilience of small holder farmers to climate change resulting to better socio-economic activities and environmental management.

2.1.4 Coastal & Marine Ecosystems

The Kenyan coastline is characterized by a rich diversity of flora and fauna, including fish, coral reefs and mangrove forests. However, rise in atmospheric temperature has resulted in melting of glaciers and polar ice with consequence on sea levels and temperatures leading to the deterioration of coastal biodiversity. A study report by UNEP (2002) revealed that 59% of the world's destroyed coral reefs were located in the Indian Ocean, and these included coral reefs in the Kenyan coast (CORDIO, 2008). In 1997/8 and 2006, massive sedimentation due to erosion of erogenous sediments following extremely heavy rainfall caused mangrove dieback in many areas along Kenyan coast (CORDIO, 2008). This trend is likely to jeopardize the livelihoods of local people depending on the mangroves especially for fisheries, wood products and coastal protection. Temperature changes and further sea level rise will accelerate these trends. This makes Kenyan coast to be one of the most vulnerable to sea level rise in the world, with the most vulnerable aspects being developments on low-lying areas including agriculture, infrastructure and tourism. Coast Development Authority together with its partners will implement various activities along the coastal region in order to enhance socio-economic development and environmental management while addressing the effects of sea level rise and shoreline changes. Some of the adaptation mechanisms that will be incorporated include; rehabilitation of the mangroves ecosystems, coral reef rehabilitation and protection, shoreline stabilization and erosion and accretion control.

Kenya has an Integrated Coastal Zone Management (ICZM) action plan as well as a Shoreline Management Strategy in place to ensure synergy among the various stakeholders in the management of coastal and marine resources and also to provide environmental baseline, a legal and institutional framework as well as policy recommendations that guide shoreline management. The Programme activities along coastal zone are in line with both the action plan and the Shoreline Management Strategy.

2.1.5 Tourism

Tourism has been growing over the years with the number of visitors increasing from 1.1 million in 2003 to 2.4 million in 2011. Wildlife both in national parks and game reserves

depend on either natural rivers feeding the national parks or manmade wells and dams for its survival. However, many of these rivers have reduced in water volume while others have completely dried-up.

However, there is an increasing number of deaths of wildlife due to prolonged and recurrent droughts, human encroachment, inadequate water and forage. For instance Kenya Wildlife Service (KWS) reported the death of 28 elephants in 2008, 37 in 2009 and 43 in 2011 with increasing trends in later years. Lately, the reduction in the volume of the Mara River, largely due to the destruction of the Mau catchment, has affected the spectacular migration of hundreds of wildebeests between the Serengeti National Park in Tanzania and the Maasai Mara National Reserve in Kenya across the Mara River described as the eighth wonder of the world. The declining water volume in Mara River is compromising the tourism industry in the country. Human-wildlife conflicts have been experienced in some areas resulting not only from human encroachment into wildlife habitats but also due to wildlife straying into human settlement in pursuit of water and forage.

The Programme will initiate rehabilitation activities at the Coastal region and Kajiado areas. This will enhance direct gains of eco-tourism activities that will foster socio-economic development and proper environmental management.

2.1.6 Energy and Infrastructure

For Kenya to attain the goals of Vision 2030, used as the country blueprint, access to energy is vital. A comprehensive study completed in 2007 indicated that biomass is the main type of energy consumed by households in Kenya, accounting for 68% of total national primary energy supply. The biomass energy supply and demand imbalance is exerting considerable pressure on the remaining forest and vegetation stocks; thereby accelerating the processes of land degradation. In addition, production of biomass energy poses a threat to competing land use systems such as agriculture, forestry and human settlements among others (Ministry of Energy, 2011). Climate change has led to drying up and decline in productive biomass, thus affecting the supply of biomass fuel and wood.

Kenya's electricity generation largely depends on hydro sources, which account for over half of the total effective capacity (1332.2 MW) while geothermal sources account for 12.2%, with the remaining 29.7% predominantly from petroleum oil based thermal. Drying up of crucial rivers has had a great impact on electricity production within the country and in turn

affecting economic productivity. According to the millennium development goal seven (7) energy is a cross sectoral commodity and is literally required for the achievement of all the 8 Millenium Development Goals (MDG's).

Households take the lion share of all energy types, accounting for 73.1% while small scale industries take about 10% (Kamfor 2002). Energy provision to rural communities in the counties has proved to be a great challenge. The vast majority of these people are dependent on the traditional fuels (wood charcoal, crop residues, maize stalk, cobs and dung) often using primitive and inefficient technologies (open fires). For many this combination barely allows fulfilment of the basic needs of nutrition, warmth and light. It has been reported that an average family of six spend about USD 5 on paraffin for lighting only out of a total family's income of USD 71. This is about 8% of the household monthly income which is very high given that the family has to cater for food, shelter, education, health care among others.

There is a need to identify and promote strategies that efficiently use fuel source is important. The programme aims to promote adaptation mechanisms such as promotion of improved cooking stoves, improved charcoal kilns and fireless cookers among other technologies that supports socio-economic development and environmental management. The areas of focus include Loitoktok in Kajiado County, Lower Yatta in Kitui County and Gwasi in Homabay County.

2.1.7 Gender and Climate Change

Climate change affects gender differently across socio and economic activities that determine their livelihoods. Women are most affected by the effects of climate change and climate variability because of their roles in the society especially fire wood, water collection and food preparation. In addition women are highly susceptible to environmental disasters such as floods, mudslides and droughts (Enarson, 2002). During the post-disaster stage, women undertake more responsibilities of reconstruction of homesteads and managers in utilization of natural resources while men often emigrate in search for work. The Programme will takes into consideration various gender roles in various activities and by use of such information develop gender segregated adaptation mechanisms to combat adverse effects of climate change.

Scope of the Programme

The Programme will promote appropriate resilience mechanisms and adaptive capacities of selected communities in Kenya. The priority areas will include economic, social development and environmental management with key activities in; water resource management, agriculture, rangeland and wildlife management, livestock, forests and agro forestry, coastal and marine ecosystems, energy and infrastructure. The Programme areas cut across various counties as shown in Table 2: Location of Programme Areas

Table 2: Location of Programme Areas

No.	Programme Area	County	Executing Entity
1.	Loitoktok District	Kajiado	KEFRI
		Kajiado	NASARU
2.	Gwassi Division	Homa Bay	World Vision
3.	Thome Village	Laikipia	Caritas Nyeri
4.	Wajir South	Wajir	Horn Aid - Kenya
5.	Fafi and Lagdera	Garissa	Horn Aid - Kenya
		Tana River	TARDA
		Kitui	TARDA
		Makueni	TARDA
		Kiambu	TARDA
		Meru	TARDA
6.	Lower Yatta	Kitui	ADRA
		Machakos	KU
7.	Warda	Marsabit	Kenya Red Cross
8.	Nyando Wetlands	Kisumu	VIRED International
9.	Kinango, Vanga, Gazi Ijara	Kwale	CDA
		Kilifi	CDA
		TaitaTaveta	CDA
		Mombasa	CDA
		Lamu	CDA
		Tana River	CDA

		Garissa	CDA

The Programme areas are spread across the country among communities with diverse cultures who derive their livelihoods from the environment and are most vulnerable to the effects of climate change. The selected Programme areas have significant water deficit status that makes the inhabitants more vulnerable to climate change as described below:

a) Loitoktok District in Kajiado County

Loitokitok**is** located at the southern tip of Rift Valley province near the Kenyan border and Republic of Tanzania to the West, Taveta district to the South East, Kajiado Central to the North West and Kibwezi to the East. It is situated between longitudes 36º 5′ and 37º5′ east and between latitudes 1º0′ and 3 º0′ south. It covers an area approximated at 6,356. 3 km^2 and has six administrative divisions namely; Entonet, Imbirikani, Kimana, Central, Lenkism and Rombo Division. Of these divisions, Entonet, Lenkism, Oltiasika in Rombo and Imbirikani are arid and semi-arid which experiences frequent droughts and extremely minimal supply of water for livestock and human settlement that is sparsely populated.

Overall the County gets water from Tsavo River with its main tributaries Nolturesh, Magoine and Rombo, which flows from the eastern slopes of Mt. Kilimanjaro. This river is perennial in the upper parts.Ground water yields vary throughout the district from 0.01 to 35.77 cubic metres per hour. Average ground water is reported as good quality and is used for domestic, livestock and irrigation purposes. Thehigh yielding springs are found in the slopes of Mt. Kilimanjaro with an average yield of 20m^3 to 50m^3/hr. The county has 6 roof catchments systems which act as water harvesting facilities used to collect rain water which is then led through a gutter to a storage tank.Other sources of water for domestic and livestock are sub surface resources such as water pans, dams and shallow wells. The amount of surface water varies from area to area. In general the area is characterised with inadequatewater facilities, encroachment of water catchment areas, poor water resource mapping and poor coordination of water actors among others.

b) Gwassi Division

The district is located in Suba, Homa Bay County, and borders Lake Victoria to the North and West, Migori District's Karungu Division to the South; and Ruma National Park covering Central Division of Suba District and Ndhiwa Division of Homa Bay District to the

West. It covers a total area of 332.9 km^2. Gwassi Division is the largest and most populous in Suba District where Suba is one of the nine districts selected by the Ministry of Planning and National Development as a pilot district for implementation of district based initiatives to fast track the achievement of the Millennium Development Goals (MDGs).

The division has more than 70% of the people without access to clean drinking water. This has resulted in prevalence of waterborne diseases including diarrhoea affecting about 32% of children below 5 years. During the implementation of the Programme, World Vision in collaboration with various stakeholders will promote effective management and supply of water resources in order to increase the adaptive capacity of the selected communities. The key adaptation mechanisms will include increased use of greenhouses with drip irrigation technology, water and soil conservation strategies and use of drought tolerant crops.

c) Thome area

Thome area is located in Matanya sub-location, Tigithi location of TigithiDivision, Laikipia Central District, Laikipia County. This is on the foot of Mt. Kenya at the confluence of EwasoNgiro and the NaroMoru rivers. The village borders NaromoruRiver on the north-east and EwasoNgiroRiver on the south-west area of the Laikipia Plateau (1800 m asl).

The rainfall in Thome area lies between 700-800mm on average per year with some areas receiving less than 600mm. The low amounts of rainfall with varying patterns have led to continued decrease in river discharge, causing conflicts between upstream and downstream users. For instance, the NaroMoru River was perennial and a reliable source of water up to the early 1990s. However, in the past decade the river has repeatedly run dry over extended periods of time. The Programme activities to be undertaken by Caritas Nyeri and other participating partners in this area will include construction of water harvesting and supply infrastructure, drip irrigation, promotion of drought resistant crops and conservation of environment through agro forestry.

d) Wajir South, Fafi and Lagdera

Wajir South in Wajir County and Fafi and Lagdera in Garissa County comprise the selected Programme areas in North Eastern Kenya. The area is largely ASAL with a fragile ecosystem with erratic and unpredictable rainfall. The selected Programme areas have experienced decrease in rainfall intensity and coverage resulting in shortage of water, poor crop production and depletion of pastures leading to massive loss of livestock and livelihoods.

The arid conditions have worsened due to prolonged drought as a result of climate change. This has increased vulnerability of the communities.

The per capita water supply was estimated at 696 m^3 per year in 2000 and is projected to decline to 235 m^3 by 2020. Garissa and Wajir counties are hard hit by water scarcity. These areas experience perennial water shortage which becomes rampant during dry season. Boreholes are the main water sources in both counties although not enough to cover increased water needs especially during dry periods. In addition, water pans and shallow wells also serve as sources of water. However, given of their small sizes and limited numbers, these facilities often dry up at the onset of the dry season, forcing communities to migrate. This leads to disruption of livelihoods in the area.

Moreover, the boreholes are also unreliable as they experience frequent break downs due to this extensive use. As such, the boreholes require routine maintenance which is unaffordable to the local communities causing water scarcity. This has been the main cause of clan conflicts as they seek control over the water resources. The Programme activities to be implemented in these regions by Horn Aid Kenya and partners will include; construction of water harvesting and storages facilities, reclamation of rangelands, soil and water conservation, promotion of agro-forestry and tree planting. These efforts will enhance water availability thus increase resilience of the local communities to climate change.

e) Tana and Athi Rivers Basins

The Tana and Athi River BasinscoverMachakos, Tana River, Meru, Makueni, Kajiado, Kiambu and Kitui Counties. These areas experience frequent droughts and unpredictable rainfall, which have devastating effects on the economy and livelihoods. The failure of the 2010 and 2011 seasonal rains followed by the rainfall deficits in the 2012 season virtually halted crop production and alarmingly reduced the water table. This situation has exposed the population in South-eastern Kenya to extreme weather conditions and increased vulnerability of these communities. The TARDA and other collaborating partners will promote various adaptation mechanisms that will improve water availability to support agriculture, livestock and other domestic needs. The Programme activities will include construction of water dams, rehabilitation of degraded areas and promotion of agro-forestry among others.

f) Walda Area

Walda area is located in Marsabit County, Eastern Kenya region. The area experiences prolonged drought throughout the year. The Programme area lies80 kms south of Moyale which is largely ASAL.

This is located in Upper Eastern Kenya, which also experiences prolonged drought throughout the year. In this area Kenya Red Cross Society (KRCS) embarked on early recovery initiatives aimed at opening up to 250 acres of irrigation in Walda, a small relief food dependent village, 80 kms south of Moyale, as a disaster risk reduction strategy aimed at building community resilience and enhancing food security. Kenya Red Cross with local people will construct more boreholes, water pans and dams to supply water for domestic and irrigation to improve resilience and adaptive capacity to climate change of the rural poor. Modern farming methods which are climate SMART (pressure compensated drip irrigation) will be adopted and solar energy will be used to power the pumping equipment's , which will reduce fuel use and minimize any harmful emissions to the environment. The programme will also contribute to up scaling of already established systems where 60 acres of land has already been piloted and significant level of success demonstrated. Ultimately this will enhance rural development; increase economic activities, social development and environmental management.

g) Nyando Wetlands in Kisumu County

The Nyando catchment in the eastern sub-catchments of the Lake Victoria basin is located in the Lake Victoria South Catchment Area in Kenya. It covers an area of 3,600 km^2 and is situated within the Winam Gulf between longitudes 34°47"E and 35°44"E, and latitudes 0°07"N and 0°20"S within Kisumu County.TheNyando Wetlands cover an area of 3,600 km^2 within Kisumu County and is a zone of low rainfall experiencing semi-arid conditions (Jaetzold and Schmidt, 1982). The rainfall has been declining over the last three decades which has in turn reduced groundwater levels in Nyando River floodplains. There have also been land use changes as a result of intensive deforestation in the upper catchment of Nyando River basin. In particular, the area under wetlands has reduced by 79% between the years 1991 and 2006 (Swallow *et al*., 2009). This follows an earlier loss where 6000ha of wetland were converted to support rice production in the 1960s and 1970s (Swallow *et al*., 2007). The Victoria Institute for Research on Environment and Development (VIRED) International will promote the following adaptation initiatives that contribute to socio-economic development and environmental management to improve water resources;

construction of water retention points for irrigation, blockage drainage channels, stabilization of canals, retention ponds, river banks and lakeshores among others.

h) Coastal Region and Ijara:

The Coastal Region comprises of six counties namely; Kwale, TaitaTaveta, Mombasa, Kilifi, Tana River and Lamu. The region is located at 3°0'S 39°30'E. The coastal counties cover a total area of about 79,687 km² with a population of about 3,325,307 (GoK, 2009). The region's climate is tropical humid characterized by dry spells and unpredictable rainfall.

Supply of portable water has not kept pace with population growth and urban development in the coastal region. Consequently, majority of the population has resorted in abstraction of groundwater by sinking boreholes and shallow wells. Some tourism facilities have also lead in increased use of the available brackish groundwater for toilet needs. Over-extraction of groundwater and destruction of water catchments has exacerbated the water supply problem and threatened the ecosystem hydrological functions thus the need for strategies to address these issues. Coast Development Authority (CDA) in partnership with other stakeholders thus intends to promote alternative sources of freshwater in a bid to reduce pressure on groundwater sources and also to create public awareness on the importance of protecting natural water systems. Rainwater harvesting is one of the strategies that will be incorporated as an alternative source of freshwater. The Programme activities will thus entail the installation of roof catchments and construction of water pans to harvest rain water for agricultural production and domestic use. These activities will be undertaken in Kwale, TaitaTaveta, Mombasa, Kilifi, Tana River and Lamu Counties as well as Ijara in Garissa County.The areas are spatially illustrated in ***Figure 3: Programme Areas and the Executing Entities***below:

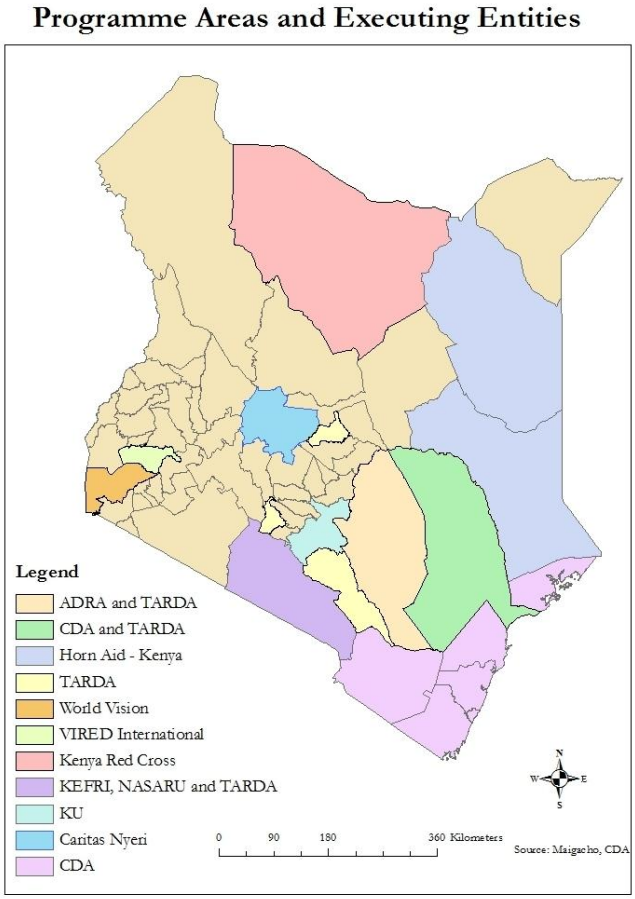


Figure 3: Programme Areas and the Executing Entities

PROGRAMME OBJECTIVES

The overall objective of the proposed programme is to enhance resilience and adaptive capacity to climate change for selected communities in various Counties in Kenya in order to increase food security and environmental management.

Specifically, the programme will be addressing the following objectives;

i) Enhancing Climate resilient agricultural, agro-forestry, pastoral and agro-pastoral production systems to improve food security in selected Counties in Kenya
ii) Improving climate resilient water management systems to enhance food security in selected Counties in Kenya
iii) Increasing resilience to the effects of rise in sea level and shoreline changes through Integrated Shoreline and Mangrove Ecosystem Management at Vanga and Gazi in the Coastal region of Kenya

iv) Disaster risk reduction among targeted vulnerable communities for climate related risks in Kenya

v) Strengthening institutional capacity, knowledge management, awareness raising and promotion of adaptation mechanisms to improve resilience on climate change to selected vulnerable communities in Kenya

PROGRAMME COMPONENTS AND FINANCING

Table 3: IDENTIFICATION OF PROGRAMME COMPONENTS, CONCRETE OUTPUTS, OUTCOMES AND FINANCIAL ALLOCATIONS

PROJECT/PROGRAMME COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
Enhancing Climate Change resilience for improved food security in selected Counties	Increased adoption of drought tolerant food and high value	Enhanced food security and improved livelihoods	**2,276,673.05**
	Increased food production through appropriate and efficient		
	Established value chain system for the introduced crops		
	Diversified alternative livelihood sources		
	Increased animal production through adoption of drought tolerant fodder		
	Enhanced land productivity through ecological land use systems , conservation strategies and management technologies		

Improving climate resilient water management systems to enhance food security in selected Counties	Established appropriate physical assets and infrastructure for water harvesting, storage and irrigation	Increased access to water and enhanced food security	**3,071,166.71**
Increase resilience to the effects of sea level rise and shoreline changes through Integrated Shoreline and Mangrove Ecosystem Management (ISMEM) in Kenyan coastal zone	Implemented Integrated Shoreline and Mangrove Ecosystem Management (ISMEM)	Secured human habitation and development	**609,818.00**
	Rehabilitated Mangrove Ecosystem		
	Rehabilitated and protected Coral Reefs		
	Stabilized shorelines		
	Controlled erosion and accretion		
	Inventory and GIS database for the shoreline and mangrove ecosystems		
Disaster risk reduction among vulnerable		Improved disaster	

communities	Enhanced use of alternative energy sources and energy saving technologies	preparedness and risk reduction	**427,826.99**
Strengthening capacity and knowledge management on climate change adaptation	Knowledge Management system established	Increased knowledge base on climate change adaptation for better decision making	**280,410.36**
	Research and knowledge development	Increased knowledge base on Climate Change adaptation	
6. Project/Programme Execution cost			**1,808,584.80**
7. Total Project/Programme Cost			**8,474,479.91**
8.**Execution Cost by Executing Entities - 9.5% of Total Project Cost (C)**			**805,075.59**

8. Project/programme Cycle Management Fee / National Implementing Entity (if applicable)	720,330.79
Amount of Financing Requested	**9,999,886.29**

PROJECTED CALENDAR

MILESTONES	**EXPECTED DATES**
Start of Project/Programme Implementation	Jan 2014
Mid-term Review	April 2015
Project/Programme Closing	Dec 2016

Terminal Evaluation	March 2017

Table 4:Programme Milestones and expected of delivery

PART II: PROGRAMME/PROJECT JUSTIFICATION

This programme has 5 main components namely:

1. Enhancing Climate Change resilience for improved food security in selected Counties
2. Establishing Climate Change resilient water management systems to enhance food security in selected Counties
3. Increase Climate Change resilience to the effects of sea level rise and shoreline changes through Integrated Shoreline and Mangrove Ecosystem Management (ISMEM) in Kenyan coastal zone
4. Disaster risk reduction and increasing preparedness among vulnerable communities
5. Strengthening capacity and knowledge management on climate change adaptation

2A.1 Component I: Enhancing Climate Change resilience for improved food security in selected Counties

This component has six concrete outputs whose adaptation activities across selected sites will contribute to increased resilience of local and vulnerable communities to climate change in Kenya. The specific activities designed in this programme will build human, natural, financial, physical, and social capital, through better leveraging and utilizing natural resource bases and economic opportunities.

Effects of climate change greatly impact on rural communities. Rural communities rely directly on climate-impacted natural resources for their livelihoods. These impacts are already occurring[3], and future projections for climate change indicate enormous potential disruption. Such substantial climatic change will further increase uncertainty and exacerbate weather-related disasters, drought, biodiversity loss, and land and water scarcity. Assessment reports indicate that approximately 60 per cent (15 of 24) of key ecosystem services are degraded and used unsustainably, with the natural resources critical to agricultural production and livelihood security for the world's poorest people in rapid decline.

[3] Intergovernmental Panel on Climate Change, Impacts, Adaptation and Vulnerability in Fourth Assessment Report: Climate Change 2007, eds. M. Parry et al. Contribution of Working Group II. Cambridge, UK: Cambridge University Press, 2007, http://www.ipccwg2.gov/publications/AR4/index.html.

The proponents of each project recognize that local knowledge, including that of women, on the management of natural assets is often quite robust. It is well documented that disempowering those who hold local knowledge may result in degradation of natural assets that undermine local livelihoods. In addition, women are often the holders and conveyors of key knowledge of local species, seeds and medicinal plants, and have a strong interest in management of water and marginal household land.

In the face of long-term climate and environmental challenges, the project proponents appreciate that today's knowledge and technologies do not adequately reach the most vulnerable communities. The programme will therefore, promote suitable farming practices and methods to improve both livestock and crop based production within households in the selected sites. Specifically, this programme will promote: drought tolerant and orphaned crops (DTC); irrigable agriculture through efficient water utilization such as open drip irrigation systems, , small holder irrigation infrastructure, diversion of run-off and rain water harvesting options; alternative livelihood sources such as fruit trees, high value seedlings, , fodder preservation/conservation techniques; efficient food utilizationthroughvalue chain approach such as marketing strategies, value addition and food preservation/storage, SACCOs and business plans, goat farming and improved cook stoves.

Significantly, these environmental protection initiatives will be mainstreamed to build community resilience in order to cope with the climatic stresses. Through this component, the programme will strengthen existing livelihoods through improved natural resource management (NRM) by implementing the adaptable activities outlined in each of the outputs detailed below.

***Output 1.1: Increased adoption of drought tolerant foodand high value crops and* Enhanced efficient utilization through value chain approach**

The agricultural sector is facing many challenges including land availability (only 20% of Kenya's total land area is considered arable), land fragmentation to small non-economical units which cannot support meaningful agriculture, migration of youth to urban areas in search of employment and reliance on erratic rainfall patterns. Climate change and variability has exacerbated these challenges rendering the agriculture sector more vulnerable thus heightened food insecurity in the country. Some of climate change impacts affecting agriculture include droughts, decline in rainfall patterns, increased crop pests and

diseases among others. The selected project sites have limited amount of arable land and are mainly characterized as arid and semi-arid areas (ASALs). In spite of these climatic conditions, their main sources of income and livelihood are from small patches of arable land and vast range lands. For instance, the livelihoods of the population from Gwasi division in Homabay County depend mainly on agriculture (up to 80%), which is a leading contributor to household income, food security and employment alongside fishing. Specifically, agriculture contributes to 51% of the household incomes in the Homabaycounty and provides employment to over 40% of the district's population. It sustains the county in terms of providing food and nutrition requirements. The potential for horticultural produce especially in the islands and along Lake Victoria is great. Fishing and small scale businesses also contribute in a lesser percentage to household income.

However, the community is made vulnerable as a result of unpredictable weather conditions that lead to crop failure, and hence food insecurity. The area experiences drought on average every five years, impeding agricultural investments, yet irrigation options are quite expensive. During a consultative meeting, the communityidentified key vulnerabilities in the area and major changes that have occurred over the past 30 years. Most notably, erratic and unreliable rainfall lead to floods and crop failure respectively,drought led to the drying of river beds , death of livestock and famine were identified as issues of concern. In some areas drought is quite severe resulting in loss of vegetation, frequent food shortages and insufficient water.

This increases vulnerability of people/farmers to climate change variability, hence less resilience. The programme intends to increase resilience to climate change by promoting crop diversification and innovations to cushion farmers from total losses due to mono cropping and unpredictable rainfall patterns in the area through the following adaptation activities:

i) Procure and distribute certified seeds of drought tolerant and orphaned/high value crops namely; sorghum, amaranthus, millet, green grams, cassava, cow peas, pigeon peas, water melons, pumpkins, butter nut to 60 farmer groups at Gwassi division, 90 farmers groups at Lower Yatta district, 120 farmer groups at Loitoktok district, 50 farmers groups at Nyando Wetlands, 30 farmer groups at Wajir, 20 farmer groups at

Garissa, 30 farmer groups in Waldaa and 15 women groups in Kajiado West district to reach a target of 15,000 farmers across the sites.

ii) Establish seed bulking centre of selected drought tolerant crops per 10 farmer groups to ensure sustainable supply and access of seeds to targeted farmers. The farmers who received seeds in the first season will thereafter donate at least 1 kg of seeds for distribution to a second target group of farmers. This will be monitored over time to ensure sustainability and adoption of promoted crops to increase food security.

iii) Establish demonstration fields for each selected drought tolerant crop per 10 farmer groups in order to improve awareness and promote drought tolerant/orphaned crops to farmers. These demonstration plots/fields will also be used as training sites to improve farmer's skills on growth and management of drought tolerant crops.

iv) Undertake at least three farmer field extensions in each group per growing season to increase extension services to the farmers to backstop them on technical issues such as land preparation and early warning systems before planting and during plant growth to guide planting and handling of crop harvest. \

v) Establish a value chain system for the introduced drought tolerant and high value crops

Output 1.2 Diversified alternative livelihood sources

The promotion of alternative sources of livelihood provides opportunities for farmers to spread climate related risks and increase resilience to climate change. For instance the integration of fruit tree farming, bee keeping and normal crop farming enhances the adaptive capacity of the farmers to shocks of climate change just in case there is crop failure. Some of the proposed adaptive activities in this programme aim to ensure consistency of cash flow/food flow in households to meet their daily demands.The diversification of Livelihoods proposed in the programme is resilient to climate change and appropriate in existing conditions and can address current challenges, while at the same time developing capacity to adapt to future changes). These strategies should will build on existing knowledge and capacities.In order to achieve impact and costeffectiveness of this output, the programme will concentrate on one intervention (***Activity 1 Procure and distribute improved assorted fruit trees seedlings (Mangoes, pawpaw, passion, avocadoes etc) that are drought tolerant to selected farmer groups a in programme selected areas***) and its market

linkage activity. The entire budget for this output will be on distribution of drought tolerant and improved fruit trees and creation of market linkages for the same.

Building Adaptive capacity of a community or an individual entails improving access to and use of resources/assets. Financial capital is one of the critical livelihood assets necessary to build resilience as it allows diversification of livelihoods. Crop and livestock value addition, increased market information and access, increased enterpreneual skills etc results in increased household financial assets thus increased resilience against climate change.

The success stories on some of these alternative sources of livelihood have been reported in the country. For instance in Lower Yatta district in Kitui County, mango fruit trees are drought resistant and have proved to grow well in the area. They are also preferred by the community. Supporting this community with grafted mango seedlings will improve the community'slivelihood security and act as a source of income through sale of fruits. Overall, this enables farmers to increase their income and hence improve their livelihood security and asset. The programme will therefore promote the following adaptive activities to increase resilience to climate change;

i) Procure and distribute improved assorted fruit trees seedlings (Mangoes, pawpaw, passion, avocadoes etc) that are drought tolerant to selected farmer groups in programme selected areas.
ii) Establish well equipped fruit tree nursery run by farmer groups in selected sites to supply and improve access of seedlings for planting.
iii) Train all target farmer groups on fruit tree production and various management techniques.

Output 1.3 **Increased food production through appropriate and efficient irrigation methods**

The selected sites experience prolonged droughts and erratic rainfall resulting in serious crop failures. This makes individuals in these areas more vulnerable to food insecurity, and hence, less resilient to climate change. To enhance the viability and success of food production, the programme will promote irrigation agriculture in selected areas based on the existing structures, previous irrigation activities and introducing new ones. For

instance, the 64 acre irrigation project undertaken by Kenya Red Cross Society at Walda Community in Marsabit showed that the Walda farmers experienced their very first bumper harvest and were able to harvest tomatoes, onions, butternut, capsicums, kales and spinach for their consumption leaving a large surplus for sale. Similarly small irrigation activities for horticultural crops at Loitokitok has also indicated positive results. The same trend has been observed in other areas where irrigation is practiced such as Yatta, Bura in Coast and Mwea Tebere in Eastern Kenya among others. Drip irrigation and use of greenhouse for agricultural farming has shown impressive results in food production (Plate and 4).

Plate: Improved tomato variety grown in the green house in Kenya

There is need to install and maintain an Automatic Weather station (AWS) to aid in monitoring the climate variability even in very remote areas. The AWS typically consist of a weather-proof enclosure containing the data logger, rechargeable battery, telemetry (optional) and the meteorological sensors with an attached solar panel or wind turbine and mounted upon a mast.

The AWAS system may report in near real time via the Argos System and the Global Telecommunications System, or save the data for later recovery. In the past, automatic weather stations were often placed where electricity and communication lines were available. Nowadays, the solar panel, wind turbine and mobile phone technology have made it possible to have wireless stations that are not connected to the electrical grid or telecommunications network. The AWS will serve several purposes, namely; measuring temperature, wind speed, wind direction, humidity, liquid-equivalent precipitation, depth

snow and solar radiation. This will be useful in enabling farmers to plan well for their planting cycles, type of crop variety to plant, better management of ground water and develop rain water harvesting tools among others. The programme will therefore achieve this component by establishing flood and drought adaptation measures, forest conservation, early warning system through river bank protection, afforestation, agro-forestry, alternative energy/energy and saving technologies among others.

The programme will therefore promote the following adaptation activities to boost food production in the targetted areas;

i) Procure, distribute and set up at least 3000 drip irrigation kits to selected groups of farmers at Loitoktok, Walda, Wajir, Garissa, Thome, Yatta, Tana and Athi Rivers Basins to support agricultural productivity.
ii) Procure and set up the water distribution equipment for existing dams constructed at Loitoktok district to support agricultural productivity.
iii) Irrigate 64 acres at Walda in Marsabit County
iv) Construct water harvesting trenches for farmer group across target sites.
v) Undertake capacity building for farmer groups on irrigation agriculture such as drip irrigation, construction and management of trenches to increase food productivity
vi) Construct, equip and maintain an Automatic Weather Station at selected programmme site(s)
vii) Collate weather data and link to Kenya Meteorogical Department to support production planning

Output 1.5 Increase animal productions through promotion of drought resistant fodder crops; pasture conservation and emergency fodder banks.

Livestock play an important role in most small scale farming systems in Kenya. They provide traction to plough fields, manure which maintains crop productivity, and nutritious food products for human consumption. Like agricultural crops, the production level of livestock largely depends on feeding resources available, environmental conditions, climatic factors like rainfall, temperature among others. The climatic changes such as unreliable rainfall and prolonged droughts will directly affect the livestock production. For example, in Loitoktok district like other target areas in this programme have reported loss of livestock due to lack of water and pasture. The low livestock productivity of livestock has been

reported due to inadequate water supply, pasture, presence and increased incidences of diseases, inaccessibility to credit facilities, low yielding livestock breeds, wildlife conflicts, inadequate marketing information, inadequate technical knowledge and skills, inadequate funds for extension, few extension officers, unpredictable weather conditions, high livestock mortality and crop failure**,** recurrent drought, poor drought management and preparedness, erratic climatic change and low/inadequate vegetation. These conditions make pastoralists and agro-pastoralists more vulnerable to climate variability hence less resilience to climate change.

Similar situation has been reported on wetlands regions where livestock graze in wetlands pastures feeding on grass and other herbaceous plants. During the wet season these lands provide adequate forage to maintain productive animals. However, during floods, such pastures are submerged and dry season the quantity and quality of forage greatly decreases and is generally low in nutritional value. Livestock sustained on such diets often lose weight and productivity.

To improve resilience to climate change for livestock farmers, there is a need for them to provide their animals with quality feeds to augment flood and dry season forages. One option is to supply expensive concentrates or supplemental feeding. For most small scale farmers this is not possible due to high costs and limited availability of supplements. A more practical option is for farmers to establish fodder banks and conservation. Fodder banks are plantings of high-quality fodder species such as improved fallows like *Calliandracalothyrsus, Sesbaniasesban* and other legumes/shrubs whose goal is to maintain healthy productive animals. This can be utilized all year, but designed to bridge the forage scarcity of annual dry seasons. The relatively deep roots of these woody perennials allow them to reach soil nutrients and moisture not available to grasses and herbaceous plants. This characteristic enables these plants to retain fresh foliage into the dry season. The ability of some legumes to fix atmospheric nitrogen makes them protein rich feeds.

Similarly, rice growing areas in Nyando Wetlands, Tana and Athi river basins are able to produce a large volume of straws that can be conserved as hay. Such hay can also enhance feed provision to livestock in times of floods and drought. The wetland ecosystem also habours macrophytes like *Pycreusnitidus* which are traditionally foraged by livestock. These plants normally grow luxuriously during the wet seasons and have a high regeneration capacity, thus can be exploited for hay.

The programme will therefore promote the following adaptive activities to increase resilience to climate change so as to improve livestock production.

i) Construct storage facility of fodder in each pastoral farmer group and promote its adoption across sites

ii) Establish mechanized fodder processing plant for farmer groups targeting pastoral and agro pastoral farmers in selected sites to enhance value addition on fodder and alternatives feed for animal during dry period (Figure 6).

Figure 6: A 20HP chopper grinder motorised chaff cutter and processed silage

Source: District Livestock Officer, Loitoktok district, Ministry of Livestock (2011)

iii) Procure and plant drought and climate resilient accessions/varieties of grass and forage to selected farmer groups across implementing sites to enhance sufficient animal feeds during dry spell periods.

iv) Establish green zones for pasture production through purchase of grass seeds among selected farmer groups especially on exhausted rangeland fields at Wajir and Garissa.

v) Establishment and rehabilitation of livestock watering points such as water trough to ensure adequate water supply for the livestock during the dry period

vi) Link farmer groups across implementing sites to special livestock insurance schemes and micro finance services that will provide them opportunity to spread and transfer climate change risks.

vii) Provide extension services per farmer group to enable them respond to livestock management and early warnings of bad weather

Output 1.6 **Enhanced land productivity through ecological land use systems, conservation strategies and management technologies**

The programme will engage each targeted farmer groups in strengthening their environmental resilience through activities that increase their capacity in natural resource management (NRM) through efficient and sustainable ecological land use, promotion of agro forestry and afforestation activities, soil conservation, landscape protection and farmland planning among others. In particular, Community-based natural resource management (CBNRM) will be promoted to build on the diversified livelihoods opportunities promoted under the programme.

Agro forestry options may provide a means for diversifying production systems and increasing the sustainability of smallholder farming systems. The most worrisome component of climate change from smallholder farmers point of view of is increased inter annual variability in rainfall and temperature. Thus tree-based systems have some obvious advantages for maintaining production during wetter and drier years. These include; the deep root systems of agro forestry species that are able to explore a larger soil volume for water and nutrients, which will help during droughts; increased soil porosity, reduced runoff and increased soil cover lead to increase water infiltration and retention in the soil profile which can reduce moisture stress during low rainfall years, tree-based systems have higher evapo-transpiration rates than row crops or pastures and can thus maintain aerated soil conditions by pumping excess water out of the soil profile more rapidly than other production systems. Finally, tree-based production systems often produce crops of higher value than row crops. Thus, diversifying the production system to include a significant tree component may buffer against income risks associated with climatic variability (Verchot et al., 2007).

In Kenya, various soil fertility management technologies have been developed for highland and dry land areas. Some of these technologies involve sole use of improved fallows such as *Crotolariagrahamiana, Calliandracalothyrsus, CajanusCajan, Sennasiamea, Sesbaniasesban*and*Tephrosiavogelii* among others), combination of organic and inorganic fertilizer among others. This combination will ensure that the most appropriate assemblage of species are planted in each adaptation intervention site and that there is achievement of maximum climate change adaptation benefits in the most cost-effective way. The following activities will be promoted across the implementing sites;

i) Introduce and upscale soil technologies that increase rain water infiltration in selected sites.
ii) Adoption of terracing across implementing sites to support soil conservation and crop productivity
iii) Adoption of improved fallow species with high nitrogen content reduce application of inorganic fertilizer in agricultural crops
iv) Establish herbal gardens to selected farmer groups so as enhance tree crop integration and landscape protection across implementing sites
v) Undertake enrichment planting in various forests and Establish tree nurseries, and woodlots

2A. 2 COMPONENT II: IMPROVING CLIMATE RESILIENT WATER MANAGEMENT SYSTEMS TO ENHANCE FOOD SECURITY IN SELECTED COUNTIES

Kenya is a water scarce country. This is compounded with impact of climate change where most parts of the country are experiencing prolonged drought, erratic rainfall, drying of wetlands, seasonal rivers and water springs among other water bodies. This affects various sectors such as agriculture & livestock that are key to Kenya's economy. The programme therefore focuses on adaptation activities that will improve water resource to support other sectors of Kenya's economy. The areas selected are mainly ASALs where land degradation is on continuous rise and frequently experience erratic rainfall patterns, frequent droughts, limited livelihood diversity, poor infrastructure and widespread poverty. The drought, coupled with natural aridity of the area has also resulted into rampant water shortage, widespread loss of local vegetation and severe pasture depletion. The situation is further aggravated by the massive uncontrolled cutting of trees for fuels and continuous expansion

of human settlements that has left tracts of land bare and exposed to severe soil, water and wind erosion leading to limited capacity for crop production.

The areas have no reliable permanent surface water sources (rivers) and largely rely on boreholes, traditional earth pans and shallow wells as the main sources of water. During the dry seasons, pastoralists rely entirely on boreholes for their water supplies as the earth pans and shallow wells dry up at the early onset of the dry season. The frequent failure of rains causes rampant water shortage resulting into a regular crop failure among the few subsistent farmers and high livestock mortality rates among the pastoralist due to lack of pasture and water.

The scarcity of water resources has been attributed to destruction of water catchments. Most springs are not fenced or protected. This has led to encroachment by both livestock and human leading to low yield and water pollution. Again, poor method used in irrigation (basin) leads to inadequate water for downstream users. Wetlands areas have been encroached and drained to create room for farming communities. This has greatly interfered with the natural ecosystem particularly denying wildlife and livestock their natural source of water and dry season grazing area. As a result wildlife human conflict is experienced and conflict between agricultural farmers and pastoralists is often reported in the area. Further, majority of women use most of their time looking for water in some parts of the district denying them time to engage in other productive work. In contrast areas that experience floods also pose challenges on access of clean water. This requires construction of water retention points to contain run-off such that the water can be used for irrigation under water efficiency technologies for crops and livestock production during the dry seasons.

Water support the proposed infrastructure will be derived from the existing rivers for TARDA projects mainly Tana River. This river floods during the rainy season, and it is during the flood seasons that most water will be harvested.

In Kajiado and other semi-arid areas under the project, water will be harvested from storm runoff and roof catchments. Most semi-arid areas of Kenya experience long and frequent droughts, which are usually followed by torrential floods, which in most cases flow into rivers without being put into meaningful use. The rainfall in ASAL areas under the project area ranges from 200-1000 mm per year. The flood water will be collected and directed to surface dams to be used for irrigated agriculture and livestock production. The water harvested from roof catchments will be put to domestic use. Rain water harvesting will save

women and children time spent in walking long distances to look for water and the time will be used in more useful economic and social purposes.

To harness water resources for domestic use and improving food security, the programme will be implementing adaptation activities across the selected sites with following output;

Output 2.1 Established appropriate physical assets and infrastructure for water harvesting, storage and irrigation

i) Construction of water pans to harness water harvesting to capacity of 352,000 m^3 in the selected sites as follows; 6 water pans at capacity of 17,000 m^3 each at Wajir and Garissa; 50 water pans at capacity of 3000 m^3 each at Kajiado; 6 water pans at capacity of 5000 m^3 each at Loitoktok district ; 2 water pans at capacity of 5000 m^3each at Thome in Laikipia and 12 water pans at Kwale, Kilifi and Taita-Taveta in Coast region

ii) Construction of 300mm pipeline approximately 9KM at Thome, Laikipia County

iii) Install equipment for constructed dams at selected sites to support agricultural production and domestic needs

iv) Construct t irrigation points to improve water harvesting that can support rice farming at Nyando Wetlands, Tana and Athi River basins

v) Install water tanks and gutters to promote roof water harvesting, shallow wells, rock catchments, underground water tanks and sub-surface dams for selected groups at implementing sites.

vi) Enhance river bank, canals, retention ponds and protection by planting grasses/fodder grass, bamboo, bananas, sugarcane, agroforestry trees and conservation of natural bushes.

vii) Establish and strengthen water users associations

viii) Fence off spring & water sources to protect them further degradation.

2A. 3 COMPONENT III: INCREASE RESILIENCE TO THE EFFECTS OF RISE IN SEA LEVEL AND SHORELINE CHANGES IN KENYAN COASTAL ZONE

Kenya's coastal and marine ecosystems are a rich repository of resources which support local and national economies and include; fisheries, coastal forests, mangrove forests, sea grass beds, coral reefs, river basins, deltas and estuaries, beaches and sand dunes as well as

natural and cultural heritage sites. However, these resources are threatened by overexploitation, transformation and degradation of habitats, pollution and climate change. Some of the interventions in these sectors include; developing county-wide maps depicting areas that will require shore protection (e.g. dykes, bulkheads, beach nourishment) and those areas to be left to adapt naturally, establishing a biodiversity monitoring network to identify species that will be affected by climate change and those that could be used as biological indicators, encouraging a coastal and watershed basin management approach linking land-use practices to marine and fisheries resource conservation, establishing networks of marine protected regions and including small enclosures comprising communities of species resilient to climate change impacts that serve as buffer zones as well as areas for seed regeneration.

Kenyan coral reefs are well distributed around most of the oceanic islands. They buffer the coastline against the impacts of waves and the full force of storms and cyclones. With all its benefits, the Kenyan coastline is extremely vulnerable to sea level rise. The most vulnerable aspects of the coastline are developments in low-lying areas which consist of agriculture, infrastructure and both tourist facilities and hotspots. The impact of climate change on Kenya's marine ecosystems include the likely submergence of approximately 17% of Mombasa or 4,600 ha of land area with a sea level rise of only 0.3 m. over the next century with the projected sea level rise between 0.17 and 0.59 meters, The Kenyan coastal development is exposed to considerable risks. Rising sea levels will lead to the inundation and displacement of coastal wetlands, the erosion of shorelines, increased salinity and the intrusion of saline water into coastal aquifers. Saltwater intrusion into ground water resources and salt wedge estuaries are phenomena that have been observed already in some places such as Lamu.

Rising sea levels associated with melting glaciers and polar ice, plus sea temperature increase (i.e. ocean waters absorbing the bulk of the heat from enhanced greenhouse effect) also threaten to cause deadly floods and high tides in low-lying coastal areas. Increasing sea temperature in the Indian Ocean could affect the entire Eastern African coast by increasing the frequency and intensity of El Niño-Southern Oscillation (ENSO) events (Klein et. al., 2002). Coral reef bleaching is a common stress response of corals to many of natural and anthropogenic disturbances. Beginning in the 1980s, the frequency and widespread distribution of reported coral reef bleaching events increased. This has been attributed to

global warming and consequent rising seawater temperatures (P.W. Glynn and L. D'Croz, 1990). Upholding the results of a recent study that revealed that 59% of the world's destroyed coral reefs were located in the Indian Ocean, 12 studies by KMFRI in conjunction with other organizations have confirmed coral bleaching and loss of Kenya's coral reefs. Further, predicted effects of climate change on mangroves include both more extreme droughts and flooding. In 1997, 1998 and 2006, massive sedimentation due to erosion of terrigenous sediments following extremely heavy rainfall caused mangrove dieback in many areas along the Kenyan coast. Mwache Creek, a peri-urban mangrove forest in Mombasa was the most affected, losing close to 500 ha of mangrove forest (KMFRI, 2008). This trend is likely to jeopardize the livelihoods of local people who depend on the mangroves particularly for fisheries, wood products and coastal protection. Increase in atmospheric temperature and further sea level rise will only accelerate these trends.

One of the adaptation measures that has been used to protect human settlements against rise in sea level is sea wall construction. However, sea walls normally alter the shoreline sceneries and also expose the adjacent exposed areas to increased erosion and accretion, other than altering the coastal ecosystem and destroying habitats for flora and fauna. Mangroves, however, provide a natural alternative for shoreline protection. Mangroves provide shoreline protection against erosion and other damages caused by storm and have also been confirmed to contribute towards carbon sequestration hence combating climate change. Mangroves also provide additional benefits such as provision of habitat and breeding grounds for fish and other fauna in addition to the important role in shoreline protection, waste assimilation, and carbon sequestration. Mangroves also provide many direct products–both timber and non-timber. Timber products include firewood, building poles and charcoal used in urban and rural areas.

Overall, mangroves provide a more environmentally sound means of shoreline protection with diverse economic and socio-cultural benefits. However, Vanga and Gazi mangrove ecosystems face various threats as highlighted by The Coast Development Authority Integrated Coast Region Master Plan (IWCRMP), 2010-2030. According to the IWCRMP, environmentally fragile areas in the coast region comprise of threatened ecosystems resulting from human settlement activities such as; overgrazing in Kinango and Samburu during very dry seasons, depletion of forest cover and species in the Kayas and the mangroves, threatened natural forests such Kayas – Kaya Diani, Kaya Kinondo, Kaya Chale,

illegal logging at Shimba Hills Forest Reserve as well as the natural mangroves at Gazi, Vanga, Faza and Tsunza areas. Moreover, there is also erosion and deposition at the coastline in addition to human activities such as fishing and human settlement, resulting in the destruction of coral reefs and seaweed beds.

The Integrated Shoreline and Mangrove Ecosystem Management (ISMEM) component thus aims at addressing the above, among other challenges. The people of Vanga and Gazi have over the years been victims of rise in sea level forcing the locals to move further inland until the waters subside. The unusual rise in sea level has over the years posed a threat to the locals of Vanga as well as their livestock and property. The main output of this component is therefore increased resilience and adaptive capacity of the people of Vanga and Gazi against the effects of sea level rise and shoreline changes resulting from climate change.

Output 3.1 Implemented Integrated Shoreline and Mangrove Ecosystem Management (ISMEM)

The main activities to be implemented in this output include the following;

i) Rehabilitation of Vanga and Gazi Mangrove Ecosystems
ii) Rehabilitation and protection of Coral Reefs
iii) Shoreline Stabilization
iv) Erosion and accretion control
v) Setting up of an Inventory and GIS Database for the shoreline and mangrove ecosystems

2A. 4 COMPONENT IV: DISASTER RISK REDUCTION AND INCREASING PREPAREDNESS AMONG VULNERABLE COMMUNITIES

The level preparedness for climate related risks such as floods, erosions, loss of livestock, prolonged drought and crop failures among others are weak in Kenya. This is further compounded with fragile ecosystem due to over exploitation of natural resources, poor management of agricultural farms and unsustainable utilization of resources from different ecosystems. For instance, increase of charcoal burning in ASALs especially the

targeted areas is causing heavy pressure on the vegetation and trees. This has resulted to serious ecological consequences such increased soil erosion, climate change, ozone depletion and biodiversity alternation and ecosystem imbalances. The Country needs to invest in early warning systems so as to prepare the communities that are more vulnerable to climate change. This will significantly reduce the cost of Government recurrent expenditure to respond to emergencies such floods, food relief due to prolonged drought and deaths as a result of landslides among others

This component has aspects on use of green and energy saving technology. The Adaptation reasoning behind this intervention is that energy saving technologies will reduce fuel wood extraction from the existing forests (more vegetation cover retained). Vegetation cover is a flood disaster reduction attribute.

Output 4.4 **Enhanced use of alternative energy sources and energy saving technologies**

According to the millennium development goal seven (7) energy is a cross sectoral commodity and is literally required for the achievement of all the 8 Millennium Development Goals (MDG's). The MDG further specifies that there has been great reliance on biomass energy, resulting in degradation in farms, rangelands and even in gazetted forests due to heavy scavenging of wood-fuel resulting to environmental degradation in terms of deforestation, soil erosion, silting of water bodies and general air pollution. Households take the lion share of all energy types, accounting for 73.1% while small scale industries take about 10% (Kenya's Energy Demand, Supply and, policy strategy for households, 2002, by Kamfor Company for Ministry of Energy). Energy provision to rural communities in the district has proved to be a great challenge. The vast majority of these people are dependent on the traditional fuels (wood charcoal, crop residues, maize stalk, cobs and dung) often using primitive and inefficient technologies (open fires). For many this combination barely allows fulfilment of the basic needs of nutrition, warmth and light, let alone the possibility of harnessing energy for productive uses. Further, charcoal burning by individuals and user groups around forested areas and woodlands has continued to increase forest destruction and loss of biodiversity increasing exposure and vulnerability of community members to climate variability. The technologies used in processing charcoal remain unchanged as in the case of three stones in households. These traditional

At least 80% of urban households in Kenya depend on charcoal as one of the primary sources of energy for cooking thus charcoal is an indispensable cooking energy in Kenya. Charcoal production in Kenya is legal and the government has enacted rules and regulations that govern charcoal production. However, current charcoal production systems are opportunistic and uncoordinated resulting in negative impacts including deforestation in water catchment areas/upstream, leading to flooding downstream.

Although charcoal production could be attributed to population growth, the action could largely be attributed to impacts of climate change. For instance, populations in ASALs resort to charcoal production as alternative livelihood option during lean times such as droughts and floods (which are climate change related hazards) when communities lose crops and livestock, which are their main source of livelihoods.
Together with Kenya Forest Service and KEFRI, the charcoal producers will be formed into charcoal producer associations (as informed by charcoal rules and regulations) where they will be trained on sustainable charcoal production techniques. Sustainable charcoal production includes planting of trees specifically for charcoal production and use of efficient charcoal production techniques.

technologies are known to consume more biomass hence deplete the forest resource making local people more risk to climate change.

To certain extent increased charcoal burning activities could be attributed to population growth but large part of this action is certainly driven by impact of climate change. For instance, huge population of pastoralist communities in North Kenya lose their livestock during the extended drought periods which recur in successively in recent times. Livestock is their main source of livelihoods. As a result, these populations are rendered poor and destitute and with minimal option of sustainable alternative livelihoods, they resort to increased gathering and selling of wood fuels (charcoal and firewood) from the local environments. This scenario illustrates that climate change is genuinely responsible for the increased charcoal burning and other local forests distraction practices.

The capacity of the community on sustainable production (and/or marketing) of energy saving cook stoves (such as kunimbili, Kenya Ceramic Jikos, fireless cookers etc) will be enhanced through training, where the activity will be treated as an income generating activity. This will ensure sustainability of the activity beyond project lifetime.

i) The following activities will be promoted in order to reduce risks to climate change; Assembly and distribution of energy saving technologies
ii) Assembly and distribution of solar panels -

2A. 5 COMPONENT V: STRENGTHENING CAPACITY AND KNOWLEDGE MANAGEMENT ON CLIMATE CHANGE ADAPTATION

This Component has been designed as a knowledge management hub where generation of best practices activities (and other relevant activities.) will be undertaken.

Series of workshops conducted in Kenya point out that climate change awareness is low countrywide. The crucial role of communication is to make citizens better-informed on climate change issues and actively participate in programmes to combat and adapt to it. Therefore this component seeks to promote appropriate models of communications such as print and electronic media, drama and community forums among that will serve to transmit and disseminate information on climate change adaptation across areas of programme implementation. Also capacity building through training will be instrumental in improving resilience to climate change. The programme will therefore implement the following activities in strengthening institutional capacity of the local people in each of discussed components as follows;

5.1Output Knowledge on climate change adaptation disseminated through print, electronic and art

i) Undertake radio programmes (local language and Kiswahili), barazas, drama and community forums to disseminate information on climate change
ii) Produce at least 1000 assorted knowledge products to disseminate information on adaptation to climate change
iii) Develop an interactive programme website to enhance feedback and information dissemination on climate change adaptation practices.
iv) Establish and operationalize the central programme repository system to improve storage, retrieval and sharing of information climate change adaptation practices.
v) Produce peer reviewed journal papers on adaptations measures to support knowledge generation and dissemination on enhancing resilience to climate change

vi) Building community and county government capacity in planning, coordination and implementation of climate change adaptation activities.

5.3 Trained programme committees on programme management and staff on programme implementation

The following activities will be implemented to build the capacity of the programme management committee and staff to facilitate effective delivery of all the outlined components

i) Develop training modules for programme implementation
ii) Train steering committee, project implementation committee, financial management and procurement committee members on sound management and administration of programme components
iii) Train all staff on implementation of the programme

PART 2B: A description of how the programme will provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations.

1.1 Introduction

Each of the programme components will significantly contribute to economic, social and environmental development of selected vulnerable communities. The interventions identified for implementation will improve adaptive capacity of the most vulnerable community members which will result in both environmental and economic gains. Through these economic gains, the programme will also deliver significant social benefits.

1.2 Environmental

This programme will have several environmental benefits, including contribution to climate change mitigation and biodiversity conservation. This programme aims to increase availability of trees for planting through community owned nurseries, establish green zones

and invest in reforestation. A need for cooking fuel is a major cause of mass tree felling to produce firewood and charcoal. One major component of the programme is tree planting envisaged to reduce tree felling and forest destruction as source of timber and fuel wood. This is in addition to introduction of energy saving stoves replacing traditional wood fire stoves that are extremely energy intensive. Beyond reducing tree felling, the energy saving stoves will also reduce emission of harmful gases associated with climate change and poor household health. It is estimated that 200 energy-efficient stoves will reduce emissions by 200-250 tonnes of CO2 per year as, compared to open fires. Besides, the trees will improve microclimate of the area as well as recycle nutrients through litter fall, leading to natural resource sustainability. Especially, leguminous trees used in agroforestry farming will improve soil fertility by fixing nitrogen.

About three quarters of the population in Kenya are engaged in agriculture. Yet, this industry is threatened by land degradation identified as a major environmental problem in 1935 through increasing soil erosion and runoff. In addition to trees that reduce soil and water erosion and runoff, the programme will train communities and implement soil and water conservation technologies (e,g. Zypits, and terraces) aimed at utilizing natural resources in a sustainable way. The control of soil erosion, use of organic fertilizer and other soil fertility management will improve the environment as this minimizes use of inorganic fertilizers which contributes emission of greenhouse gases (GHG). Another activity that will address environmental degradation is river banks protection that will be done through planting of grass and agro forestry tree species. Similarly, construction of water pans will create local communities capacity on conservation and sustainable use of limited water resource in line with Kenyan Vision 2030, Millennium Development Goals No. 7 (MDG 7) – Ensuring Environmental Sustainability, and also in line with the National Climate Change Response Strategy.

Overally the programme activities in selected sites such as tree planting, control of soil erosion, restoration of degraded lands, use of agro forestry practices, distribution of cooking stoves, protection of river banks and use organic fertilizer among others will reduce the environmental degradation by 10% and increase biodiversity conservation by 5% against baseline indicator.

1.3 Economic Benefits

The outputs from each of the programme components will significantly contribute to economic, social and environmental benefits to selected vulnerable communities in different ways. The interventions identified for implementation to improve adaptive capacity of most vulnerable community members and most disadvantaged groups such as women would result to huge economic gains. In particular, the activities outlined in each output of the component on enhancing climate resilience agricultural, agro-forestry, pastoral and agro-pastoral production systems to improve food security among selected most vulnerable communities will benefit them as follows: The programme will lead to increased agriculture and livestock production and move vulnerable communities beyond subsistence farming to selling excess crops and stock for income. For example in 2012, the data from the Ministry of Agriculture (MoA) showed that of the total production targeted from various crops in Oloitoktok District in Kajiado County, it was only sorghum, sun flower and pigeon pea that significantly surpassed the target yield by 240%, 171% and 153%, respectively as compared to maize, beans and Irish potatoes that achieved 91%, 32% and 25% of the target yields in that order. The surplus provides an opportunity for the market resulting to improved income in the households. Also the up scaling of Walda Project in Marsabit County on agricultural irrigation where farmers got bumper harvest will increase agricultural production per unit area leaving surplus for sale and reducing the demand for opening more land. Water use efficiency will reduce coast of production and use of local labour and local materials like farm yard manure (FYM) in place for inorganic fertilizers will eventually result to economic gains for the farmers. . In the irrigation system, renewable energy through use of solar will be utilised and this will not only reduce the use of diesel, which is known for GHG emissions, and other environmental hazards related to spills oil based waste disposals but cost of maintaining diesel pumps is significantly high. The project will

be economically viable at the local context with farmers not being bothered to cut down their returns to meet fuel costs. Similar trend of agricultural and livestock production is expected in selected areas of Coast, North Eastern, Nyanza, Tana and Athi River basins that will yield surplus of the markets.

This programme will also aim at building on impressive gains from agricultural and livestock production by organising the farmers into sustainable marketing and credit cooperatives known as Cooperative SACCOs. This is because the livelihoods of smallholder farmers are often constrained by poor access to markets and limited entrepreneurial skills which skills, which hinders the economic development hence limiting the economic base of the most vulnerable communities. The business cooperative approach has proven to be the strongest driver of income generation. By increasing the scale of their combined outputs, the cooperative model will maximize their bargaining power and gain better access to markets and credit. The cooperative will also benefit their members through skills training in agricultural techniques and business practices. It will also support a valuable sense of teamwork and togetherness that helps propel success. This will in turn provide support for improving storage facilities to minimize post-harvest losses, and enhancing not only access to the latest market-information but climate data as well, particularly through new information and innovative communication technologies.

Consequently, supplying the markets offers both higher income and improved business relations for farmers. However, accessing the markets requires significant upgrading in terms of product quality, quantities and business management which management, which this programme will equally address. Current evidence indicates that sustaining success in productivity-based agricultural growth critically depends on expansion of market opportunities and requires thinking beyond productivity to incorporate profitability and competitiveness. The gained money can be used to pay for other household needs such as school fees, healthcare and clothing. The other activities that are intended to be both adaptation and income generating activities such as apiculture (bee keeping and honey production), fish farming and tree nurseries will improve social welfare and economic standards of the most vulnerable groups.

The programme targets 425 farmer groups resulting to at least 15,000 farmers across selected sites as primary beneficiaries. Approximately 60% of these targeted farmers will be women, 10% youth and remaining men.

-The youth engagement on establishment and management of tree nurseries will create direct employment of about 900 young men and women.

-Assembling for energy cooking stoves, solar systems, assembling and installation of plant processing will directly provide gainful employment to about 2000 beneficiaries.

-The knowledge management pathways and access to agricultural produce are expected to reach over 100,000 indirect beneficiaries of the programme.

On overall the activities on enhancing climate resilience agricultural, agro-forestry, pastoral and agropastoral production systems will increase food security by 30% in selected sites targeting at least 10,000 households. The surplus from agricultural production, value addition, post-harvest management, sustainable animal management and linkage to markets will increase household income by at least 10% of the targeted households.

1.4 Social benefits

The interventions identified for implementation will improve the adaptive capacity of the most vulnerable community members and most disadvantaged groups. The social benefits from this program are manifold, as with greater economic power, families and communities will be better able to invest in their own healthcare and education for their children.

As well as being better equipped to pay school fees, when children have fewer responsibilities at home, they are able to attend school regularly, and study at home. Currently, many households rely on their children for the time-intensive activities that allow the family to sustain themselves, such as collection of firewood and water. With improved sources of household water, crops that require less water and reduced dependence on wood fuel, children will be free to engage in their education.

Within Kenyan society, women and girls are traditionally segregated in both their rights and their responsibilities. In agricultural communities, women and girls undertake an estimated 75% of household labour, yet have little control over family finances. Women are also given little opportunity to participate in community level decisions. The selection of beneficiaries aims to redress this imbalance by ensuring a minimum of 50% will be women. In several

activities, the beneficiaries will be exclusively women, for instance the KuniMbili/Fireless Stoves. By embracing the essential role women play in providing meals for the household, the stoves will empower women with improved technologies that require less time to collect firewood and a means of independent income generation.

Many activities will also assist to bring better health to program beneficiaries. The energy saving stoves will reduce the emission of harmful gases associated with climate change and poor household health. It is estimated that 200 energy-efficient stoves will reduce emissions by 200-250 tonnes of CO^2 per year as, compared to open fires. Enhanced nutrition will also be experience by beneficiaries, who will have more sufficient food supplies, and a greater diversity of foods available to them. With stronger health, beneficiaries will be able to engage more fully in livelihood activities, and for children, their educations.

To ensure equitable distribution, this program is being implemented in districts across Kenya, with a focus being placed on those communities already affected by unpredictable climate events, particularly drought and flooding. The programme will also seek out the most vulnerable in each of the target communities including female-headed households, youth, and people living with a disability or HIV/AIDs. Quantifiable indicators will include;

- The efficient use of water that supports crop and animal husbandry will reduce wastage by about 45%.
-The afforestation activities, establishment of woodlots, use of energy saving/improved jikos and fireless cookers will reduce women and girl child's time spent on fetching firewood by 30% against the baseline indicator. Time saved will be then be used for other productive activities such as agriculture for women and education for girl child.
-The promotion of environmental friendly programme activities such as improved cook stoves, fireless cookers, control of floods etc will reduce health hazards by about 10% of the selected sites.
-The purposeful selection of women participation in the programme activities and ensuring gender balance will increase by about30% against baseline of women and youth involvement in implementation and benefit sharing.

PART 2C: An Analysis of Cost-Effectiveness of the Proposed Programme

The grouping of the programme project sites into three zones namely Eastern, Central and the Lake region in implementing the various components presents in itself a cost effective approach in undertaking the adaptation activities. For instance integration of agriculture based intervention such as up scaling of drought tolerant crops, promoting forestry and livestock based adaptation to climate change will add to the synergistic benefits for the programme. Costs that would otherwise be associated with individual sectoral approach such as agriculture, agro-forestry and pastoral/agro-pastoral being implemented parallel will be saved. Equally, the same group of farmers will benefit from both interventions resulting to bigger programme impact. As a result, farmers will have a diversified income strategy, with both crops and livestock, and may use different areas and resources in the landscape for each.

Climate change adaptation will require ever more flexible and diversified livelihood systems; hence the programme projects are more likely to prove to be cost effective by investing in both rain fed and irrigated agriculture and pastoralism, especially considering the broad social benefits for greater income and household food security. The programme will help strengthen and diversify the options by which these socio-economic objectives can be achieved.

In spite of the fact that the programme targets more vulnerable groups/farmers that carries substance farming and their importance to food production, especially meat and dairy, food and horticultural crops the project will also targets larger farmers. This affords the project greater opportunities to commercialize the practices and technologies which will be introduced through the project. This two-track approach is more cost-effective (relative to outcomes and impacts, as well as by financial measures). In particular, the demonstration of the benefits of good farming practices of conservation agriculture and water saving irrigation will be cost effective.

Consequently, it is important to point out that all the farm level measures for resilient agricultural production which will be introduced and promoted are known to be inherently more cost-effective as they represent good international practice of conservation agriculture and known to require less input and maintenance costs. In addition to

inventorying such practices, the programme will facilitate the selection and adaption of suitable practices amongst this inventory on a range of types of farms. This diversification and localization strategy is the most likely to prove cost effective, especially in terms of the impacts felt after the project is finished. Furthermore, the approach to water saving irrigation practice which will be promoted by the project will involve a flexible approach to the farms that are already covered by the central irrigation network; and the efficiency of water application resulting from this dimension of the project will be highly cost effective in light of the current low efficiency of that system.

Also the direct benefits from the landscape-scale land rehabilitation and management approach include improved farm level production, reduced losses due to wind erosion and the monetary equivalent of the fodder harvested which would otherwise have to be purchased or land re-allocated away from other uses to grow fodder. Similarly, the use of organic farming based on indigenous knowledge of the community that utilizes materials that are locally available will prove more cost-effective and economical as compared to use of inorganic fertilizers where the latter will lead soil burn as compared to the former that will build up soil organic with long term effect. These benefits will be quantified during the baseline stage of the programme implementation.

PART 2D: Description on consistence of the programme with national or sub-national sustainable development strategies

This program of activities 'overarching reference document is the National Climate change Response Strategy (NCCRS). National Climate change Response Strategy is the main national document detailing how the Kenyan government plans to respond to climate change in the country. This program is also consistent with other the national and sub-national development strategies as follows:

i) Vision 2030

In 2007, Vision 2030was developed as a national blue-print for long-term industrial and economic development of Kenya by 2030. In order to overcome the persistent development challenges and bottlenecks, the country developed a long term National Development strategy called "Kenya Vision 2030" which envisions a globally competitive and prosperous nation with a high quality of life by 2030. The Vision is anchored on three key pillars; The

Economic and the Social Pillars aimed at achieving a just and cohesive society enjoying equitable social development in a clean and secure environment and Political pillar aimed at establishing an accountable democratic political system. The Economic and the Social Pillars aimed at achieving a just and cohesive society enjoying equitable social development in a clean and secure environment. This programme is therefore consistent with First Medium Term Plan (MTP) 2008-2012 and second MTP 2013-2017 of Vision 2030 as it will contribute to the economic and social pillars on the following areas: education and training, environment, water, gender, vulnerable groups and youth under social pillar and agriculture and livestock under economic pillar. In particular, the economic pillar on the agricultural sector classifies food crops into: cereals (maize, wheat, sorghum, rice, millet); pulses (beans, pigeon peas, cow peas, chick peas, green grams); and roots and tubers (Irish potatoes, sweet potatoes, cassava, arrow roots and yams). These are some of the flagship crops marked for promotion as drought resistance in selected sites.

The Political pillar aimed at establishing an accountable democratic political system. The program has also referenced the Poverty Reduction Strategy Paper (PRSP) and the Economic Recovery Strategy for Wealth and Employment Creation (ERS) in planning the project. Within this plan, agriculture, the environment and climate change adaptation are all highlighted as priorities.

Agricultural efficiency has been acted upon, through three new acts of parliament published in January 2013: *The Agriculture, Fish and Food Authority Act, 2012; The Crops Development Act 2012; and the Agricultural and livestock Research Act, 2012.*A twenty-year National Forestry Plan has also been developed, aimed at increasing the forest cover to 10%. At the same time according to FAO (2007), agricultural production and the biophysical, political and social systems that determine food security in Africa, Kenya inclusive are expected to be placed under considerable additional stress by climate change.

ii) National Climate Change Action Plan (NCCAP)

As part of *Kenya Vision 2030*, the National Climate Change Action Plan 3013-17 has been developed, to guide 'the transition of the country towards a low carbon climate resilient development pathway' (NCCAP, 2013). This programme shares many of the priorities of NCCAP 2013-17 including clean energy solutions, improved water resource management,

restoration of forests on degraded lands, and climate smart agriculture and agroforestry. The climate risk-based adaptation analysis conducted during the preparation of the National Climate Change Action Plan (NCCAP) built on the findings of the National Climate Change Response Strategy (NCCRS), and was commissioned to among others develop a set of potential and priority adaptation actions to address projected climate impacts per sector that will feed into Kenya's National Adaptation Plan (NAP).

The NCCRS identified the following adaptations options for agriculture which this programme will promote; horticulture and food security; support for community-based adaptation strategies, e.g. building or enhancing systems for conveying climate information to rural populations. The Government and development partners need to provide support to the KMD's Early Warning System to facilitate the timely dissemination of projected and downscaled weather information to farmers. This will enhance farmers' resilience to the impacts of climate change, e.g. through altering the timing of planting dates to adapt to changing conditions; enhanced financial and technical support to the Orphan Crops Programme so that indigenous and more drought tolerant food crops like cassava, millet, sorghum sweet potatoes can be re-introduced into the farming systems; promoting irrigated agriculture by developing irrigation schemes along river basins, construction of water basins and pans, but also reconfiguring irrigated production systems to use water more efficiently and to accommodate the use of marginal quality water; addressing land degradation by building soil and stone bunds, creating grass strips and contour leveling as well as incorporating trees or hedgerows.

These measures will increase rain-water infiltration, reduce run-off during floods, reduce soil erosion, and help trap sediments including dead plant matter; promoting conservation agriculture (CA), whose aim is to achieve sustainable and profitable agriculture and ultimately improve farmers' livelihoods through the application of the three CA principles: minimal soil disturbance, permanent soil cover and crop rotations, diversifying rural economies, e.g. through value addition to agricultural products and financial support for sericulture and apiculture with the aim of reducing reliance on climate-sensitive agricultural practices; developing an innovative Insurance Scheme – low premium micro-insurance policy – which together with low-interest loans will insure farmers against crop failure due to droughts, pests or floods; enhancing agricultural extension services to train farmers on

how to better cope with climate variability and change; strengthening integrated and environmental friendly pest management systems to cope with increased threats from insects, pathogens, and weeds, and developing proper food storage facilities to cater for surplus harvest while promoting traditional and modern food preservation methods.

Similarly the NCCRS also provides various adaptations in forestry, livestock, energy and water among other sectors. The programme project activities in each component were mainly derived from the NCCRS adaptation option which presents an opportunity for the government to implement the NCCRS at local level.

iii) Kenya Country Program framework for Ending Drought Emergencies (CP-EDE)

As per the Government of Kenya Adaptation Technical analysis report ,November 2012 by climate and development knowledge network, the Kenya Country Program framework for Ending Drought Emergencies (CP-EDE) is based on six Strategic Response Areas (SRAs) aligned to the Intergovernmental Authority for Development (IGAD) Common Architecture where some of them include the focus on livelihoods improvements to enable adaptation to increased climate variability over the short term and change over the medium term and strengthening the National Development Management Authority (NDMA) to ensure that it is responsible for the supervision and coordination of all drought management activities and coordination of all stakeholders implementing any drought management program in Kenya.

iv) Comprehensive Africa Agriculture Development Programme (CAADP)

The Comprehensive Africa Agriculture Development Programme (CAADP) has been endorsed by African Heads of State and Governments as a vision for the restoration of agricultural growth, food and nutrition security, and rural development in Africa. A specific goal of CAADP is to attain an average annual growth rate of 6 per cent in agriculture. To achieve this goal; CAADP aims to stimulate agriculture-led development that eliminates hunger and reduces poverty and food insecurity. (*Comprehensive African Agriculture Development Programmed Pillar III Framework for African Food Security*). The activities outlined in are in tandem with programme projects and activities.

v) Feed the Future (FTF) 2011-2015

Kenya's Feed the Future (FTF) 2011-2015 strategy builds upon the experience and results of previous programs, most notably the Initiative to End Hunger in Africa and the Global Food Security Response. Thus, in its formulation, the strategy incorporates best practices and lessons learned over several years. It is focused on, innovation seeking and aims to find what works and bring s it to scale. The private sector will be a partner in the USG's efforts from the beginning; as it develops new partnerships with Government of Kenya (GOK) institutions it will ensure that the private sector has a seat at the table. This strategy will follow the GOK's lead in aligning behind the country's agricultural sector development plan and will work with other development partners to harmonize procedures and encourage shared learning and resource leveraging. It will support analytical work to inform policy-makers and strengthen advocacy efforts. The main objective of the hunger Millennium Development Goal (MDG) is to reduce the population of the hungry by half by year 2015 where development policies based on sound science and scaling up of best practices are key (Achieving millennium development goals in Kenya, 2012).The goal of the new forest policy and forest Acts, 2005 is to enhance the contribution of the forest sector in the provisions of economic, social and environmental goods and services.

Actions to improve climate resilience in the environment sector will uphold the country's goals to preserve Kenya's rich ecosystems. Forest-based actions are recognised to hold the highest potential for acting on climate change because of the combined adaptation, mitigation and sustainable development co-benefits. Some of the Actions relevant to the programme activities include: Increasing tree cover to 10 per cent of total land area. This could slow the rapid loss of rainwater runoff thereby helping to prevent flooding and landslides, reduced erosion and sediment discharge into rivers and improved water availability; Reforesting and rehabilitating the main water towers and water catchment areas. This a priority for Kenya due to the livelihood and biodiversity improvements; Restoration of forests on degraded lands has a mitigation potential of over 30 MtCO2e a year in 2030, the largest potential identified in the low carbon analysis; Other climate change actions include reforestation and reducing emissions from deforestation and forest degradation (REDD), with mitigation potentials of 6.1 and 1.6 MtCO2e; Improving coastal zone management to rehabilitate and conserve vital coastal ecosystems through the implementation of the Integrated Coastal Zone Management Plan, the National Disaster

Risk Management Response Plan and National Environment Action Plan. Acting to improve water management include increased domestic water supply and improved sewage systems, enhanced irrigation and drainage to increase agricultural and livestock production, effective trans-boundary water resources management, and flood mitigation schemes. These actions reduce the impact of droughts and floods on crop yields and livelihoods, and more irrigation-based agriculture reduces the reliance of crop production on rainfall; improved waste management systems: with proper design can contribute to mitigation and adaptation. By capturing methane and landfill gas, there are opportunities to enhance energy security at the local level through the abundance of resources for electricity generation (National Climate Change Action Plan, 2012-2017)

The implementation of programme activities is in line with the government of Kenya policy and a key issue in the strategic growth of agriculture in Kenya. The Government of Kenya Policy documents; the Strategy for Revitalization of Agriculture (SRA) 2004-2014, its successor the Agricultural Sector Development Strategy (ASDS) 2009-2014 and the Kenya Vision 2030, recognize the agricultural sector as one of the major spring boards for the country's rapid growth to a newly industrializing "mid-income" economy by the year 2030; targeted to grow at an annual rate of 10% where harsh low rainfall is considered as one of the main factors that affect crop productivity negatively.

The government has also realized that improving agricultural productivity requires development of suitable agricultural technologies to harness fully the country's land, genetic and water resources. The overall goal of the agricultural sector is to achieve an average growth rate of 7 per cent per year over the next 5 years. Assuming a conducive external environment and support from enabling sectors and factors, the agricultural sector has set the following among other targets to be achieved by 2015: Reduced number of people living below absolute poverty lines to less than 25 per cent, to achieve the first MDG (Millennium Development Goal); Reduced food insecurity by 30 per cent to surpass the MDGs; Ensuring environmental sustainability and Increasing agricultural productivity and incomes, especially for small-holder farmers.

PART 2 E: Description on how the Programme meets relevant National Technical Standards

The programme will be assisting in fulfilling some national policies and strategies set by the Republic of Kenya as follows;

i) Compliance with environmental standards and codes

The programme will be subjected to Environmental Impact Assessment (EIA) specified in the second schedule of EMCA 1999. The Environment Management and Coordination Act no. 8 of 1999 EMCA guides tree planting on water catchment, boundary planting and tree species that are friendly to the environment among others.

The programme also aims to contribute in achievement of Kenya's Vision 2030 and other government regulations towards achieving 10% forest cover as well as improve household livelihoods.

ii) Supporting forests and ecosystems in Kenya

Protection of forests will assist in protecting wildlife, which is emphasized in the Wild Life Conservation and Management Act (Cap. 376), the Water Act of 2002 promotes catchment area and ecosystems management. Sessional paper No. 1 of 2007 on Forest Policy and Act and Agriculture Act (Cap 318) on Farm Forestry Rules 2009 stipulates a 10% forest cover on farms as a way of increasing low forest cover in the country as well as diversify subsistence production and income while contributing to soil and water conservation. Additionally, Sessional Paper No.1 of 2007 on Forest Policy emphasizes the need to support farmers on sound farm and forest management and marketing strategies.

iii) Supporting vision 2030 and poverty alleviation initiatives

Large population in the proposed project areas experiences chronic poverty problems as more than 80% of the population live below the poverty line of 1 USD per day. Pervasive low income attributed to massive unemployment, lack of alternative livelihoods opportunities and poor access to viable livestock markets is largely attributed to this high poverty. Consequently, socio-economic problems such as limited access, lack of sustainable livelihoods, chronic food insecurity, perennial malnutrition and water shortage often repeatedly manifesting into severe situation are quite rampant in the mentioned counties. The programme will contribute towards the national initiatives around the above.

iv) Targeting dry lands and drought prone areas

The selected areas have no reliable permanent surface water sources (rivers) and largely rely on boreholes, traditional earth pans and shallow wells as the main sources of water, all hindering sustainable development in the targeted areas.

The following laws, policies and strategies will be invoked:

- The Water Act (2002)
- The Agriculture Act (Cap 318)
- The Environment Management and Co-ordination Act, 1999
- The Land Planning Act (Cap. 303)
- The Environment Impact Assessment and Audit Regulations, 2003
- The Environment Management and Co-ordination (Wetlands, river banks, Lake Shores and Sea Shore Management) Regulations, 2006: Legal Notice No 19 of 2009
- National Policy for Disaster Management in Kenya (2009)
- National Policy for sustainable Development of ASALs of Kenya (2004)
- National Climate Change Response Strategy (2010)

v) Adherence to other Acts and standards

The programme activities will also adhere to the following Acts and standard

- Regulations, standards and requirements for the installation of irrigation channels on the farms and well drilling.
- Seeds and Plant Varieties Act which is now contained in the new law Agriculture, Livestock, Fisheries and Food Authority Bill 2012, which regulates transactions of seeds, including provision for the testing and certification of seeds, control importation of seeds, restricts importation of new varieties. This will be applicable especially when promoting drought tolerant and disease resistance crops and trees. This will also apply for vaccination and breeding programs.
- The science technology and Innovation Bill 2012 that controls innovations and patents. This may apply in this project when promoting climate change adaptations innovations such as value addition and crop variety among others

PART 2 F: Description of Duplication of Programme with other funding sources

The programmes components will as much as possible avoid any duplication of actions and funding sources. In the designing, a call for proposal was made nationwide, to ask key stakeholders in the sector to submit proposals. The proposal received were then analysed and screened by NIE secretariat, where the best 11 were selected against a rigorous criteria. During the selection, a profile of existing funded projects was done to ensure that no duplication occurs. During the selection, regional representation was also considered to ensure, the all climatic zones of the country is all represented (ASAL, Wetlands, and Coastal). This approach therefore not only avoided duplication of funding sources from actors but also ensured synergy of the components being implemented.

The proposed programme of activities are not funded elsewhere and will complement some of the existing projects addressing agriculture and food security as shown in Table 3 below. The programme will learn from the experiences of these projects for better management and implementation of proposed programme activities. Through financial support from government and development partners, the below climate change adaptation and mitigation projects have been developed in the country, with these institutions playing key roles in channelling financial, information, technological, leadership, and policy interventions into these projects, thus enabling different social groups adapt to climate change.
The implementation of the programme components by different executing entities will build synergies through the following:
-Joint consultative meetings among implementing entities with similar components.
-Joint stakeholders monitoring session feedbacks among implementing entities.
-Sharing experiences, lessons learnt best practices amongst various implementing entities.
-Creating linkages through education fora, exchange programmes for project primary beneficiaries with a view to promote and further educate communities' thereby promoting adoption of various programme components implementation.

Thematic synergies will also be achieved. To illustrate this, water harvested in the programme activities (component 2) will be used as input in the food security interventions

in component one. The implementers of the programme will create financial and technical synergies by way of hiring same experts and consultants where applicable. This will have a cost saving element and also cross breeding of experiences.

Adaptation project executed by KARI and funded by the World Bank will not duplicate or overlap with the programme activities. The Kenya Agricultural Productivity and Agribusiness Program (KAPAP) activities carried out by KARI at Kitui and Taita-Taveta are research based whose focus is on assessment and documentation of agricultural production practices and associated vulnerability impacts to climate. In this regard they do not overlap with proposed adaptation activities in selected sites but they will rather build synergies on the interventions to be undertaken. The data generated from these activities will inform best approaches to use in promoting drought crops and other adaptation strategies to enhance resilience of the local communities to climate change.

The activity on climate change and adaptation strategies at Fafi district in Northern Kenya are broad and research based expected to generate knowledge on approaches to promote resilience to climate change. In this respect, there is no overlap but rather building synergies to support effective implementation of the NIE adaptation activities in this region that will have direct impact on local communities. The activity on demonstration of adaptable drought tolerant maize varieties under suitable water harvesting technology in the dry lands will not result to duplication on selected sites but increase the diversification sources of livelihood and drought tolerant crops in NIE sites. This will also build synergies on selection of drought tolerant crops. For instance as KARI embarks on demonstration, the NIE program will focus on distribution of seeds if the crop is among the selected ones.

The others activities under KAPAP such as evaluation of the potential of water harvesting technologies in maize production in dry areas of Baringo county; identification of adaptable high yielding orange fleshed varieties of sweet potatoes for different agro-ecological zones in Kenya; options for intensification of Beans-maize cropping Systems under Conservation Agriculture Techniques; post-harvest handling technologies in wheat in the ASALs of Kenya; introduction and evaluation of mulberry trees for silkworm production as a commercial livelihood; Improved marketing and production of honey and other bee products in Marsabit, Laisamis and Samburu; and enterprise development for *Aloe* plant in

the arid and semi-arid areas of the larger Baringo and identification of drought resistance genes through genetic fingerprinting of native Napier grass (*pennisetumpurpureum*) are similar activities and not carried on selected sites under NIE program.

Table 5: On-going adaptation and mitigation projects in Kenya

No.	Project name	Project objective	Implemented by	Source of funds
1	National Agriculture and Livestock Extension Programme II (NALEP – SIDA II)	To promote agricultural and livestock production to contribute to socio-economic development through poverty alleviation, improved food security, increased household incomes, and improved environment	Ministry of Agriculture, Livestock and Fisheries (MoALF)	SIDA/GOK
2	Njaa Marufuku Kenya (NMK)	To contribute to reduction of poverty, hunger and food insecurity among poor and vulnerable communities in Kenya.	MoALF	GOK
3	National Accelerated Agriculture Input Access programme (NAAIAP)	To increase agricultural productivity and outputs at farm level for 2.5 million smallholder farmers with 1 hectare or less of land in 70 districts	MoALF and collaborators	WB/FAO/EU/ADB/GOK
4	Enhanced Food Security through Water Harvesting (EFStWH) Water Harvesting for Crop production	To enhance food security through water harvesting of rain water and development of water storage infrastructure for agricultural production in ASAL and medium potential areas	MoALF	GOK

No.	Project name	Project objective	Implemented by	Source of funds
5	Private Sector Development in Kenya (PSDA)	To enable small and medium agricultural production and processing entrepreneurs in high and medium potential areas to fully utilize their production, marketing and employment potential	MoALF	GIZ/GOK
6	Smallholder Horticulture Development Project (SHDP)	To support livelihood improvement of smallholder horticultural farmers in districts under the project	MoALF, Ministry of Environment, Water and Natural resources	ADB/GOK
7	Smallholder Horticulture Marketing Project (SHoMAP)	To support livelihood improvement of smallholder horticulture farmers in districts under the project	MoALF and collaborators	
9	Kenya Agricultural Production and Sustainable Land Management (KAPSLM)	To assist agriculture producers adopt environmentally sound land management practices without sacrificing their economic welfare in targeted operational areas.	MoALF	WB/GOK
10	Green Zones Development Support Project (GZDSP)	To reduce poverty and increase forest cover for water and biodiversity conservation	MoALF	ADB/GOK

No.	Project name	Project objective	Implemented by	Source of funds
11	FAO/SIDA	Strengthening capacity for climate change adaptation in sustainable land and water management in Kenya (Multi-partner collaborative project)	Kenya Agricultural Research Institute (KARI)	FAO/SIDA
12	EU GoK	ASAL Agricultural Productivity Research Project – support crop and livestock value chains (Multi-partner collaborative project)	KARI	EU GoK
13	CAPACITY BUILDING – various donors	***Trainings in postgraduate level PhD*** a) Climate modeling and downscaling of climatic data in Tana Delta; b) Climate policies and support to vulnerability in Ijara; c)Costs and benefits of adaptation options in Ijara and Trans Mara; d)Trade off analysis of adaptation and gaseous sequestration in Trans Mara; GIS applications in climate change in central Kenya; e) Modelling gaseous emissions for climate change mitigation in the coastal region; f) Economic of climate change	KARI	Various donors
14	GIZ-ICRISAT	Calesa (Climate Analogue Sites And East And Sothern Africa) *Adapting Agriculture To Climate Change: Developing*	KARI	GIZ-ICRISAT

No.	Project name	Project objective	Implemented by	Source of funds
		Promising Strategies Using Analogue Locations In Eastern And Southern Africa(Multi-Partner Collaborative Project)		
15	Rockefeller Foundation (KARI Climate	Participatory Assessment of Farmers Adaptive Capacity to Negative Climate Change Impacts on Water Resource in agricultural systems in most parts of Kenya Catchment ; Vulnerability assessment and coping strategies/capacities of farmers to climate change in Asal and semi-arid areas ; Assessment of climate change exposure and impact on biophysical and social systems of agro-pastoral systems of the semi-arid parts of eastern and North eastern of Kenya ; Farm level assessment of costs of adaptation to climate change; Assessment of variability trends, vulnerability, impacts and adaptation in the agricultural systems of the above Regions of Kenya to climate change ; Assessment of Vulnerability and Adaptation to Climate Change in the Context of Conflict and Natural Resource Degradation: A Case of Livestock Keepers' System of West Pokot ; An assessment of vulnerabilities and coping strategies to climate change to agricultural systems of coastal Kenya;	KARI	Rockefeller Foundation

No.	Project name	Project objective	Implemented by	Source of funds
		Maize Yield Forecasting for Adaptation to Climate Change in the semiarid areas of Kenya; Mainstreaming climate change in KARI research programs; Assessment of Vulnerability and Adaptation of pastoralists to climate change in Marsabit County;		
19	Kenya Agricultural Productivity and Agribusiness Program	1. Assessment and documentation of current agricultural production practices in selected areas of Taita Taveta and Kitui districts and their perceived vulnerability to impacts of climate variability and climate change; Climate change and adaptation strategies in Daadab and Fafi district of Northern Kenya; Documentation of policies that affect the agricultural value chains as affected by climate change; Demonstration of adaptable drought tolerant maize varieties under suitable water harvesting technology in the drylands; Evaluation of drought tolerant maize varieties for adaptation in coastal lowlands ASALs; Evaluation of the potential of water harvesting technologies in maize production in dry areas of Baringo county; Identification of adaptable high yielding orange fleshed varieties of sweet	KARI	WORLD BANK

No.	Project name	Project objective	Implemented by	Source of funds
		potatoes for different agro-ecological zones in Kenya; Options for intensification of Beans-maize cropping Systems under Conservation Agriculture Techniques; Post-harvest handling Technologies in wheat in the ASALs of Kenya; Introduction and evaluation of mulberry trees for silkworm production as a commercial livelihood; Evaluation of indigenous technical knowledge for the control of goat *helminthosis;* Improved marketing and production of honey and other bee products in Marsabit, Laisamis and Samburu; Assessment of the constraints and opportunities for sustainable utilization of *Doum* palm as alternative livelihood in northern Kenya; Enterprise development for *Aloe* plant in the arid and semi-arid areas of the larger Baringo; viable livelihood option in a high risk environment; Integrating use of climate data, seasonal weather forecasts and improved crop production techniques for enhanced adaptation to climate variability and in semi-arid eastern Kenya; Evaluation of MAS developed maize inbred lines for insects resistance and		

No.	Project name	Project objective	Implemented by	Source of funds
		drought tolerance; Development of a vaccine against Rift valley fever through expression of Rift valley Glyco-proteins in Transgenic Sweet potato; Identification of drought resistance genes through genetic fingerprinting of native Napier grass (*pennisetumpurpureum*); Farmers' perception of and attitude towards agriculture and its determinants in Kenya; Farm-level mitigation and adaptation strategies in North Rift Kenya; Conservation Agriculture as an option towards adaptation to climate change – Ex-post assessment of impacts of CASARD activities in Eastern, Rift Valley; and A social, economic and cultural study to understand the low level acceptability of sorghum as a food security crop in the famine among pastoral communities of the dry north rift: Lessons for food policy in Kenya's marginal areas.		

PART 2 G: Description of the Learning and Knowledge Management Component to Capture and Disseminate Lessons Learned.

i) Participatory implementation

Farmer field days, farmer trainings, tour and visits, and on farm demonstrations will be conducted in a participatory way.

ii) Participatory monitoring and evaluation:

Participatory monitoring and evaluation (M&E) focusing on outcomes and learning parameters to allow stakeholders share control over content, processes, and will be carried out This will help measure the effectiveness of the project, build ownership, and promote accountability at various levels.

iii) Dissemination of information through diverse media (Print and social media):

Project magazines outlining from inception to commissioning and detailing possible future outcomes will be used to disseminate information. Pamphlets explaining in very simple terms understandable by communities will be developed. Photos, dram, art, PowerPoint presentations, will be employed to enhance access to information and increase the possibilities for users to find it through search engines

iv) Face -to-Face interaction

Highly interactive meetings are important for establishing the trust that is needed for collaboration and communication. Meetings and workshops will be designed in a way to facilitate group discussions

v) Conferences

Scientific Paper presentations at international, regional and national level will be done during climate change conferences and in other relevant forums

vi) Publications

The results of this programme will be published in a book and also in peer reviewed journal

vii) Project reports and policy briefs

Project report to the implementing entity and the executing entity will be done on quarterly basis. Policy briefs will be done whenever a need whenever necessary.

viii) Documentation

Documentation of the entire process with a focus on best practices and lessons learnt will be done and information repositories established. Knowledge products shall be developed and distributed appropriately.

PART 2H: Description of the Consultative Process

Consultative strategy

To ensure involvement of all the stakeholders in the whole process of needs identification and proposal development of a "all inclusive strategy" was utilized as explained in the diagram Figure 4: Consultative framework below:

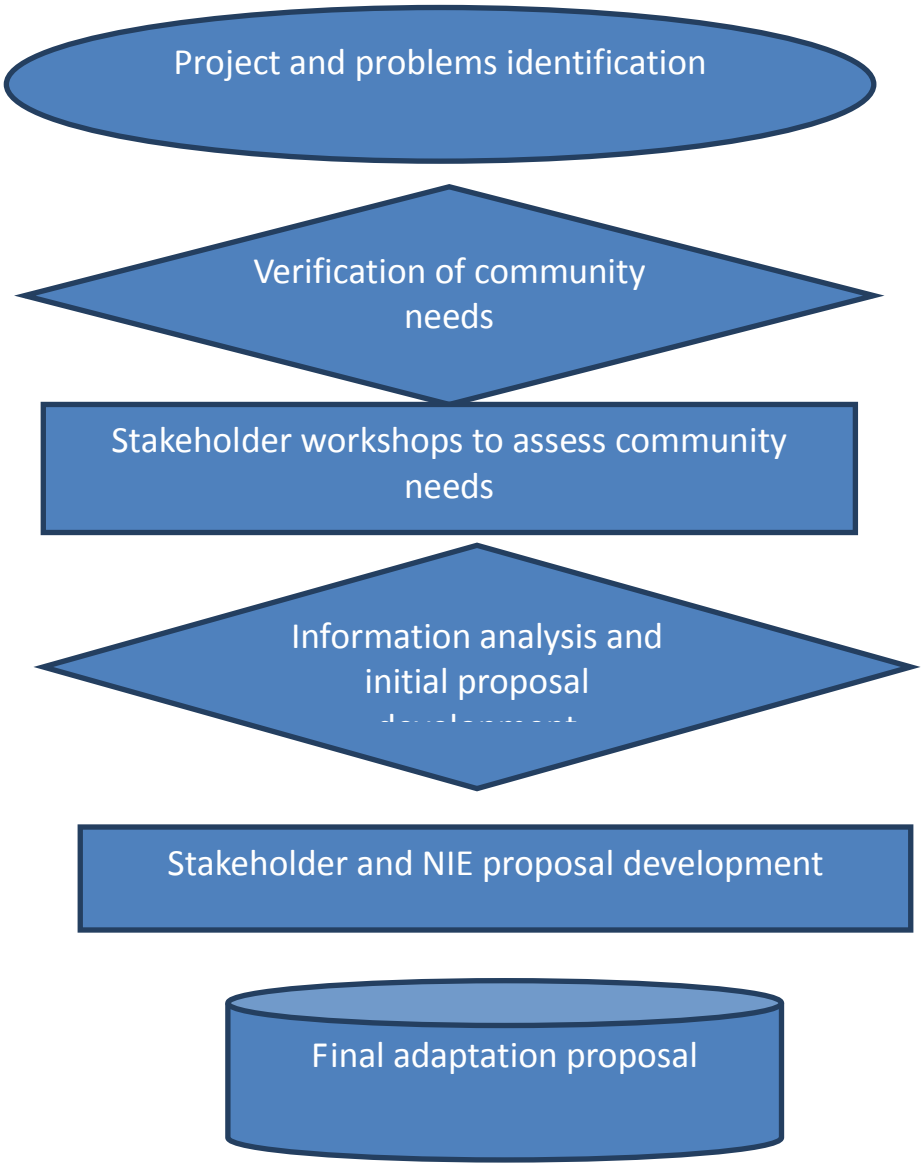


Figure 4: Consultative framework

National Environment Management Authority (NEMA) after its accreditation as an NIE made a public call for proposals in local daily paper (Standard Newspapers) which has a nationwide distribution. NEMA went further and invited relevant Climate Change Adaptation stakeholders to a capacity building meeting to sensitise them on modalities of developing proposals for submission to the Adaptation Fund Board. Various institutions and community based organization (CBOs)/Non-governmental organizations (NGOs) participated in this forum. Total of and 102 proposals were submitted to the NIE for consideration. A suitable screening criterion was developed by the NIE that led to selection of the most suitable proposals for Kenya.

Indigenous population;

This program area of coverage targets rural communities majority who are natives having historically existed on those lands for long time- (pre-colonial). The lands they occupy are ancestral and majority have own culture in general, speak own language and vary from one specific region of the country to another. These varying communities in the selected program areas are the indigenous people. The programme therefore ensured the following measures were put in place to safeguard the interest of the indigenous communities;

-During the proposal formulation the indigenous communities participated through a consultative process encompassed participatory climate change related problems identification and planning for adaptation measures.

-The program adopted indigenous community proposed interventions towards enhanced resilience.

-The indigenous communities will participate in the planning, implementation and monitoring and evaluation of all programme components

-At the end of the programme all facilities will be handed over to the indigenous communities with technical support from relevant government authorities.

The selected executing entities are eleven and they each held their respective consultations as illustrated below:

i) KEFRI

KEFRI formed a group of scientist to develop a proposal in partnership with other institutions. The group was mandated to consult and work as a team in developing desirable proposal on Agriculture and Food Security with overarching water aspects. After consultations and brainstorming team settled on Ecosystems based adaptations to cover three sectors, namely; agriculture, forestry and livestock (pastoralism and agro-pastrolism). This adaptation theme led to inclusion of Kenya Agricultural Research Institute (KARI) to undertake agricultural ecosystem based adaptations and livestock whereas KEFRI and University of Nairobi, upper Kabete campus on forestry, water and rangelands/woodlands.

Various government documents were reviewed including climate change response strategy, medium term plans, vision 2030 and poverty alleviation plans among others. After review of these documents the team settled Loitoktok district as the case study in Kajiado County which will be up-scaled to other similar areas upon successful completion. This led to the field visit of the area to meet the community members, women groups, youth groups, opinion leaders and government officers from ministry of livestock, agriculture, water, planning and development and vision 2030, regulatory body, Kenya Plant Health Inspectorate Service (KEPHIS) in Loitoktok district. The officers from these government ministries provided valuable reports (quarterly and annual as well as other concluded projects) since 2008 which formed a basis of the project activities in each component. Selected community groups and government made a commitment to partner in implementation of the project activities

In particular, those designated to undertake the list of selected activities are as summarized in the table below.

Table 6: List of stakeholders met, organization and their positions.

Organization	**Name**	**Position**
Ministry of Agriculture	Benson Muriuki	District Agricultural Officer Loitoktok
Ministry of Livestock and Development	Musili Miriti	District Livestock Development Officer (DLPO)
Kenya Agricultural Research Institute (KARI) Gene Bank	Dr. D Nyamongo	National Program Coordinator on Biodiversity Kenya Agricultural Research Institute (KARI)
Kenya Agricultural Research Institute (KARI)	Dr. John MutuaMugambi	Centre director The Veterinary Research Centre

Kenya Forest Service	Kurgat B.	County Director Kajiado County
University of Nairobi Department of Land Resource Management and agricultural technology	Dr Oliver Wazonga	Senior Lecturer University of Nairobi
Community Based Organizations	Imbirikani Aids Village group, Boma la Tumaini group, Noomayianat community group, Kenya Women Finance Trust group, Group in Munyula, Olchoro and Inkisanjani sub locations	Selected members

Source (data collection team KEFRI 2013)

ii) Victoria Institute for Research on Environment and Development (VIRED) International

VIRED developed the proposal by adequate involvement of the Nyando wetland community. This was done through brainstorming and discussions at local community meetings (Barazas) and workshops. As the key stakeholders, the community contributed immensely in the identification of adaptation measures, resilient crops and suitable areas to conduct different activities for better results. Consultations with the community brought in representatives from the line ministries, government parastatals and private sector such as Ministry of Environment and Natural Resources, Ministry of Agriculture, Ministry of Livestock Development, KENGEN, Lake Basin Development Authority and Red Cross among others. The project will also build on existing public-private partnership which VIRED International has established in the past given their long experience in the project area.

iii) Coastal Development Authority (CDA)

The CDA experience on frequent interaction with community members in the Coastal region provided it with high leverage on seeking opinions and ideas on what to include in the proposal so as to address the most vulnerable groups. From the 16th to the 20th of January 2013, CDA carried out consultative meetings with a cross-section of representatives in Kwale County. The process began with field excursion across some areas worst hit by the water crisis, a glaring impact of climate change. During the field visit CDA was able to affirm, beyond reasonable doubt, the severe state of affairs, a mere representation of the situation in the greater coastal region. Poverty has without a doubt reinforced the plague, rendering the local communities unable to sustain their livelihoods. It is simply miraculous how the local communities survive in such an environment. Access to water for coastal communities is a matter of urgency, more so in the adversely affected areas. It is indeed a sorry state of affairs.

On the second day the CDA team had a consultative meeting with the Kasemeni Divisional Officer (DO) and the area chief, after which the team visited a nearby local women group that practices vegetable farming amidst the adverse weather conditions. This was very inspiring. The chief impediment to these highly industrious women was the evident scarcity of water. The team thus gathered views from both the DO, the Chief, local women and the surrounding community. On day three the CDA had a meeting at Kasemeni Divisional Headquarters with village elders, women group representatives, youth group members, area chief and assistant chiefs, farmers and community leaders. This was a very fruitful session that re-affirmed the ill state of affairs. It also came out that poverty, coupled with low education levels were a stumbling stone for most households in the region.

The CDA team then proceeded to the District Commissioner's (DC) office and had a very informative meeting with the DC. The DC reiterated the urgent need for water and also advocated for training and capacity building for the local communities. After the session with the DC, the CDA team then met the Director of Gender and Social Services and the District Development Officer who gave an overview of the socio-economic state in the region as well as some of the positive gains in some regions. The officers also suggested

some alternative livelihoods and other critical components that could be incorporated in the project.

ADRA-K: These activities were designed with the cooperation and support of the community and the local administration. In October, 2012, ADRA Kenya conducted a rapid needs assessment of the Lower Yatta district to further assess the deteriorating conditions of the local population. The Rapid Needs Assessment was conducted by the ADRA field team, and included three personnel (senior executive - female, field coordinator - male and M&E officer – male). The needs assessment was based on several data collections methods (document review, field observation, household visits, local authority interviews, focus group discussions, beneficiary interviews and gender activity profile). During the needs assessments the following local and regional authorities were consulted: District Forest Officer, District Public Health Officer, the Deputy District Agricultural Officer, the Water Officer, the Drought Management Officer, District Health Officer and the District Commissioner. The field assessment team also conducted 2 focus groups discussions with targeted beneficiaries (25 people in total – 10 male, 15 female) and a detailed qualitative interview with 6 females and 9 males.

Through the Rapid Needs Assessment, the community identified the following critical problems (in order of priority):

1. Disrupted livelihoods due to repetitive droughts and floods leading to increased poverty and human mortality
2. A critical lack of access to safe water;
3. Disrupted livelihoods due to repetitive droughts and floods leading to increased poverty and human mortality
4. A critical lack of access to safe water;
5. A lack of agricultural inputs and adequate techniques.
6. Poor health, hygiene and sanitation practices;

The needs assessment found out that without a community based drought management response and disaster risk reduction measures, the population of Lower Yatta remains

exposed to continuing droughts and reliance on government and international aid. Due to the problems encountered, the community has resulted to some copying strategies that have negatively affected the environment, water levels, crop production and the climate in totality. They include remittances from families, relief food, charcoal burning ,ballast making and river sand harvesting The three most vulnerable location in lower Yatta District include in terms of agricultural production resulting to food insecurity include KwaVonza, Kanyangi and Kanyongonyo

NASARU:

Consultations for the proposed climate change adaptation project started between the Nasaru Women Group Executive Committee and their partners who are the Green Lifestyle Africa (GLA). Then the Women group leaders and their Partners started the process of consulting the local community, collaborating women groups and key stakeholders.

The consultative process revealed that the local community understand that there are changes that are happening in the local climate and looked forward for adaptation techniques. The Nasaru and their partners also held focus group meetings and consultations with the Masaai elders in the proposed project area, who own and control use of land, the area Chief of Kisamison government policies, heads of institutions like schools and dispensaries and the local community in and surrounding Kisamis who are beneficiaries of the proposed project. The local community and stakeholders are very supportive of the proposed project.

iv) World Vision

The World Vision built on a consultative process that began with stakeholders in regard to building community's resilience against climate change impacts. Discussions revolved around building adaptive capacity of the community living adjacent to Gwassi hills against climate change vagaries, as well as participate in climate change mitigation through promotion of GHG mitigation programmes such as cookstoves and forest conservation. The following were the outcomes of the typical issues discussed:

Impacts of climate change – Discussions revolved around causes and impacts of climate change (droughts and floods), and necessary interventions needed to build communities resilience against climate change as well as mitigating impacts of climate change through natural resource management; Population pressure – increased population pressure (the Gwassi Division has a population of over 65,000 people with a population density of 186

people per km2 and a growth rate of about 3%) in the proposed programme area has been on the rise leading to forest encroachment by adjacent communities in search of land for agriculture as well as alternative sources of livelihoods (firewood, honey, timber) during lean economic times such as during drought. Increased population pressure has exacerbated climate change impacts; Drivers and agents of Gwassi hills forest degradation - charcoal production is a critical driver of forest degradation besides other drivers such as increased search for agricultural land by the community, firewood for household use as well fish processing, timber for house construction and boat making, among others. The participants agreed unilaterally that impacts of climate change force the community to seek for alternative livelihood sources in the forest thus the resultant forest destruction.

Alternative livelihood options – discussions also revolved around alternative livelihood options with two objectives in mind; one is to divert community's attention from forest destruction, and second was to identify alternative options to agriculture which is becoming sensitive to environmental disasters such droughts and floods. Some of the identified options include production of certified sustainable charcoal, bee-keeping, growing of Yellow Oleander for biodiesel production, improved agriculture and livestock farming including goat farming and greenhouses, eco-tourism (construction of "mountain lodge"), and sale of tree seedlings; Community ownership of proposed programme interventions for sustainability reasons - Implementation of the programme will be by community based structures such as cooperatives and CBOs meaning the project will heavily rely on community structures for implementation. The beneficiaries will, also, monitor evaluate and give feedback on the way all programme resources will be utilized.

Stakeholders present during the community consultation process were as follows:

- Osienala - is an NGO which supports Social agro-forestry and Environmental Conservation programme in partnership with the Green Forest Social Investment Trust (GFSIT) in Nyakanga area, Gwassi division;
- Government line ministries - Kenya Forest Service, Ministries of Environment and Mineral Resources, Water and Irrigation, Education, Agriculture, and Social Development;
- Green Forest Social Investment LTD (GFSI) - The initiative has a long-term goal of providing equal economic opportunities for the social wellbeing of children, youth

and women and to invest in the natural environment in Gwassi Division, Suba District Global Nature Fund - German based German based NGO, World Vision Kenya and Germany

- Gwassi Hills Forest Conservation Association – the association supports afforestation programmes in selected parts of Gwassi Hills; Provincial Administration including chiefs and District officers; Local communities.
- The Attendance list of stakeholders is as shown in annex 1

v) Kenya Red Cross Society (KRCS)

KRCS has over the years been able to cultivate good relationship with other players in the sector, among them the Government of Kenya, International organizations and communities. KRCS coordinates and forms partnerships with other agencies in the area for better resource utilization and to avoid duplications. The selected activities in this programme to be executed by KRCS were widely consulted with local communities, stakeholders and relevant government ministries. The entry point of their project was mainly on up-scaling of the current projects they are undertaking at Walda in Marsabit. The KRCS co-chairs the Rapid-Onset Disaster Committee with the Office of the President. The Committee is a body that comprises international NGOs, UN agencies and Government ministries. The society also is a member of the Kenya Food Security Steering Group (KFSSG), which is the main organ for coordination of food security matters.

Consequently, KRCS Moyale Branch has been generating reports on collaboration with the other government line ministries at the district level and will continue to coordinate the response with the district disaster commit-tees, district steering committees at the local level and National level in addition to the existing coordination mechanisms.

The delivery of the proposed action will be executed directly by the KRCS through its branch and region in Moyale District in collaboration with the relevant government line ministries and other likeminded stakeholders.

In the long-term, the key to sustainability is scaling up, and therefore a main Project goal is to work with relevant government ministries and other stakeholders to create infrastructure programs that can plan for maintenance systematically and take advantage of economies of scale in every respect, both in Walda and beyond.

In relation on the proposal for the Waldaa phase 2; KRCS consulted with the following key stakeholders;

-The Waldaa farmers and the Waldaa community through the local KRCS Moyale branch
-Local administrators in Waldaa mainly the chief and the assistant chiefs within Waldaa
-Kenya Meteorological Department who are key partners in the implementation for the proposed Waldaa phase 2 project.
-The various line ministries; Agriculture, Environment Water and Natural Resources, Health, Cooperative development.
-Various NGO's operating in North Eastern Region through the WESCOORD forum to avoid any necessary project duplication
-National Environmental Management Authority (NEMA).

vi) Adventist Development and Relief Agency-Kenya (ADRA-K)

ADRA is uniquely positioned to respond to the humanitarian/development issues in Yatta, given its history of successfully responding to past emergencies/ developments in the same district and other regions. ADRA has a deep understanding of the local context, a very strong reputation with the communities due to previous projects, and a close working relationship with the local government. In this programme ADRA consulted the following stakeholders, opinion leaders, religious leaders who assisted in prioritizing relevant activities for adaptation at Lower Yatta District area.

- The Government of Kenya line ministries.
- World Food Program (WFP) through Catholic Diocese of Kitui (CDK). They provide food for Asset and Protracted Relief and Recovery Program (PRRO) and cover only a small proportion of the vulnerable community members.
- The horticulture project is only covering one Village in Mandongoi Sub-location along the Tiva River.
- Vet works- at Kanyangi and Kanyongonyo locations doing Vaccination and capacity building on livestock diseases for the livestock farmers,
- German International operations (GIZ) which deals with Grass seed bulking and rehabilitation at Kwa-vonza. Works closely with the ministry of livestock
- UNICEF which supports the children under-fives and people living with HIV/AIDs by distributing Anti-Retroviral Drugs and supplementary feeding and works closely with the ministry of health.

- APHIA IV is an NGO that supports the ministry of Public Health in Training the community health units.
- National Council of Churches in Kenya (NCCK) has operations in Kwavonza where they promote water harvesting for agricultural use and works in collaboration with the ministry of agriculture

vii) HORN AID, CARITAS and NASARU Kenya

Horn Aid Kenya, CARITAS Kenya and NASARU are locally formed institution from the area that they have a vast knowledge and expertise to work in the selected sites. They consulted relevant stakeholders and community members who assisted in identifying suitable activities to be implemented in this programme.

viii) Tana and Athi Rivers Development Authority (TARDA)

The selected team from TARDAextensively engaged with various community members and organizations involved in land management presented as Annex 1. Since the project idea was at its early conceptual stage notwithstanding the wide scope that the two river basins cover, only community representatives including women representatives, youth representatives and disabled persons representatives were invited for the stakeholder's workshop to represent the views of their groups. However, consultative forums will be organized at the grassroots level especially during the project design and implementation. Some of the key selected areas and team includes are as summarized in the table below.

Table 7: Key selected areas and team

PERSON	LOCATION AND TITLE
1.Japheth M'Mkengo	Chief Kamainde Location
2. Simon Nthiga	Senior Chief Kajuki Location
3. Gilford Muriuki	Chief, Itugururu Location
4.Kenneth Mureithi	Mukuuni Location
5. Bernard Ag.	Ag. Chief Muiru Location
6.Gitonga Njage	Divisional Agribusiness Development Officer-Mwonge Location
7. David Mwamba	Mwonge Location
8.Irene Mwendandu	District Crops Officer – Meru South District
9. John Elangano	District Commissioner – Meru South District
10.Community Members	Kamainde sub-location

vii) Kenyatta University

The project implementers widely consulted with farmers, stakeholders and key government's institutions that will support implementation of the project activities.

Ministry of agriculture, livestock and fisheries

Kenya agricultural Research Institute

University of Nairobi

Community

PART 2I: Justification of Funding requested

The National Climate Change Action Plan (NCCAP, 2012) states that climate change will affect all sectors of the economy in this country particularly agriculture and livestock which contributes to 20 per cent of the GDP. Water is the other sector that is hardly hit by prolonged severe droughts, flooding and sea level rise. Transition to resilient development

pathway is important for this country because according to National Climate Change Action Plan (NCCAP, 2012) climate change poses a real threat to development prospects and livelihoods. There is therefore need for building adaptive capacity of the country especially in the most vulnerable community groups is therefore crucial in order to enhance the resilience of the agricultural production under the increasing climate variability and extreme events.

The National Climate Change Response Strategy NCCRS (GoK, 2010) identifies alternative sources of livelihoods to be adopted. But the country does not have the technological and financial capacity within the community groups to undertake effective adaptation plans and actions. The appropriate technologies can be deployed and diffused to the communities if adequate financial assistance is provided.

The Kenya's (NCCRS) estimated an annual average cost of Ksh. 235.83 billion (approximately US$ 3.14 billion) for the implementation of adaptation and mitigation programmes identified in the Strategy over the next 20 years. Annual Cost estimates in the NCCRS for addressing climate change issues in agriculture and other related sectors were: agriculture Ksh. 10.60 billion; Forestry and Wildlife Ksh. 32.26 billion; marine & fisheries resources Ksh. 2.52 billion; and water & Irrigation Ksh. 5.96 billion. However, the Draft National Adaptation Plan (NAP) of the Action Plan for the implementation of the NCCRS, pointed out that the indicative costs for the agriculture sector in the NCCRS do not cover all priority actions in the sector, and that the actual costs, are likely to be higher than the NCCRS estimates.

NCCRS Fund mobilization plan was to target domestic resources from both local and national government, the private sector, international funding agencies such as the World Bank and International Monetary Fund (IMF), external resources from development partners and regional funding agencies such as multilateral development banks e.g. the African Development Bank (AfDB). The country also intends to target financing from developed countries as part of their obligatory functions to finance cost of climate change interventions in developing countries that are particularly vulnerable to climate change. Such funds include Adaptation Fund, the Green Climate Fund, and World Bank Climate Investment Funds, Clean Development Mechanism, among others.

The government also calls for collaborative and joint action with all stakeholders (private sector, civil society, NGOs, etc) in tackling the impacts of climate change. Since leveraging for funds by government is still at its nascent stages, there is need for a more concerted effort, where all stakeholders join hands with government in leveraging for additional funds to support implementation of climate change response activities. It is against this backdrop that the proposed programme seeks USD 10 Million from the Adaptation Fund Board, to implement climate change Adaptation activities in Kenya. The funding requested will target Agriculture and food security, Disaster Risk Reduction and Water and Coastal Management Themes.

PART 2J: Description on sustainability of the programme outcomes

The programme components and activities will be mainstreamed in respective government entities whose mandate is in relation to the identified activities. In particular the programme will put emphasis on national and county ownership of the programme through the inclusion of all stakeholders including national and regional bodies, in collaborative partnership with county governments and gender and vulnerable groups. The technical support and oversight will be given by Government bodies like National Climate Change Activities Coordinating Committee (NCCACC) of the Ministry of Environment, Water and Natural resources. All the institutions mentioned were involved in the process of designing this programme from the beginning at the level of needs assessment where they are expected to mainstream identified in their respective routine activities.

The proposed programme components not being business as usual;

Component 1: Enhancing climate change resilience for improved food security in selected counties

Unpredictable erratic rainfall patterns have become common occurrences in the country. Most of our cropping systems are rain fed, hence food crops are all vulnerable. Crop growing conditions and seasons are becoming less predictable and there are increased livestock pests and diseases. Tackling observed and projected climate change impacts requires a coherent, integrated approach which builds community's resilience or adaptive capacity. Climate change and variability has exacerbated these challenges heightening food insecurity in proposed project areas. In order to cushion communities against climate change vagaries, proposed adaptation interventions in this component will build resilience of communities

Kenya's coastal and marine ecosystems are rich in resources. However, these resources are threatened by overexploitation, transformation and degradation of habitats, pollution and climate change. Some of the interventions in these sectors include; developing county-wide maps depicting areas that will require shore protection (e.g. dykes, bulkheads, beach nourishment) and those areas to be left to adapt naturally, establishing a biodiversity monitoring network to identify species that will be affected by climate change and those that could be used as biological indicators, encouraging a coastal and watershed basin management approach linking land-use practices to marine and fisheries resource conservation, establishing networks of marine protected regions and including small enclosures comprising communities of species resilient to climate change impacts that serve as buffer zones as well as areas for seed regeneration.

Component 2: Improving climate resilient, water management systems to enhance food security in selected counties

Component 4: Disaster Risk reduction

This component has been reworked to only include aspects on use of green and energy saving technology. The Adaptation reasoning behind this intervention is that energy saving technologies will reduce fuel wood extraction from the existing forests (more vegetation cover retained). Vegetation cover is a flood disaster reduction attribute.

Component 5: Strengthening capacity and knowledge management of adaptations to climate change

Kenya is a water scarce country. This is compounded with impact of climate change where most parts of the country are experiencing prolonged drought, erratic rainfall, drying of wetlands, seasonal rivers and water springs among other water bodies. This affects various sectors such as agriculture& livestock that are key to Kenya's economy. The programme therefore focuses on adaptation activities that will improve water resource to support other sectors of Kenya's economy. The areas selected are mainly ASALs where land degradation is on continuous rise and frequently experience erratic rainfall patterns, frequent droughts, limited livelihood diversity, poor infrastructure and widespread poverty. The drought, coupled with natural aridity of the area has also resulted into rampant water shortage, widespread loss of local vegetation and severe pasture depletion. The situation is further aggravated by the massive uncontrolled cutting of trees for fuels and continuous expansion of human settlements that has left tracts of land bare and exposed to severe soil, water and wind erosion leading to limited capacity for crop production.

Component 3: Increase resilience for the effect of rise in sea level and shoreline changes in Kenyan coastal zone

A number of science based technologies have been developed to respond to the devastating effects of climate change. In particular the focus is on climate change adaptation through breeding of drought tolerant crops, faster maturing species, high yielding crops, pest and disease resistance crops, stable genotypes across the environmental sites, improvement of soil conservation technologies to minimize emissions of greenhouse gases among other innovations whose primary aim is to reduce vulnerability of smallholder farmers from the impacts of climate change. However, the successes of these technologies have been limited to piloted areas and demonstration sites due to inadequate funds to support extension and up-scaling to similar agro-ecological zones. This has lead to less awareness on the existing agricultural technologies that will support farmers to respond to the impacts of climate change. Therefore, this component programme will accelerate the uptake of best bet practices on climate change adaptations strategies to ensure food security to smallholder's farmers in most vulnerable ASALs and medium potential areas.

Kenya is also at infant stage of developing climate change bill and policy that will address mitigation and adaptations plans and strategies at development county government levels. This needs stakeholders participation and empirical data to formulate action oriented policies to enhance farmer's access climate change opportunities in response to adaptation capacity. Therefore, the proposed programme activities will generate information that will support the ongoing process of developing suitable policy framework that will support the implementation of Kenya's climate change response strategy.

The details of various sustainability approaches are as follows:

i) Environmental and technological sustainability

The Programme will ensure environmental and technological sustainability by equipping the local institutions like the CBOs/FBOs with skills and abilities such as, agro forestry, soil and water conservation, rain water harvesting and its utilization, green house farming with drip irrigation, furrow irrigation, flood management, coast and shoreline management, among others to continue managing these climate adaptation initiatives after programme ends. The rationale is to have the communities participating, owning and sustaining their own development, leading to improved agricultural production systems, as well as sustained use of natural resources, the beneficiaries' livelihood base will be solid as there shall be increased household income which assures beneficiaries' increased resilience

against effects of climate change. The outcomes of the programmes will also result in poverty reduction thus reduced destructive coping mechanisms in the forests.

ii) Financial sustainability

To make sure the programme is financially sustainable, this programme is premised on turning rain dependant subsistence farmers into '*agri-prenuers*' (agro-businesses) using their limited resources in a socially and environmentally sound manner. Sustainability is assured when beneficiaries are empowered to initiate income generating activities. This programme will set off activities that are geared to increasing Household Income, therefore increasing their resilience and ability to adapt to Climate change, some of the activities will include, value addition to livestock and crop products, introduction of improved livestock breeds that would increase milk and meat production for high income. The programme will also link farmers to financiers (including crop/livestock insurance through saccos), input supplies, technology providers, processors, marketers and other private companies to facilitate famers to produce for the markets and will continue to produce so long as it is profitable (income and food) .The programme will also facilitate communities' members to establish and manage Village savings and loaning schemes thus deepening access to financial services.

iii) Institutional sustainability

Implementation of the programme will be by community structures namely CBOs and/or FBOs and county Government, meaning the project will heavily rely on community structures for implementation. The beneficiaries will, also, monitor evaluate and give feedback on the way all programme resources will be utilized.

For long-term sustainability, this project will be implemented in close collaboration with relevant Government line Ministries (stakeholders), namely NDMA, Agriculture, NEMA, Energy, Gender, Forest Department, provincial Administration and research organizations including, Kenya Forestry Research Institute. This will help establish linkages that the communities can use beyond the project life. Use of trainer of trainers (ToT) approach will promote participatory technology development and selection, thus increasing farmer ownership of interventions since the technologies chosen will be appropriate to their

On the case of value addition and market access, the farmer groups will be organized to form commercial villages that will be linked to SACCOs in order to upscale the market network of the farm surplus produce. This will cover more farmers not fully recruited in the programme activities but will form part of the programme beneficiaries. This approach will enhance uptake of the programme activities which will directly translate to upscaling of the best practices on resilience to climate change for improved food security. Overall this will result to over 100,000 households with multiplier effect of about 5 to 6 members per household benefiting from upscaling of activities on improving food security.

The activities and outputs on the outcome on increased access to water and enhanced food security will designed in manner that harnesses the existing technologies to improve access to water resources. The efficient utilization of water technologies will result to harnessing of resources that can lead to upscaling of the water harvesting and storage technologies to support food security in the selected counties.

situation, technically and financially. In addition, the capacity building of community on all aspects of the projects especially on the new technologies to be upscaled will ensure existence of expertise within the community.

Besides the sustainability of the programme actions in target areas, the issue of scaling up of the programme outcomes is not clear;

The farmer group approach will designed in manner that will support the scaling up of the best adaptation practices upon documenting the experiences and lessons learnt in each crop growing seasons. In particular, drought tolerant crops with good uptake will be upscaled to cover other areas within the intervention sites. One of the envisioned approaches to use is that each farmer in each group will also distribute seeds of about 0.5 to 1 kg seeds of drought tolerant crops to other selected farmers on targeted areas for upscaling purposes. The same chain will follow within the programme period till the target farmers are reached in order to enhance food security and improved livelihoods. The same principle will apply for various outputs within the programme component of enhancing Climate Change resilience for improved food security in selected Counties.

The program activities will cover a total area of 7531.9 km^2 distributed as follows; Oloitoktok (3245 km^2) and Kisamis (231.7 km^2) in Kajiado County, Masinga dam (400 km^2)in Machakos

County, Emali (180 km^2) in Makueni County, Gwasi (112 km^2) in Homabay County, Nyando wetlands (800 km^2) in Kisumu County, Wajir South (420 km^2) &Lagdera (1245 km^2) in Wajir County, Thome (19.2 km^2) in Laikipia county, Lower Yatta (234 km^2)in Kitui County, Vanga & Gazi (74 km^2) and Kinango (134 km^2) in Kwale County, Mwatate (265 km^2)in Taita-Taveta County, Waldaa (115 km^2) in Marsabit County and Machakos (57 km^2) in MachakosCounty.The implementation of the programme activities across selected Counties will be undertaken with strong collaboration from County Government in conjunction with National Government. In particular, the responsible officers in the ministries of Agriculture, Livestock and Fisheries, Environment, Water and Natural resources and Industrialization and Enterprise Development both at County and National Governments will collaborate partners in the implementation and follow-up of programme activities. In this arrangement, they will participate on work plan meetings, community sensitizations, extension service meetings, monitoring and evaluations, feedback workshops and development of policy briefs. This will enable them to revise the National Medium Term Plans and County Development Action Plans as well as Strategic Plans to align them to lessons learnt from the programme activities that will impact positively to communities in enhancing resilience to climate change. The information from lessons learnt will also support the National government to draft relevant climate change policy based on empirical data from the programme among other related climate change adaptation activities. The lessons learnt from the programme will also support the County Government in passing legislation that will aid response to climate change adaptation.

PART III: IMPLEMENTATION ARRANGEMENTS

3A) Programme Management Arrangements

i) Description of the arrangements for programme implementation

The government of Kenya has prioritized climate change mitigation and adaptation in its policies and strategies. Through the Ministry of Environment, Water and Natural Resources (MEMR), the country recognizes a need to enhance coordination of climate change activities through various policy documents with an overall aim of ensuring climate proof socioeconomic development anchored on a low carbon path. Further an authority: the National Environment Management Authority (NEMA) was established under the Environmental Management and Coordination Act (EMCA) No. 8 of 1999, as the principal instrument of government in the implementation of all policies relating to the environment. In Kenya currently all Ministries, Departments and Agencies (MDAs) are required to engage on a quarterly basis on environmental sustainability efforts and submit reports to NEMA. Activities implementation include domesticating an environmental policy at the workplace, planting of trees, development and implementing environment awareness creation programmes, protecting river banks through vegetation recovery as well as vegetative recovering of the 5 water towers in the country. Under waste management, they are required to reduce, reuse and recycle waste, develop and implement mechanisms for proper disposal of e- waste. Government agencies are also required to put in place measures to mitigate against water, air, noise and other forms of pollution, develop and implement climate change adaptation and mitigation initiatives. MDAs are also required to promote environmental protection and conservation through partnerships with stakeholders in various regions (NEMA, 2012). [4]

The implementation of this programme will be three fold from National Implementing Entity, NEMA. Based on the projects proposal approved, the executing entities and respective collaborating partners were grouped into three based on the geographical distribution and building of synergies to effectively implement programme activities across Counties in Lake Victoria Basin, Southern and Northern Regions. In each of these regions there will be Lead Agencies that will ensure there is effective coordination and

[4]NEMA quarterly publication July-September 2012- NEMA decentralizes functions and services to counties

reporting based on the four adaptation thematic areas. The Lake Victoria Basin will consist of World Vision Kenya (WVK) and VIRED International executing entities where WVK would be the lead agency. The Southern part of Kenya consists of Kenya Forestry Research Institute (KEFRI), Coastal Development Authority and NASARU executing entities that will be led by KEFRI. The Northern parts of Kenya entails Tana and Athi Rivers Development Authority (TARDA), Horn Aid Kenya, Kenya Red Cross Society, Kenyatta University, CARITAS and Adventist Development and Relief Agency-Kenya (ADRA-K) executing entities that will be led by TARDA. In each of the executing various beneficiaries and collaborating partners will be linked to overall implementation of the programme activities across selected sites (Figure 1).

In each of the lead agencies Team Leader will be appointed to oversee and track progress of programme activities who will then report to NIE. There will also be steering committee at NIE that will also consists of Team Leaders from each region who will approve work plans and review the progress reports of the programme periodically. The committee members will also undertake Monitoring and Evaluation of programme activities. They will as ensure there is prudent expenditure of financial resources among other roles.

In order to ensure the programme activities are in tandem with goal of adaptation fund the steering committee will put measures in place that will guide project deliverables. Specifically, the programme will use a people–centered development approach, which ensures that the interests and aspirations of stakeholders are put at epi-centre of all programme interventions. As articulated in the problem identification process; this programme design has benefited a lot from inputs of all stakeholders' through various consultative meetings. The implementation of the programme activities will be therefore restricted to the inputs and activities outlined by beneficiaries and stakeholders in the programme sites. Overall the roles of each of these programme layers as shown in figure 1 are as follows:

ii) Roles and Responsibilities of NIE-NEMA and Programme Steering Committee

i) Provide policy guidance to the Program related to the national policies in Adaptation Fund

ii) Supervise all aspects of programme implementation and disbursement of funds to the executing entities/Lead Agencies

iii) Review and approve programme activities for each executing entity

iv) Coordinate monitoring activities, including internal and external evaluations

v) Monitor overall progress of the program with a special focus on delays and bottlenecks to ensure adjustments are made from the recommendations of various evaluation missions and audit reports

vi) Review programme and project status reports with the aim of ensuring activities are implemented as planned and that they achieve expected outcomes

vii) Provide guidance on the use of program resources and take measures that ensure cost effectiveness in Adaptation Fund

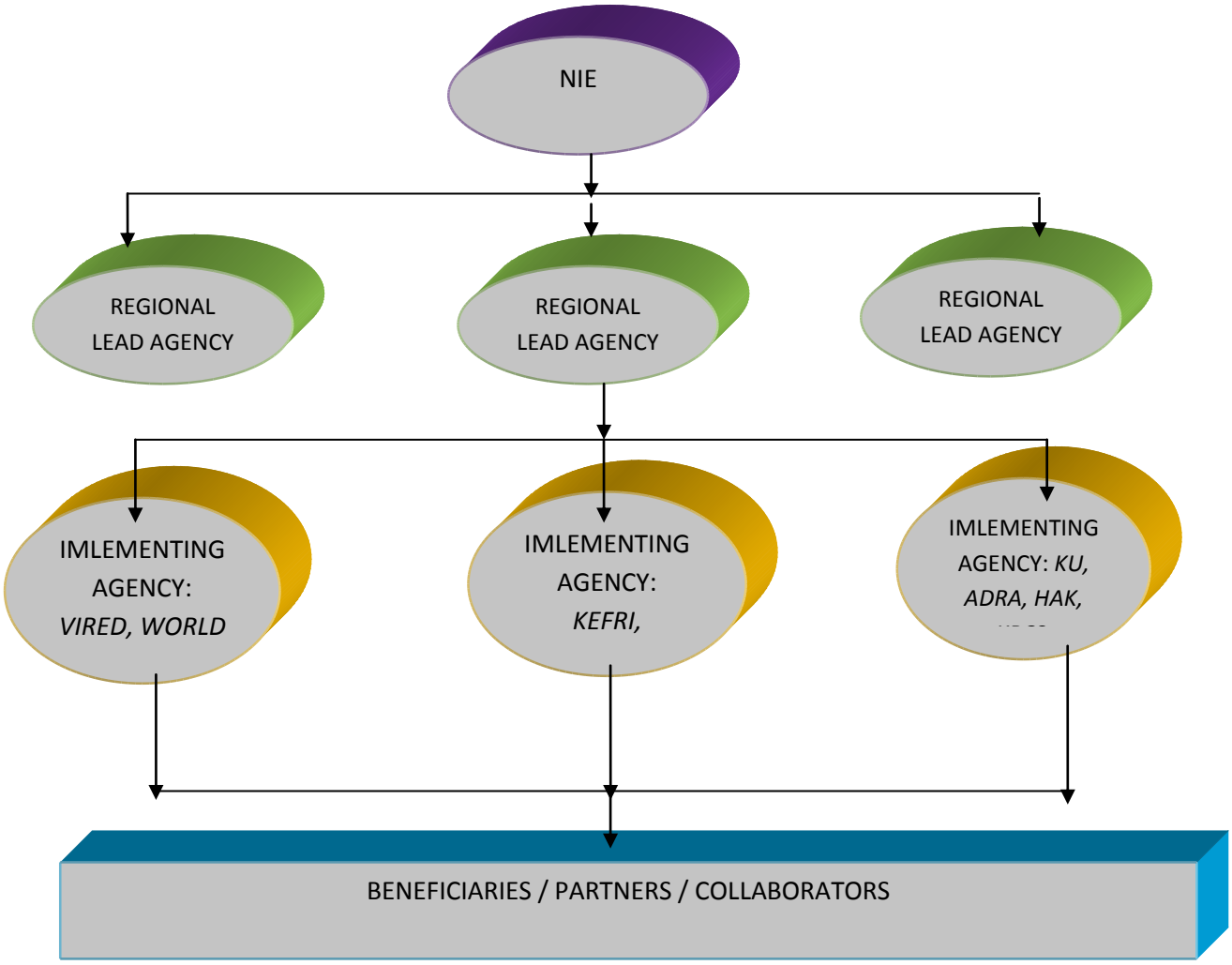
viii) Carry out activities that would ensure achievement of the basic goals of harmonization and integration of programme components as envisaged in Adaptation Fund

ix) Liaise with the government of Kenya & AFB on programme implementation

x) The NEMA/NIE shall keep the Regional lead agency informed on its deliberations, decisions, and progress of program implementation

xi) Train and Capacity build of the regional lead agencies

Figure 5: Organogram showing implementation arrangements



iii) Roles and Responsibilities of Regional Lead Agencies

i) Coordinate Adaptation Fund project activities within their regions of jurisdiction.

ii) Offer overall guidance of the projects challenges within the region and suggest specific solutions.

iii) Prepare regional progress reports on Adaptation Fund projects on behalf of NEMA/NIE

iv) Train and capacity build Adaptation Fund implementing agencies within the region coverage

v) Liaise with the NEMA/NIE on projects implementation

vi) Coordinate the roll up audits by NEMA/NIE

vii) Be role model for other regional Adaptation Fund projects by effectively implementing its specific project.

iv) Roles and Responsibilities of Implementing agencies

i) Ensure effective implementation of the projects

ii) Mobilize capital and human resources towards achievements of the concrete outputs per project

iii) Parameterization and rolling out core projects applications

iv) Developing/sourcing other climate change adaptations for local use through suitable integration with core module

v) Providing advisory services relating to management of climate change adaptation and mitigation measures at all levels.

vi) Construction and management of disaster risk reduction centers and infrastructure.

vii) Training and capacity building of the project beneficiaries.

v) Roles and Responsibilities of Beneficiaries, Partners and Collaborators

i) Provide human, physical and capital resources towards full implementation of the project.

ii) Take over project management and operations after full implementation.

iii) Submit progress reports on projects operations to the relevant implementing agencies

iv) Full participation during project implementation

v) Disseminate information and create awareness on climate change adaptation and mitigation as per the implemented projects

vi) Provide feedback on the projects impacts to the program

3B) Description of the measures for financial and programme risk management

The following measures for financial and programme risk management will be put in place during implementation of the programme activities.The risk categories on delays in implementation ofprogramme activities and conflict management are rated as low whereas that of limited stakeholders' involvement, instability within programme areas and natural and environmental hazards are rated as medium. The financial risks are one rated as high. The explanation on how to mitigate the risks exists in the submitted programme proposal.

Table 8: measures for financial and programme risk management

Risks Category	Measures to be taken
Delays in Implementation of Programme activities	A programme committee as an oversight body for implementation constituted with regular quarterly meetings to review, approve and provide corrective oversight on programme milestones; inception, mid programme review and end of programme review. Lobbying for inclusion of climate change adaptations mechanisms; policies, strategies and plans within the county government framework. Development of detailed implementation plans (DIPs) and annual plans to be approved by the NIE and to guide the implementation. Joint monitoring team formed to review progress in implementation in the various programme components.
Conflict Management	-NIE Management and conflict resolution Structure/ mechanism set up and providing oversight support role

Risks Category	Measures to be taken
	-NIE to ensure agreed arbitration mechanisms on any upcoming programme related conflicts.
Limited Stakeholders Involvement	-All stakeholders to be involved in the programme design, implementation and monitoring & evaluation during the entire programme life cycle. -Democratic decision making process on all pertinent issues will be upheld for all the stakeholders. -Involvement of key local stakeholders; local leaders, community beneficiaries, local county government structure and public service organizations.
Instability within programme areas	-NIE to reach out to relevant government departments particularly where ethnic /political tensions/ conflict may interfere with programme implementation -Programme stakeholders also to play key role in conflict resolution in the respective programme implementation areas.
Financial Risk	-A financial management strategy formulated to manage any upcoming financial problems including any inflation in market prices. -The programme to adhere to all Generally Acceptable Accounting Principles (GAAP) regarding control, transparency and documentation, and have processes, procedures and necessary infrastructure in place for an appropriate audit system. -Internationally accepted firm to undertake regular annual programme financial audits -Kenya government approved regulations, procedures and guidelines on costs for services & goods to be upheld
Natural and Environmental hazards	-Traditional and scientific early warning systems to guide decision making process on the implementation of programme components

Risks Category	Measures to be taken
	-Diversification of relevant drought/ floods mitigation approaches incorporated in programme implementation. -Improved awareness on climate change vulnerabilities and adaptations among stakeholders.

3C) Description of Monitoring and Evaluation arrangements and Budgets

Monitoring and Evaluation of this programme shall be designed in a way that it complies with formal guidelines, protocols and toolkits issued by the Adaptation Fund, NIE and government of Kenya's regulations and procedures. The key components of the M&E Framework will be as follows:

A baseline survey - this will be done to establish the benchmarks to be monitored and evaluated during the implementation of the programme activities. This will be held within the first month of the programme. The establishment of the benchmarks will participatory with implementing partners so as to develop common understanding on how to assess the progress of the programme activities based on the baseline information. The implementing agencies and the partners, with support from NIE will do continuous monitoring of the project and semi and annual reporting on the project progress.

Monitoring - regular monitoring will conducted by programme staff, with additional spot checks by technical support staff and visits from NIE and other external validators where necessary. Monitoring will include reviewing and responding to issues raised through the Community Feedback Mechanism, thus strengthening the programme's accountability to its beneficiaries. Participatory monitory will take place building the capacity of community to hold actors to account for programme plans.

Reporting - The programme lead agencies will receive reports from executing entities that will compile them and submit them to NIE as per the agreed periods. In particular, the reports will involve getting feedbacks from communities, stakeholders, observations and secondary data reviews in relation to baseline data. The information will be consolidated on quarterly and annual basis and presented to the project coordinator who will compile final reports. These reports will be reviewed by stakeholders before presentation to NIE. Lessons learnt, recommendations and good practices will be used to review and recast progress against set goals, objectives and targets, and detailed financial

disbursements. Any change with regards to the implementation of the project will easily be identified and appropriate actions taken in consultation with key stakeholders, partners and NIE/Adaptation Fund Board (AFB). The feedback received from NIE/AFB will further enrich the monitoring objectives of the project.

Mid-term programme Evaluation - The programme will undergo an independent Mid-Term Evaluation (MTE) at the mid-point of project implementation (June 2015). The MTE will determine progress made toward the achievement of outcomes and will identify corrective actions if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. The findings of this review will be incorporated in a midterm report.

Summative Programme evaluation - At the end of programme evaluation will be undertaken to measure the overall achievements against the baseline survey and a report compiled for presentation as close of project report. Following the baseline, the log frame milestones will be refined and updated. The evaluation will include assessing the programme's performance on value for money.

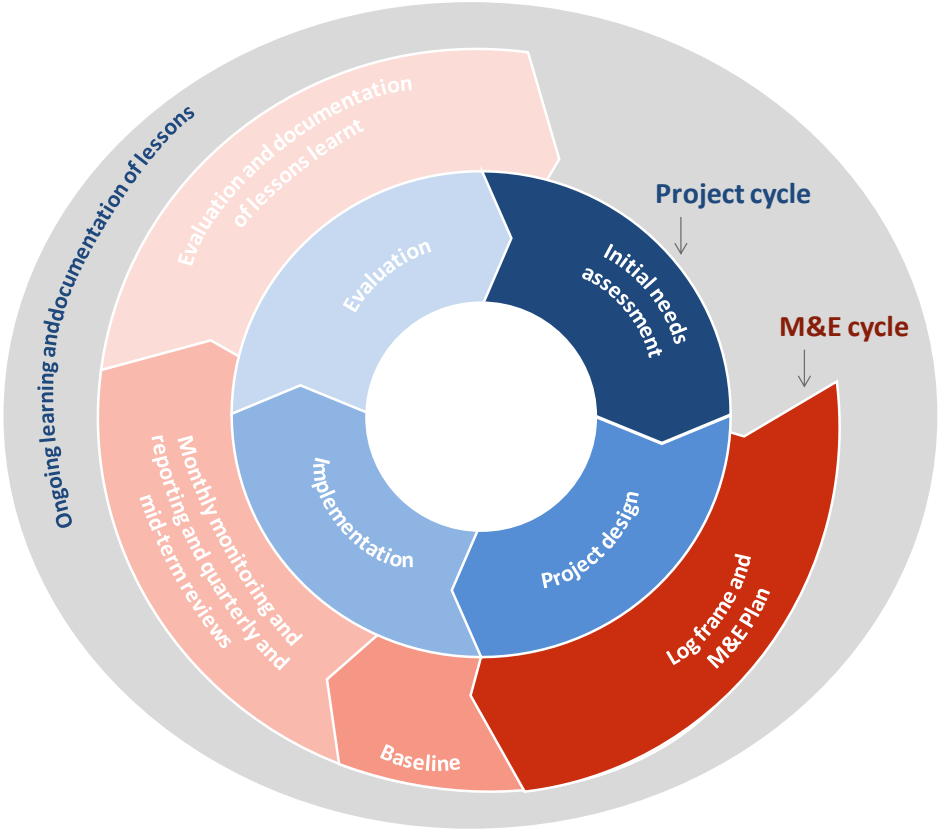


Figure 6: Project Monitoring and Evaluation

Table 9: M&E BUDGET

vii)Description of Monitoring and Evaluation arrangements and Budgets

The following are the monitoring and Evaluation products that will be outputs of the framework

i. Quarterly reports will consolidate on quarterly basis.
ii. Annual reports will include reports on progress against outputs and outcomes
iii. Field reports will document findings against objectives of the field visits
iv. Midterm evaluation report. A consultant will be engaged to develop the report
v. Programme Evaluation report. This will be done at end of the programme

M&E plan including the budget

METHODS OR TYPES OF ACTIVITIES	DESCRIPTION	RESPONSIBILITY	COST (USD)
Workshops	Workshops will be conducted to: 1. Develop M&E instruments, benchmarks and tools 2. Introduce the M&E units at EE level 3. Inception workshop to Develop	• NIE • Stakeholders	38452.53

	annual work plans and log frames		
Meetings	Programme Steering committee meetings Stakeholder engagement, ownership and verifications in the 3 regions	• NIE • EES • Stakeholders • DA	18960.80
Quarterly reports	Quarterly reports (4) per annum	• NIE • EEs • DA	28912.20
Annual reports	Annual Report (1) Annual audits	• NIE • EEs • Other stakeholders	11421.34
Field Visits	Baseline surveys Field visits per EE for verifications of the content of quarterly and annual reports. Exchange visits between EEs	• NIE • EEs • Other stakeholders •	32672.90

	(Exchanges may last 5 days at most by some members of the M&E Unit)		
Reporting Process	EE to NIE NIE to AFB NIE to Government	• NIE	865.34
WRITTEN			
Mid Term Reports	Mid term report (1)	• NIE • EES • Consultants	16783.02
Evaluation Reports	Evaluation Report (End of the Programme)	• NIE • Consultants	28423.44

3D) Programme Results Framework

Table 10: Programme Components and Outcomes with Adaptation Fund Results Framework

Table 11: Results Framework

Goal		**Building Resilience to Climate Change & Adaptive Capacity of Vulnerable Communities in selected counties in Kenya**				
Impact		**- Enhance resilience and adaptive capacity to climate change for selected communities in selected Counties.**				
Outcomes	**Outputs**	**Activities**	**Indicators(output)**	**End of project results/targets (outcomes and outputs)**	**Means of Verification**	**Assumptions (External Factors or Risks)**
Outcome 1 Enhanced food security and improved livelihoods	**Output 1.1.** Increased adoption of drought tolerant food crops and high	1.1.1 Procure and distribute certified seeds of drought tolerant and orphaned/high value crops namely; sorghum, amaranthus, millet, green grams, cassava, cow peas, pigeon peas, water melons, pumpkins, butter nut to 60 farmer groups at Gwassi division, 90 farmers groups at Lower Yatta district, 120 farmer groups at Loitokitok district, 50 farmers groups at Nyando Wetlands, 30 farmer groups at Wajir, 20 farmer groups at Garissa and 15 women groups in Kajiado	-No. of farm holds and type of drought tolerant crops planted -No of seed bulking centers -No of demonstration farms -Type of income sources for households generated under climate change	- The activities on enhancing climate resilience agricultural, agro-forestry, pastoral and agro-pastoral production systems will increase food security by 30% from baseline in selected sites targeting at least 15,000 households - 15000 farmers adopt drought tolerant crops across the programme	Reports and Surveys	**Assumptions** -Adoption and support from local communities -Support by central and county governments **Risks** -High illiteracy levels amongst some communities -Lack of political goodwill

	value crops	West district to reach a target of 15,000 farmers across the sites. 1.1.2 Establish one (1) seed bulking centre of selected drought tolerant crops per 10 farmer groups to ensure sustainable supply and access of seeds to targeted farmers. Those farmers who received seeds in the first season will be required to donate at least 1 kg of seeds for distribution to a second target group of farmers. This will be monitored over time to ensure sustainability and adoption of promoted crops to increase food security. 1.1.3 Establish one (1) demonstration field for each selected drought tolerant crop per 10 farmer groups in order to improve awareness and promote drought tolerant/orphaned crops to farmers. These demonstration plots/fields will also be used as training sites to improve farmer's skills on growth and management of drought tolerant crops. 1.1.4 Undertake at least three farmer field extensions in each group per growing season to increase extension services to the farmers to	scenario -No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets) -No. and types of investments and organizations established for value chain processes	areas. - The surplus from agricultural production, value addition, post harvest management, sustainable animal management and linkage to markets will increase household income by at least 10% of the targeted households. 38 seed bulking centers established Households (15000) in the target areas of this component with a minimum two sources of livelihoods. All the target farmers organized into farmer associations Value chain developed for at least 3 of the introduced crops.		

		backstop them on technical issues such as land preparation and early warning systems before planting and during plant growth to guide planting and handling of crop harvest. 4.1.1 Establish community based friendly information dissemination system by Construct and equip 20 Automatic Weather and collate weather data and link to Kenya Meteorological Department to be used for agricultural production planning (to time when to plant) 1,1,5: Establish value chains for the introduced crops		-The programme activities in selected sites such as tree planting, control of soil erosion, restoration of degraded lands, use of agro forestry practices, distribution of cooking stoves, protection of river banks and use organic fertilizer among others will reduce the environmental degradation by 10% and increase biodiversity conservation by 5% against baseline indicator. - The efficient use of water that supports crop and animal husbandry will reduce wastage by about 45%. -The afforestation activities, establishment of woodlots, use of energy saving/improved jikos and fireless cookers will		
	Output 1.2 Diversified alternative livelihood sources	1.2.1 Procure and distribute improved assorted fruit trees seedlings (Mangoes, pawpaw, passion, avocadoes etc) that are drought tolerant to selected farmer groups at Loitokitok, Lower Yatta, Tana and Athi River basins among other program target areas. 1.2.2 Establish well equipped fruit tree nursery run by farmer groups in selected sites to supply and improve access of seedlings for planting.				

	Output 1.3 Increased food production through appropriate and efficient irrigation methods	1.3.3 Procure and set up efficient farm level irrigation infrastructure in target areas 1.3.4 Irrigate 64 acres Walda farm in Marsabit County 1.3.5 Construct water harvesting trenches per farmer group across target sites. 1.3.6 Undertake capacity building for farmer groups on irrigation agriculture such as drip irrigation, construction and management of trenches to increase food productivity		reduce women and girl child's time spent on fetching firewood by 30% against the baseline indicator. Time saved will be then be used for other productive activities such as agriculture for women and education for girl child. -The purposeful selection of women participation in the programme activities and ensuring gender balance will increase by about30% against baseline of women and youth involvement in implementation and benefit sharing. - 30000 improved /certified fruit tree seedlings distributed - 20 fodder storage facilities – with a mechanized	Reports and Surveys	
	Output 1.5 Increase animal production through promotion of droug	1.5.1 Construct 1 storage facility of fodder in each pastoral farmer group and promote its adoption across sites 1.5.2 Establish a mechanized fodder processing plant per 10 farmer groups targeting pastoral and agro pastoral farmers in selected sites to enhance value addition on fodder and alternatives feed for animal during dry period 1.5.3 Procure and plant drought and			Reports and Surveys	

	ht resistant animal breeds, pasture conservation and emergency fodder banks	climate resilient accessions/varieties of grass and forage to selected farmer groups across implementing sites to enhance sufficient animal feeds during dry spell periods. 1.5.4 Establish at least 5 green zones for pasture production through purchase of grass seeds among selected farmer groups especially on exhausted rangeland fields at Wajir and Garissa. 1.5.5 Establishment and rehabilitation of livestock watering points such as water trough to ensure adequate water supply for the livestock during the dry period 1.5.8 Provide at least 4 extension services per farmer group to enable them respond to livestock management and early warnings of bad weather		processing system - 5 green zones established - Drought tolerant varieties of fodder distributed in the target pastoral communities - Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress		
	Output 1.6 Enhanced land	1.6.1 Introduce and upscale five soil technologies that increase rain water infiltration in selected sites. 1.6.2 Adoption of terracing across implementing sites to support soil		Ecosystem based adaptation adopted across the programme areas	Reports and Surveys	

	productivity through ecological land use systems, conservation strategies and management technologies	conservation and crop productivity 1.6..3 Adoption of improved fallow species with high nitrogen content reduce application of inorganic fertilizer in agricultural crops 1.6.4 Establish tree nurseries, herbal gardens and woodlots to enhance ecosystem based adaptation				
Outcome 2 Improving climate resilient water management	**Output 2.1** Established appropriate physical assets and infrastructur	2.1.1 Construction of water pans to harness water harvesting to capacity of 352,000 m3 in the selected sites as follows; 2.1.2 Construction of pipe 9.8 KM long to harvest flood water from Narumoru river at Thome, Laikipia County 2.1.3 Install equipment for constructed dams at selected sites to support agricultural production and domestic needs	No. an types of physical assets for water harvesting, storage and irrigation constructed to withstand conditions resulting from climate variability and change	-Water Development sector services responsive to evolving needs from changing and variable climate -Water sector Physical infrastructure improved to withstand climate change and variability-	Reports and Surveys	**<u>Risks</u>** -Lack of political goodwill

systems to enhance food security in selected Counties in Kenya	e for water harvesting, storage and irrigation	2.1.4 Install water tanks and gutters to promote roof water harvesting, and one check dam in Tana Delta 2.1.6 Enhance river bank, canals, retention ponds and protection by planting grasses/fodder grass, bamboo, bananas, sugarcane, agro-forestry trees and conservation of natural bushes. 2.1.7 Establish and strengthen water users associations 2.1.8 Fence off spring & water sources to protect them further degradation.		induced stress as follows: - 6 water pans at capacity of 17,000 m3 each at Wajir and Garissa; 50 farm ponds at capacity of 3000 m3 each at Kajiado; 6 water pans at capacity of 5000 m3 each at Loitokitok district; 2 water pans at capacity of 5000 m3 each at Thome in Laikipia and 10 water pans in Kwale, Kilifi, Tana River and Taita-Taveta in Coast region. - 5000 households with water tanks and gutters for roof water		

				harvesting, - One check-dam in Tana Delta to serve about 1500 farmers - Formation of water users association where all the above infrastructure will be constructed		
Outcome 3: Increased Resilience and adaptive capacity of	**Output 3.1** Rehabilitated Mangrove Ecosystems	3.1.1 Survey and Demarcation 3.1.2 Formation of Community Mangrove Management Units (In liaison with KFS) 3.1.3 Mangrove Training, Education and Awareness 3.1.4 Empowering and capacity building of the community for Participatory Forest Management (PFM) 3.1.5 Payment for Ecosystem	No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	- Ecosystem services and natural assets of Vanga and Gazi mangrove ecosystem maintained or improved under climate change and variability-	Reports and Surveys	**<u>Assumptions</u>** -Adoption and support from local communities - **<u>Risks</u>** -High illiteracy levels amongst some communities

coastal communities against the effects of rise in sea level and shoreline changes through the implementation of ISMEM		Services (PES) Capacity Building 3.1.6 Socio-economic Evaluation and Resource Evaluation 3.1.7 Development of Management Plan - Exploitation and socio-economic 3.1.8 Purchase of Seeds 3.1.9 Setting up of Tree Nurseries 3.1.10 Mangrove Planting 3.1.11 Monitoring and Evaluation		induced stress - Secured human habitation and development for communities in Vanga and Gazi - GIS database/Map of Vanga and Gazi mangrove ecosystem - Resource evaluation of Vanga and Gazi Mangroves - A management plan for the Vanda and Gaze Mangroves - Mangrove		
	Output 3.2 Rehabilitated and protected of Coral Reefs	3.2.1 Capacity Building for BMUs and local communities on coral reef protection 3.2.2 Site Survey and Demarcation 3.2.3 Structural Design 3.2.4 Environmental Impact Assessment 3.2.5 Mobilization and awareness creation for stakeholders 3.2.6 Erection of green coral reef protection structures 3.2.7 Establishment of Coral Reef Protection Units (with membership from BMUs, local community and key stakeholders) 3.2.8 Monitoring and Evaluation				
	Output 3.3 Stabilized Shoreli	3.3.1 Site Survey and Demarcation 3.3.2 Structural Design 3.3.3 Environmental Impact Assessment 3.3.4 Construction of green				

	ne	shoreline reinforcement structures 3.3.5 Capacity building of BMUs and stakeholders on shoreline management 3.3.6 Monitoring and Evaluation		planting/enrichment planting for restoration in the entire Vanga and Gazi Mangroves - 20 tree nurseries of mangroves for sustained mangrove enrichment planting. - Green coral reef protection structures established - Establishment of beach management units - Green erosion and accretion control structures established		
	Output 3.4 Controlled Coastal erosion and accretion	3.4.1 Site survey and mapping 3.4.2 Structural Design 3.4.3 Environmental Impact Assessment 3.4.4 Erection of green erosion and accretion control structures 3.4.5 Mobilization and awareness creation on erosion and accretion control for local communities, BMUs and other stakeholders 3.4.6 Monitoring and Evaluation				
	Output 3.5 Inventory and GIS Database for the shoreline and mangrove ecosystems	3.5.1 Purchase of GIS Equipment and Software 3.5.2 GIS Capacity Building for Executing Entity 3.5.3 GIS Consultancy 3.5.4 Field Survey and Mapping (PGIS) 3.5.5 Setting up of an Inventory 3.5.6 Creation of GIS Database 3.5.7 GIS Database Management 3.5.8 Equipment Maintenance 3.5.9 Monitoring and Evaluation (Ground Proofing) – Geospatial with web portal				

Outcome 5: Strengthening capacity and knowledge management on climate change adaptation	**Output 5.1** : Knowledge on climate change adaptation disseminated through print, electronic and art	5.1.1 Undertake 15 air radio programme (local language and Kiswahili), 30barazas, 10 drama and 20 community forums to disseminate information on climate change 5.1.2 Produce at least 1000 assorted knowledge products to disseminate information on adaptation to climate change 5.1.3 Develop an interactive programme website to enhance feedback and information dissemination on climate change adaptation practices. 5.1.4 Establish and operationalize the central programme repository system to improve storage, retrieval and sharing of information climate change adaptation practices. 5.1.5 Produce at least 6 peer reviewed journal papers on adaptations measures to support knowledge generation and dissemination on enhancing resilience to climate change 5.1.6 Train farmer groups on various adaptation measures to improve resilience to climate change	- No. of staff trained to respond to, and mitigate impacts of, climate-related events -No. and type of risk reduction actions or strategies introduced at local level -No. of news outlets in the local press and media that have covered the topic -No., type, and sector of policies introduced or adjusted to address climate change risks -No. or targeted development strategies with incorporated climate change priorities enforced	- 30% of targeted population aware adverse impacts of climate change, and of appropriate responses - Knowledge management products developed and disseminated - Innovations to generate new ideas in the project implementation as well research based strategies. - Best practices and lessons learnt from these new innovations will be documented and shared with the government ministries	- Surveys - Reports	**<u>Assumptions</u>** -Adoption and support from local communities -Support by central and county governments especially in policy formulation **<u>Risks</u>** -Hostility from some target communities -High illiteracy levels amongst some communities -Lack of political goodwill

	Output 5.2: Research, Information generation and documentation of best practices and lessons.	Profile and document the entire programme implementation. Profile all lessons learnt Profile and document best practices Prepare policy brief for central government ministries		at the planning level so that these best practices can be mainstreamed and incorporated in climate change adaptation work within the government. Also it will be shared with target communities and the general public. This is an element of sustainability which is key to adaptation projects - Programme implementation documented. - Lessons learnt profiled - Best practices Profiled and documented - Policy briefs to the government		

3E.Budget and budget notes

PROJECT HOLDER:	**National Environment Management Authority (NEMA - Kenya)**
PROJECT TITLE	**INTEGRATED PROGRAMME TO BUILD RESILIENCE TO CLIMATE CHANGE & ADAPTIVE CAPACITY OF VULNERABLE COMMUNITIES IN KENYA**
PROJECT PERIOD:	**2013 - 2016**

DETAILED BUDGET FOR ALL THE COUNTIES IN KENYA FOR 3 YEARS

I. DIRECT PROJECT COSTS Per Output

Component 1:	**A. Enhancing Climate resilient agricultural, forestry, pastoral and agro-pastoral production systems to improve food security in selected Counties in Kenya.**					**Budget Notes**
Outputs	**Description**	**YEAR 1 Budget in USD**	**YEAR 2 Budget in USD**	**YEAR 3 Budget in USD**	**TOTAL in USD**	
Output 1.1.	Increased adoption of drought tolerant food crops and high value crops	162,447.02	224,199.78	117,678.12	504,324.92	These funds will be used for procurement and distribution of drought tolerant seeds to farmer groups; this will include the establishment of produce bulking centers; establishment of demonstration fields for selected drought tolerant crops and farmer field extension services. It is assumed that this will eventually lead to an increase in adoption of drought tolerant food crops

						/ high value crops as a way of building resilience of vulnerable communities in Kenya. Part of the funds will be used to establish value chain system for the introduced crops
Output 1.2.	Diversified alternative livelihood sources	236,564.05	106,146.40	71,191.67	413,902.12	These funds will be used to procure and distribute assorted improved fruit tree seedlings; and establishing tree nurseries of the fruit trees.
Output 1.3.	Increased food production through appropriate and efficient irrigation methods	139,249.64	374,157.48	100,644.54	614,051.66	This programme shall endeavour to increase food production through appropriate and efficient irrigation methods in Kenya. A total of USD 570,202.38 will be used to scale up irrigation projects
Output 1.5.	Increased animal production through adoption of drought tolerant fodder crops	254,509.90	127,394.40	118,984.88	500,889.17	A cost of USD 483,605.47 will be used for introduction and up-scaling of drought tolerant fodder crops
Output 1.6.	Enhanced land productivity through ecological land use systems , conservation strategies and management technologies	108,422.01	102,872.01	32,211.08	243,505.10	A cost of USD142, 933.24 will be used to upscale use of agroforestry technologies, upscale soil and water retention technologies, improve fallow species and establish herbal gardens and techniques. A cost of USD 100,571.86 will be used to promote the establishment of tree nurseries and woodlots in various ASAL

						areas in Kenya. More tress and woodlots will reduce the pressure from the natural forests in Kenya
Total Component 1		**901,192.62**	**934,770.07**	**440,710.35**	**2,276,673.05**	
Component 2:	**A. Improving climate resilient water management systems to enhance food security in selected Counties in Kenya**					
Outputs	**Description**	**YEAR 1 Budget in USD**	**YEAR 2 Budget in USD**	**YEAR 3 Budget in USD**	**TOTAL in USD**	
Output 2.1.	Water harvesting & storage and efficient water use technologies promoted and adopted through physical assets; Construction of water dams & pans, roof water catchment and storage, water pumps, Gabions/flood structure, design of flood water harvesting at Naromoru river	1,261,203.88	1,461,871.58	348,091.25	3,071,166.71	These funds will be used for construction of water pans, construction of flood water harvesting pipes canals, construction of irrigation points, installation of water storage facilities, pipes and the construction of check dams and to protect river banks.
Total Component 2		**1,261,203.88**	**1,461,871.58**	**348,091.25**	**3,071,166.71**	
Component 3:	**A. Improving climate resilient water management systems to enhance food security in selected Counties in Kenya**					
Outputs	**Description**	**YEAR 1 Budget in USD**	**YEAR 2 Budget in USD**	**YEAR 3 Budget in USD**	**TOTAL in USD**	

Output 3.1.	Promote Integrated Shoreline and Mangrove Ecosystem Management (ISMEM) at Coastal region through: Rehabilitation Mangroves, Coral reef, stabilization of Shorelines, accretion control, Coastal erosion control and development of the management plan for Gazi and Vanga mangrove ecosystem.	609,818.00	-	-	609,818.00	These funds will be used to promote Integrated Shoreline and Mangrove Ecosystem Management (ISMEM) at the Coastal region of Kenya through: Rehabilitation Mangroves, Coral reef, stabilization of Shorelines, accretion control, Coastal erosion control and development of the management plan for Gazi and Vanga mangrove ecosystem.
Total Component 3		**609,818.00**	**-**	**-**	**609,818.00**	
Component 4:	**Enhanced use of alternative energy sources and energy saving technologies**					
Outputs	**Description**	**YEAR 1 Budget in USD**	**YEAR 2 Budget in USD**	**YEAR 3 Budget in USD**	**TOTAL in USD**	
Output 4.1	Enhanced use of alternative energy sources and energy saving technologies	258,230.61	140,244.61	29,351.77	427,826.99	Another USD 440,507.94 shall be utilized in assembling and promoting use of alternative sources of energy or promoting the use of energy saving cook-stoves among rural communities
Total Component 4		**258,230.61**	**140,244.61**	**29,351.77**	**427,826.99**	

Component 5:	**A. Institutional capacity, knowledge management, awareness raising and promotion adaptation mechanisms to improve resilience on climate change**					
Outputs	**Description**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**TOTAL in USD**	
Output 5.1.	Knowledge on climate change adaptation disseminated through print, electronic and art - Brochures, Booklets, Radio talk shows held in local dialects.	55,088.10	36,015.46	16,119.63	107,223.18	The cost will be dedicated purely for information dissemination to the targeted beneficiaries and Kenyans in general on appropriate methods of adaptation, their applications and effectiveness. Further the monies allocated will be utilized to package community strategies for records and sharing.
Output 5.2.	Research, Information generation and documentation of best practices and lessons.	81,996.11	38,696.11	52,494.96	173,187.18	This output will focus on financing innovations to generate new ideas in the project implementation as well research based strategies. Best practices and lessons learned from these new innovations will be documented and shared with target communities and the general public. This is an element of sustainability which is key to adaptation projects
Total Component 5		**137,084.21**	**74,711.57**	**68,614.59**	**280,410.36**	
TOTAL DIRECT PROGRAMME COSTS PER COMPONENT (A)		**3,167,529.32**	**2,611,597.83**	**886,767.96**	**6,665,895.11**	**USD 6,778, 576.06 is the total cost of implementing the above activities; it is the total direct cost of implementation. This cost makes 66.66% of the total project Budget.**

TOTAL DIRECT PROGRAMME COSTS (B)	**884,360.00**	**549,224.80**	**375,000.00**	**1,808,584.80**	A total of USD 1,808,584.80 is the actual cost directly related to implementing the project activities. It includes costs like: (i) Salaries & Benefits for Programme Implementation Staff at the project sites; (ii) Purchase of Project Equipment like Computers and Cameras (iii) Travel and related costs for project staff and other costs directly related to the implementation of the project including project vehicles, fuel and maintenance, insurance, and car-hire
TOTAL DIRECT COSTS (A+B)	**4,051,889.32**	**3,160,822.63**	**1,261,767.96**	**8,474,479.91**	
Execution Cost by Executing Entities - 9.5% of Total Project Cost (C)	**384,929.49**	**300,278.15**	**119,867.96**	**805,075.59**	These are costs related to overheads for the executing entities (EE) which includes but not limited to: 1. Project management costs, 2. Headquarters staff 3. Cost of monitoring and evaluation (M&E), 4. Staffs per diems for M&E 5. Office running costs such as: Rent rates, stationery, Office general supplies, postage/courier services, utility bills, banking charges, security, repair and maintenance and communication.

Project and Programme Cycle Management Fee - NIE - 8.5% of Total Project Cost (D)	**344,410.59**	**268,669.92**	**107,250.28**	**720,330.79**	These are costs related to the management of the entire project and the management of executing entities (EE) by the NIE. A detailed budget for these funds is provided.
GRAND TOTAL	**4,781,229.40**	**3,729,770.70**	**1,488,886.19**	**9,999,886.29**	Entire programme cost for 3 years.

1 ANNEX 3: DISBURSEMENT MATRIX – KENYA PROGRAMME

	Upon Agreement signature	One Year after Project Start[a/]	Year 2[b/]	Year 3	Year 4[c/]	**Total**
Scheduled Date						
Project Funds	4,436,818.81	3,461,100.78	1,381,635.93			9,279,555.50
Implementing Entity Fee	344,410.59	268,669.92	107,250.28			720,330.79
Total	**4,781,229.40**	**3,729,770.70**	**1,488,886.21**	**0.00**	**0.00**	**9,999,886.29**

Appendix 1

3D) Alignment of Programme Components and Outcomes with Adaptation Fund Results Framework

Table 12: Programme Components and Outcomes with Adaptation Fund Results Framework

Programme components	Programme Indicator(s)	Fund Outcome	Fund Outcome Indicator	Fund Output	Fund Output Indicator	Grant Amount (USD)
1. Enhancing Climate Change resilience for improved food security in selected Counties	Percentage of households with secure food supply Number of households with increased types of climate resilient livelihoods	**Outcome 6**: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1 Percentage of households and communities having more secure (increased) access to livelihood assets 6.2. Percentage of targeted population with sustained climate-resilient livelihoods	**Output 6:**Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual- or community-livelihood strategies 6.1.2. Type of income sources for households	

	Percentage of farmers adopting agro forestry practices	**Outcome 5:** Increased ecosystem resilience in response to climate change and variability-induced	5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress	**Output 5.**Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including	generated under climate change scenario 5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	

		stress		variability		
2. Improving climate resilient water management systems to enhance food security in selected Counties	No. and type of water infrastructure constructed and improved to enhance resilience to climate change	**Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	***Output 4:*** Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	
3. Increase resilience to climate change of Shoreline and Mangrove Ecosystem in Kenyan coastal zone	Area of stabilized shorelines and rehabilitated mangroves to enhance climate change resilience and protection	**Outcome 5:** Increased ecosystem resilience in response to climate change	5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress	**Output 5.** Vulnerable physical, natural, and social assets strengthened in response to	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions	

	investments	and variability-induced stress		climate change impacts, including variability	resulting from climate variability and change (by type of assets)	
4. Disaster risk reduction and increasing preparedness among vulnerable communities	No. and type of physical and natural infrastructure established and improved to reduce risk of disaster	**Outcome 1:** Reduced exposure at national level to climate-related hazards and threats **Outcome 4:** Increased	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis weather events	***Output 1:*** Risk and vulnerability assessments conducted and updated at a national level ***Output 4:***	1.1. No. and type of projects that conduct and update risk and vulnerability assessments 1.2 Development of early warning systems 4.1.1. No. and type of health or social infrastructure	

		adaptive capacity within relevant development and natural resource sectors **Outcome 5**: Increased ecosystem resilience in response to	4.1. Development sectors' services responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 5. Ecosystem services and natural assets maintained or improved	Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability **Output 5:** Vulnerable physical, natural, and	developed or modified to respond to new conditions resulting from climate variability and change (by type) 4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability	

		climate change and variability-induced stress	under climate change and variability-induced stress	social assets strengthened in response to climate change impacts, including variability	and change (by asset types) 5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	
5. Strengthening	No. of people	**Outcome 2:**	2.1. No. and type of targeted	***Output 2.1***:	2.1.1. No. of staff	

institutional capacity and knowledge management on climate change adaptation	trained for effective programme implementation No. and type of knowledge products developed and disseminated	Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses **Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction	institutions with increased capacity to minimize exposure to climate variability risks 3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of	Strengthened capacity of national and regional centers and networks to respond rapidly to extreme weather events ***Output 3***: Targeted population groups participating in adaptation and risk reduction	trained to respond to, and mitigate impacts of, climate-related events 3.1.1 No. and type of risk reduction actions or strategies introduced at local	

		processes at local level **Outcome 7:** Improved policies and regulations that promote and enforce resilience measures	appropriate responses 3.2. Modification in behavior of targeted population 7. Climate change priorities are integrated into national development strategy	awareness activities ***Output 7:*** Improved integration of climate-resilience strategies into country development plans	level 3.1.2 No. of news outlets in the local press and media that have covered the topic 7.1. No., type, and sector of policies introduced or adjusted to address climate change risks 7.2. No. or targeted development strategies with incorporated	

					climate change priorities enforced	

Appendix 2

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CLIMATE CHANGE ADAPTATION

LIST OF ATTENDANCE

DURING STAKEHOLDERS FORUM ON A **TRAINING/MEETING**

AT .... **DATE** 21st SEPT 2011

No.	NAME	GROUP (CBO/FBO/WUC etc)	GENDER M/F	ID NUMBER	IF RC PARENT /GUARDIAN, RC NAME	SCHOOL NAME OF RC	SIGNATURE
1.	KAMAU P NGUMBA	OSIENALA	M	22619485			
2.	Peter O. MIRERI	OSIENALA	M	22249975			
3.	William Marurang	WVK-NO	M	8501998			
4.	GAchengo Munti	WVK-NO	M	5173240			
5.	Zakayo Lolpejalai	WVK-NO	M	12759773			
6.	David Anjere	GAPAH	M	11560784			
7.	JAMES O. OMOL	W.V. STAFF	M	9177972			
8.	Regina Tidd	W.V staff	F	21119109			
9.	Edgar Juma	WV Staff	M	7937852			
10.	R. Nyawira	"	"	—			
11.	Timothy Oduol	MALUNGA	M	20104719			
12.	DAVID OMONDI		M	25435694			
13.	Nyamoking Chris	Staff	M	11597110			
14.							

World Vision

CLIMATE CHANGE ADAPTATION

LIST OF ATTENDANCE

DURING STAKEHOLDERS FORUM ON ^ **TRAINING/MEETING**

AT TONGA CATHOLIC PARISH HALL **DATE** 21st SEPT 2011

No.	NAME	GROUP (CBO/FBO/WUC etc)	GENDER M/F	ID NUMBER	IF RC PARENT /GUARDIAN , RC NAME	SCHOOL NAME OF RC	SIGNATURE
1.	DR. Godfrey Ogonda	OSIENALA	M	10703468			[signature]
2.	ANNE OKELO	OSIENALA	F	20259752			[signature]
3.	Eli Otieno	GREEN FOREST SOCIAL INV	M	23255404			[signature]
4.	Bulwer Odira	G.H.F.C.A	F	8260260			[signature]
5.	MAURICE O. OGOLA	G.H.F.C.A	M	5857742			[signature]
6.	ELPHAS O. TEMBE	NYAKONYA CBO	M	8110545			[signature]
7.	LEA AWITI	AKONYA CBO	W	7210600			[signature]
8.	JACTON MIGUNA	GSPDG	M	8096479			[signature]
9.	KENNEDY OSANA	PUNDO SUPPORT GRP	M	20218736			[signature]
10.	FRANCIS W. KITOTO	SUSHO CBO	M	8154064			[signature]
11.	JOAKIM OGUDH	G.H.F.CA	M	1470894			[signature]
12.	SALMON OTIENO	GSDDG	M	27211814			[signature]
13.	[illegible]	GSID [illegible]	M	[illegible]			[signature]
14.	[illegible]	[illegible]	[illegible]	[illegible]			[signature]

World Vision

CLIMATE CHANGE ADAPTATION

LIST OF ATTENDANCE

DURING STAKEHOLDERS FORUM ON ^ TRAINING/MEETING
AT TONGA CATHOLIC PARISH HALL DATE 21st SEPT 2011

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1.	DR. Godfrey Ogonda	OSIENALA	M	10703468			
2.	ANNE OKERO	OSIENALA	F	20259752			
3.	Eli Otieno	GREEN FOREST SOCIAL INV	M	23255404			
4.	Quinter Odiva	G.H.F.C.A	F	8260260			
5.	MAURICE O. OGOLA	G.H.F.C.A	M	5857743			
6.	ELPHAS O. TEMBE	NYAKONYA CBO	M	8160545			
7.	LEA AWITI	AKONYA CBO	W	7210600			
8.	JACTON MIGUNA	GSPDG	M	8096479			
9.	KENNEDY OSAWA	PUNDO SUPPORT GRO	M	22218736			
10.	FRANCIS W. KITOTO	SUSHO CBO	M	8154064			
11.	JOAKIM OGUDA	G.H.F.C.A.	M	1470894			
12.	SALMON OTIENO	GSPDG	M	27211814			
13.	[illegible]	GSPD Group	M	6612364			
14.	FIBI OENGO	GSPD GROUP	F				
15.	Maureen Atieno	BOKIMO TOUR Group	F	26175191			
16.	Catherine Okumu	Green Forest social int.	F	26061955			
17.	Beatrice Achieng	GSPDG	F	27964711			
18.	GORDON OCHIENG'	M.O.A	M	6191759			
19.	Timothy Mwaki'o	WV Kenya Nrb.	M	14511480			
20.	Philomon Owillo	a member of G-H	F	4478094			

No of FEMALE PARTICIPANTS	No of RC PARENTS/GUARDIANS	No of RC PARENTS/GUARDIANS WITH DISABILITY	
No of MALE PARTICIPANTS	No of OTHER PARENTS/ GUARDIANS	No of OTHER PARENTS/GUARDIANS WITH DISABILITY	

Prepared By EDGAR JUMA Sign......... Date 21st SEPT 2011	Reviewed By Mamonkis Chui Sign......... Date 29/9/11	Approved By OMONDI FREDERICK Sign......... Date 29.09.2011

CLIMATE CHANGE ADABTATION

LIST OF ATTENDANCE

DURING STAKEHOLDERS FORUM ON A TRAINING/MEETING

AT .... DATE 21st SEPT 2011

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1.	KAMAU P NGUMBA	OSIENALA	M	22619485			
2.	Peter O. MIRERI	OSIENALA	M	22349975			
3.	William Mawranga	WVK-NO	M	1501998			
4.	GACHENGO MURIU	WVK-NO	M	5173240			
5.	Zakayo Lolpejalai	WVK-NO	M	12752773			
6.	DAVID ANGIRO	GAPAH	M	11560784			
7.	JAMES O. OMOL	W.V. STAFF	M	9177972			
8.	Regina Hald	W.V staff	F	25119109			
9.	EDGAR JUMA	WV Staff	M	7937852			
10.	R. Nyawira	〃	〃	—			
11.	Omondi Odudi	MAHUMBA	M	20144519			
12.	DAVID OMONDI		M	25435649			
13.	Nawoakiis Chuis	STEPH	M	11597110			
14.							
15.							
16.							
17.							
18.							
19.							
20.							

No of FEMALE PARTICIPANTS	No of RC PARENTS/GUARDIANS		No of RC PARENTS/GUARDIANS WITH DISABILITY
No of MALE PARTICIPANTS	No of OTHER PARENTS/ GUARDIANS		No of OTHER PARENTS/GUARDIANS WITH DISABILITY

Prepared By EDGAR JUMA .... Sign .... Date 21st SEPT 2011	Reviewed By Nawoakiis .... Sign .... Date 29/9/2011	Approved By OMONDI FREDERICK .... Sign .... Date 29.09.2011