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building climate resilience

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Abbreviations and acronyms

ACC	African Conservation Centre
ACM	Adaptive Collaborative Management approach
Act!	Act, Change and Transform
ACTS	African Centre for Technology Studies
AdapCC	Adapt to Climate Change
AFD	French Development Agency
ALDEF	Arid Lands Development Focus
ALIN	Arid Lands Information Network
ASALs	Arid and Semi-arid Lands
ATPS	African Technology Policy Studies
AWF	African Wildlife Foundation
AYICC	African Youth Initiative of Climate Change
BMUs	Beach Management Units
BUCDEO	Bunyore Community Development and Environmental Organisation
CBO	Community Based Organisations
CD	Cafédirect
CDKN	Climate and Development Knowledge Network
CDTF-CEF	Community Development Trust Fund-Community Environmental Facility
CFAs	Community Forest Associations
CFG	Climate Finance Governance
CGIAR	Consultative Group on International Agricultural Research
CGN	Climate Governance Network
CNA	Climate Network Africa
COP12	Conference of Parties
CORDAID	Catholic Organisation for Relief and Development Aid
CORDIO	Coastal Oceans Research and Development in the Indian Ocean
CRiSTAL	Community Based Risk-Screening Tool – Adaptation and Livelihoods
CSOs	Civil Society Organisations
CSTI	Centre for Science and Technology innovation
CVCA	Climate Vulnerability and Capacity Analysis
DFID	Department for International Development
DPA	District Pastoral Association
DRR	Disaster Risk Reduction
EAWLS	East African Wild Life Society

ECHO	European Commission Humanitarian Office
ENSO	El Nino Southern Oscillation
EPK	Eastern Produce Kenya
FAN	Forest Action Network
FCPF	Forest Carbon Partnership Facility
FEWS-NET	Famine Early Warning Systems Network
GBM	Green Belt Movement
GCRMN	Global Coral Reef Monitoring Network
GDC	German Development Cooperation
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft Zusannenarbeit
GoK	Government of Kenya
GTZ	German Technical Cooperation
GWI	Global Water Initiative
HBF	Heinrich Boel Foundation
HCEP	Host Community Program
HSNP	Horn of Africa Emergency Project,
IBA	Important Bird Areas
ICJ	International Commission of Jurists
ICRI	International Coral Reef Initiative
IEW	Institute for Environment and Water
IIED	International Institute of Environment and Development
IIN	Indigenous Information Network
ILEG	Institute for Law Enforcement and Governance
IOD	Indian Ocean Dipole
IUCN	World Conservation Union
IWRM	Integrated Water Resource Management
KACCAL	Kenya Adaptation to Climate Change in Arid Lands
KARA	Kenya Alliance of Residents Association
KARI	Kenya Agricultural Research Institute
KCA	Kenya Correspondents Association
KCCWG	Kenya Climate Change Working Group
KCF	Kenya Climate Change Forum
KCJWC	Kenya Climate Justice Women Champions
KCOMACP	Kuruwitu Community Marine Conservation Project
KCWA	Kuruwitu Conservation Welfare Association
KEBS	Kenya Bureau of Standards

KENFAP	Kenya National Federation of Agricultural Producers
KENVO	Kijabe Environment Volunteers
KFWG	Kenya Forests Working Group
KMD	Kenya Metrological Department
KNAS	Kenya National Academy of Sciences
KRCS	Kenya Red Cross Society
KTDA	Kenya Tea Development Agency
KWCF	Kenya Wildlife Conservation Forum
KWF	Kenya Wetland Forum
KYCN	Kenya Youth Climate Network
KYG	Kenya Young Greens
LDCs	Least Developed Countries
LIPFUND	Livestock Purchase Fund
MACODEP	Magarini Community Development Programme
NCA	Norwegian Church Aid
NCCCK	National Climate Change Consortium of Kenya
NCCRS	National Climate Change Response Strategy
NGOs	Non-Governmental Organisations
NYCC3	Third National Youth Conference on Climate Change
PACJA	The Pan African Climate Justice Alliance
PANERECC	Parliamentary Network on Renewable Energy and Climate Change
PELUM	Participatory Ecological Land Use Management
PES	Payment for Environmental Services
PPP	Public-Private-Partnership
RCCCC	Red Cross and Red Crescent Climate Centre
RECONCILE	Resource Centre for Civil Leadership
REDD+	Reduced Emissions from Deforestation and forest Degradation
REGLAP	Regional Learning and Advocacy Programme
R-PP	Readiness Preparation Proposal
SEMPP	Socio-Economic Monitoring Pilot Project
SSGs	Site Support Groups
START	Global change System for Analysis, Research and Training
STI	Science, Technology and Innovation
TCZCDP	Tanga Coastal Zone Conservation and Development Project
THINK Foundation	The Innovation Knowledge Foundation
TI	Transparency International
TIST	International Small Group Tree Planting Programme
UN	United Nations

UNFCCC	United Nations Framework Convention on Climate Change
WASDA	Wajir Sustainable Development Association
WCS	Wildlife Conservation Society
WI	Wetland International
WRUAs	Water Resource User Associations
WSF	World Social Forum
WWF ESARPO)	World Wide Fund for Nature Eastern and Southern Africa Regional Programme Office

Glossary of terms

Adaptation. Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory, autonomous and planned adaptation (IPCC AR4 WGII, 2007).

Adaptive capacity (in relation to climate change impacts). The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. (IPCC AR4 WGII, 2007)

Baseline/reference. The baseline (or reference) is the state against which change is measured. It might be a 'current baseline', in which case it represents observable, present-day conditions. It might also be a 'future baseline', which is a projected future set of conditions excluding the driving factor of interest. (IPCC AR4 WGII, 2007)

Capacity building. In the context of climate change, capacity building is developing the technical skills and institutional capabilities in developing countries and economies in transition to enable their participation in all aspects of adaptation to, mitigation of, and research on climate change, and in the implementation of the Kyoto Mechanisms, etc. (IPCC AR4 WGII, 2007)

Climate change. Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. (IPCC AR4 WGI, 2007)

Climate threshold. The point at which external forcing of the climate system, such as the increasing atmospheric concentration of greenhouse gases, triggers a significant climatic or environmental event which is considered unalterable, or recoverable only on very long time-scales, such as widespread bleaching of corals or a collapse of oceanic circulation systems. (IPCC AR4 WGII, 2007)

Climate variability. Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability). (IPCC AR4 WGI, 2007)

Downscaling. Downscaling is a method that derives local- to regional-scale (10 to 100 km) information from larger-scale models or data analyses. Two main methods are distinguished: dynamical downscaling and empirical/statistical downscaling. The dynamical method uses the output of regional climate models, global models with variable spatial resolution or high-resolution global models. The empirical/statistical methods develop statistical relationships that link the large-scale atmospheric variables with local/regional climate variables. In all cases, the quality of the downscaled product depends on the quality of the driving model. (IPCC AR4 WGI, 2007)

Ecosystem services. Ecological processes or functions having monetary or non-monetary value to individuals or society at large. There are (i) supporting services such as productivity or biodiversity maintenance, (ii) provisioning services such as food, fibre, or fish, (iii) regulating services such as climate regulation or carbon sequestration, and

(iv) cultural services such as tourism or spiritual and aesthetic appreciation. (IPCC AR4 WGII, 2007)

Emission scenario. A plausible representation of the future development of emissions of substances that are potentially radiatively active (e.g., greenhouse gases, aerosols), based on a coherent and internally consistent set of assumptions about driving forces (such as demographic and socioeconomic development, technological change) and their key relationships. (IPCC AR4 WGI, 2007)

Extreme weather event. An extreme weather event is an event that is rare at a particular place and time of year. Definitions of *rare* vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile of the observed probability density function. (IPCC AR4 WGI, 2007)

Greenhouse gas (GHG). Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4) and ozone (O_3) are the primary greenhouse gases in the Earth's atmosphere. (IPCC AR4 WGI, 2007)

Impacts. The effects of climate change on natural and human systems. Depending on the consideration of adaptation, one can distinguish between potential impacts and residual impacts:

- **Potential impacts:** all impacts that may occur given a projected change in climate, without considering adaptation.
- **Residual impacts:** the impacts of climate change that would occur after adaptation. (IPCC AR4 WGII, 2007)

Mitigation. A human intervention to reduce the sources or enhance the sinks of greenhouse gases. (IPCC AR4 WGI, 2007)

Risk. Combination of the probability (likelihood) of an event and its consequences (ISO/IEC, 2002).

Resilience. The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change. (IPCC AR4 WGII, 2007)

Sensitivity. Sensitivity is the degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea-level rise). (IPCC AR4 WGII, 2007)

SRES scenarios. The storylines and associated population, GDP and emissions scenarios associated with the Special Report on Emissions Scenarios (SRES) (Nakićenović *et al.*, 2000), and the resulting climate change and sea-level rise scenarios. Four families of socio-economic scenario (A1, A2, B1 and B2) represent different world futures in two distinct dimensions: a focus on economic versus environmental concerns, and global versus regional development patterns. (IPCC AR4 WGII, 2007). The following terms are relevant for a better understanding of the structure and use of the set of SRES scenarios (IPCC AR4 WGI, 2007):

- **Scenario family Scenarios** that have a similar demographic, societal, economic and technical change storyline. Four scenario families comprise the SRES scenario set: A1, A2, B1 and B2.

- **Illustrative Scenario.** A scenario that is illustrative for each of the six scenario groups reflected in the Summary for Policymakers of Nakićenović and Swart (2000). They include four revised scenario markers for the scenario groups A1B, A2, B1, B2, and two additional scenarios for the A1FI and A1T groups. All scenario groups are equally sound.
- **Marker Scenario.** A scenario that was originally posted in draft form on the SRES website to represent a given scenario family. The choice of markers was based on which of the initial quantifications best reflected the storyline, and the features of specific models. Markers are no more likely than other scenarios, but are considered by the SRES writing team as illustrative of a particular storyline. They are included in revised form in Nakićenović and Swart (2000). These scenarios received the closest scrutiny of the entire writing team and via the SRES open process. Scenarios were also selected to illustrate the other two scenario groups.
- **Storyline.** A narrative description of a scenario (or family of scenarios), highlighting the main scenario characteristics, relationships between key driving forces and the dynamics of their evolution.

Storm surge. The temporary increase, at a particular locality, in the height of the sea due to extreme meteorological conditions (low atmospheric pressure and/or strong winds). The storm surge is defined as being the excess above the level expected from the tidal variation alone at that time and place. (IPCC AR4 WGI, 2007)

Threshold. The level of magnitude of a system process at which sudden or rapid change occurs. A point or level at which new properties emerge in an ecological, economic or other system, invalidating predictions based on mathematical relationships that apply at lower levels. (IPCC AR4 WGII, 2007)

Uncertainty. An expression of the degree to which a value (e.g., the future state of the climate system) is unknown. Uncertainty can result from lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from quantifiable errors in the data to ambiguously defined concepts or terminology, or uncertain projections of human behaviour. Uncertainty can therefore be represented by quantitative measures, for example, a range of values calculated by various models, or by qualitative statements, for example, reflecting the judgement of a team of experts. (IPCC AR4 WGI, 2007)

Vulnerability. Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity. (IPCC AR4 WGII, 2007)

REFERENCES:

IPCC AR4 WGI (2007). Climate Change 2007 - The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007. Glossary available online:

http://www.ipcc.ch/pdf/glossary/ar4-WGI.pdf

IPCC AR4 WGII (2007). Climate Change 2007 - Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007. Glossary available online: http://www.ipcc.ch/pdf/glossary/ar4-wg2.pdf

ISO/IEC (2002). Guide 73: Risk management – Vocabulary – Guidelines for use in standards, pp16.

Nakićenović, N., J. Alcamo, G. Davis, B. de Vries, J. Fenhann, S. Gaffin, K. Gregory, A. Grübler, T.Y. Jung, T. Kram, E.L. La Rovere, L. Michaelis, S. Mori, T. Morita, W. Pepper, H. Pitcher, L. Price, K. Raihi, A. Roehrl, H.-H. Rogner, A. Sankovski, M. Schlesinger, P. Shukla, S. Smith, R. Swart, S. van Rooijen, N. Victor and Z. Dadi, (2000). Emissions Scenarios: A Special Report of Working Group III of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, and New York, 599 pp.

1. Introduction

1.1 Background and purpose

Civil Society Organisations (CSOs) are among the many actors involved in climate change issues in one way or the other, directly or indirectly. These include many of the CSOs involved in biodiversity conservation and natural resources management. This paper highlights some of the activities undertaken by CSOs involved in climate change with more focus on adaptation. It also provides information on approaches used, climate change vulnerability, impacts of climate change and responses, adaptation and mitigation strategies and lessons learnt from CSOs work in climate change. The paper is aimed at providing information that will be useful in formulation of the National Adaptation Plan. The methodology combined a desk-based review of existing CSOs documents and reports, together with a number of interviews with selected CSOs.

1.2 Structure of this report

Following this short introduction, Chapter 2 highlights some of the climate change-related approaches and activities undertaken by CSOs. This information is presented under the following sub-sections.

- Vulnerability assessment and baseline surveys
- Research in climate change
- Advocacy on climate change
- Institutional and Human Capacity Development
- Policy Development
- Governance
- Information (gathering, packaging and Dissemination)
- Gender Mainstreaming
- Monitoring and Early Warning
- Disaster Risk Reduction and Preparedness
- Livelihood Support
- Technology Transfer
- Energy
- Humanitarian Support
- Indigenous knowledge
- Strategic Partnerships
- Co-management
- Ecosystem based management approaches
- Forest restoration
- Building resilience of coral reefs
- Promotion of better agricultural practices
- Carbon credit markets – green financing

Three case studies have been presented in this section: Case Study 1 is on the Public – Private Partnership “Adapt to Climate Change pilot group of Michimikuru in Meru” where a private company has entered into partnership with tea growers to address climate change

issues; Case Study 2 is on conservation of marine resources, the Kurawitu Marine Conservation Initiative where local communities are protecting coral reefs with a view of making them resilient to impact of climate change and as a result support fishery resources at Coastal Kenya, while Case Study 3 is on adoption of better farming practices by local communities in Malewa River Basin Initiative in Naivasha that is supported by Care Kenya.

Two examples of adaptation and mitigation synergies are presented as case studies. Case Study 4 is a case study of Mbirikani Carbon Project where the African Wildlife Foundation (AWF) is working with communities in a Reduced Emissions from Deforestation and forest Degradation (REDD) project while Case Study 5 is an agricultural and carbon financing project at Nyando River Basin that is supported by Care Kenya.

Chapter 3 provides the lessons learnt from CSOs activities and Chapter 4 concludes the report.

2. Role of Civil Society Organisations in climate change adaptation and mitigation in Kenya

2.1 Background

There are many Civil Society Organisations (CSOs) that have been involved in climate change adaptation and mitigation measures in Kenya. The United Nation Convention on Climate Change acknowledges the role of civil society in Paragraph 1(i) Article 4 in the areas of education, training and public awareness related to climate change. The Convention further encourages Parties to support the widest participation of Non-Governmental Organisations (NGOs) in the climate change process with an emphasis on the above areas. In Kenya, the civil society is known to be a strong agent of change through public awareness creation and policy research, analysis and advocacy on key socio-economic issues including climate change.

Civil society response to climate change in Kenya gained momentum when the Government of Kenya hosted the *12th Session of Conference of Parties (COP12)* to *UNFCCC* and the *2nd Meeting of the Parties to the Kyoto Protocol* in Nairobi in 2006. Various civil society forums were formed to coordinate CSOs' participation in the climate change talks during COP12 under the auspices of the African Centre for Technology Studies (ACTS) and Climate Network Africa (CNA) through support from the International Institute of Environment and Development (IIED). These forums grew and evolved into the following entities – the Kenya Climate Change Forum (KCF) and the National Climate Change Consortium of Kenya (NCCCK). These were facilitated by the Forest Action Network (FAN) and the Kenya National Federation of Agricultural Producers (KENFAP) respectively. In an effort to improve coordination of Kenyan civil societies' action on climate change campaigning, policy and advocacy, KCF and NCCCK began discussions in October 2008 and formally merged as the Kenya Climate Change Working Group (KCCWG) in February 2009. KCCWG's engagement was based on three pillars: climate change legislation, climate policy and climate advocacy. The first two focused on supporting the formulation of the climate change bill and policy, through research conducted in the thematic areas – agriculture, water, energy, urbanisation and infrastructure, forestry, conflict, and tourism whilst the latter focused on the *15th Session of the Conference of Parties (COP 15)* in Copenhagen.

Some of activities undertaken by CSOs include; vulnerability assessment, baseline studies and research; advocacy, capacity building and awareness creation; policy development and promotion of good governance; information sharing; gender mainstreaming in climate change; monitoring and early warning systems, livelihood support; promotion of improved technologies and efficient use of energy; humanitarian support and promotion of use of indigenous knowledge. Each of these activities are discussed in more detail in this section. Some of the key CSOs analysed by this study are presented in Appendix 1 of this report.

2.2 Vulnerability assessment and baseline surveys

To better understand climate change vulnerability and impacts, there are several CSOs involved in vulnerability assessment and surveys. These include East African Wild Life Society (EAWLS), African Wildlife Foundation (AWF), Coastal Oceans Research and Development in the Indian Ocean (CORDIO), Heinrich Boel Foundation (HBF), World Wide Fund for Nature Eastern and Southern Africa Regional Programme Office (WWF ESARPO), Climate Network Africa (CNA), African Conservation Centre (ACC) and Centre for Science and Technology (CSTI), Care Kenya, among others. Notable studies undertaken by these organisations include:

- EAWLS commissioned a study on the impacts of climate change, and vulnerability assessments and adaptation measures on wetland, marine and coastal resources in East Africa (2010);
- CORDIO conducted a study on coastal communities in adaptation and resilience to vulnerability (2008);
- HBF commissioned CAMCO to conduct a study on climate change vulnerability and adaptation preparedness in Kenya (2010);
- WWF is currently planning to carry out a climate change vulnerability assessment in Lamu with a view to developing an adaptation strategy. Towards this, they have held two meetings with stakeholders with a view to understanding what information is needed, where that information is stored and in what form, etc;
- AWF conducts vulnerability assessments, particularly with regard to developing resilience building conservation actions to safeguard ecosystem services for local communities (especially water) and species/habitat adaptation (e.g. corridors), while increasing the resilience of water and agriculture systems;
- CNA has been involved in climate change assessment and studies. These include studies on assessment of the Impact and Potential for Solar Box Cookers in Kenya and increasing the Policy, Analytical and Networking Capacity of NGOs in Africa on Desertification;
- ACC is involved in assessments of the likely impacts of climate and land-use changes on specific biodiversity taxa. It is also developing climate change models for plant indicator and vertebrate indicator species and exploring the potential of adaptation mechanisms for communities and ecosystems in Kenya's rangeland ecosystems; and CSTI is a UNESCO associated centre based at the Kenya National Academy of Sciences (KNAS), aimed at improving life through science, technology and innovation. It focuses on vulnerability and adaptation assessments especially in the health sector. The centre has been involved in undertaking a number of studies on vulnerability and adaptation to malaria and cholera in different parts of the country. It uses innovative participatory and networking methods to enable and support effective adaptation decisions that reduce vulnerability and promote sustainable development.

Care International and Care Kenya are particularly active in the field of climate change vulnerability assessments and baseline surveys. Care International has developed a Climate Vulnerability and Capacity Analysis (CVCA) Tool that helps gather data and information at different levels. CVCA handbook is available at www.careclimatechange.org/cvca. The main objectives of the CVCA are to:

1. Analyse vulnerability to climate change and adaptive capacity at the community level; and
2. Combine local information with scientific data to yield greater understanding about the local impacts of climate change.

Care Kenya has been using this tool in Garissa. The tool has been useful in gathering rain calendar information and changes in temperature. The objectives of the rainfall calendar tool is: (i) to enable users understand what is "normal" and "abnormal" rainfall and temperature from the perspective of community members; (ii) to examine changes in rainfall and temperature patterns; to brainstorm on future rainfall scenarios and potential responses; and (iii) to evaluate use of weather and climate information for planning. The key information gathered includes onset and cessation of rainfall, its duration, distribution and quality; unusual temperature increase and decrease, major impacts of observed changes on livelihoods and major weather-related events. Local communities have also been trained to

prepare hazard maps. Hazard mapping was introduced as an option to enable more active community participation in the vulnerability assessment. Community members plot the position of their resources / risks and hazards. It enables communities to see and analyse links, patterns and inter-relationships between risks, hazard locations and resources. The mapping process is useful for completing the vulnerability matrix.

Care Kenya has also been gathering information on the main livelihood activities and the natural, physical, financial, human and social resources that support these activities. These can be extracted from the hazard map. Once all resources that are important to the livelihood have been identified , the top three resources under each category (natural, physical, financial, human and social) are ranked. This is followed by identifying the three most influential climatic hazards on the community livelihood (e.g. floods, drought). For each hazard, the impacts on the livelihood are identified (e.g. crop failure, water shortage, disease). The top three impacts from each hazard are then identified. The most common current coping strategy is then recorded for each impact (e.g. when there is water shortage, people walk long distances). In the assessment, communities are asked whether the coping strategy is working and sustainable. If it is not, an alternative coping strategy that increases the resilience of the community to the climatic hazard is identified, along with the resources needed for implementation. The above information is complimented by information levels of influence of hazards on the livelihood resources. Other causes of the impacts are also identified (e.g. overpopulation could result in water shortages). Further discussion questions can be also asked including who has access and control over identified resources in the community, observed changes in the environment conditions, hazards and livelihoods, socio-political and other issues that affect vulnerability.

Another tool used in vulnerability analysis by Care Kenya is the Community Based Risk-Screening Tool – Adaptation and Livelihoods (CRiSTAL). It helps to analyse vulnerability assessment information gathered through the CVCA or other methods. It is a decision-support tool with the goal of promoting integration of risk reduction and climate change adaptation into community-level projects. The tool helps users to understand links between livelihoods and climate, and assess the impacts of projects on the community's ability to adapt. It is a decision-support tool that aims to provide a logical, user-friendly process to help better understand the links between climate-related risks and peoples' livelihoods. In so doing, successful adaptation strategies can be developed and better supported at the local and regional level. There are two modules in the CRISTAL tool: (1) examines the climate change context, by looking at impacts and coping strategies, as well as the livelihood context; and (2) looks at the impacts of projects on livelihood activities, and how project activities can be adjusted to reduce vulnerability and enhance adaptive capacity. While the process is not specific to resource management, the spread sheets enable investigators to specify how livelihood, resources and community resilience may be affected by projected climate change. The CRiSTAL Tool and handbook are available at www.cristaltool.org. CRiSTAL combined with CVCA can be used to make projects climate-resilient and identify adaptation strategies.

There are other on-going regional vulnerability and assessment programmes undertaken by CSOs. These studies are helping CSOs to understand climate change vulnerability and impacts as a basis of developing climate change response strategies.

2.3 Climate change research

There are several CSOs who are already engaged in climate change research, including CORDIO, Institute for Environment and Water (IEW), ACC, Kijabe Environment Volunteers (KENVO) and Birdlife International, among others. Notable research programmes being undertaken by these organisations include:

- IEW is conducting analytical studies on gender and climate change in Kenya covering the 8 themes of the National Climate Change Response Strategy (NCCRS) to gain an understanding of the gender gaps in climate change. This will inform actors and help them understand the gender issues in climate change to formulate and implement strategies to address this.
- ACC is working in the rangelands to restore their productivity and improve the resilience of pastoral communities. Utilising case studies at multiple scales, the project aims to develop new and innovative solutions to strengthen rangeland resilience, including land tenure and management, institutional development, environmental governance and collaborative arrangements. Building on decades of experience working with pastoral communities in Kenya and on local capacity, ACC is expanding the existing systems of community based resource assessment.
- KENVO has undertaken an assessment of the level of community knowledge and understanding of climate change in Kereita Forest in the Kikuyu Escarpment (central Kenya). The assessment included: (i) community knowledge of the potential implications of climatic changes on the environment and livelihoods; ii) some of the activities that communities are engaging in order to cope with the current effects of climate change; and iii) government policies and their implications for local livelihoods and local community coping and adaptation strategies on climate change. (Kuria2009). About 36%of the respondents in this study said that they got their information on climate change from observations, experience, and the media among other sources.
- Birdlife International has been actively involved in research, which shows that climate change is having multiple impacts on birds and their habitats, including: changes in behaviour and phenology, for example timings of migration; range shifts and contractions; disruption of species interactions and communities; and exacerbation of other threats. Using this information, Birdlife International has developed a number of strategies aimed at addressing some of the climatic challenges. By working with wider stakeholders at a local and international level, the Important Bird Areas (IBAs) programme of the Birdlife International is able to link individual communities to global debates and vice versa. It has also established the African IBA network, which reaches a wide network of local people, who use IBA areas for the ecosystem services, livelihood resources and products that they provide. One of the objectives of the IBA programme is to work with local communities adjacent to or within the IBA sites, through organised groups known as Site Support Groups (SSGs). The SSGs are playing diverse and crucial roles in advocating for conservation, ranging from providing links for negotiation and interventions, establishing environmental education programmes, initiating income-generating activities and monitoring sites and species. The SSGs are achieving successes in climate change adaptation. For example, they have been successful in starting some micro-entrepreneurship activities, such as bee keeping and butterfly farming. These activities diversify household incomes and provide an alternative to the income lost as a result of adverse weather. The SSGs are also helping to gather data on the status of local environments. Their data sometimes incorporates the views and knowledge of local people, including how they are adapting to climate change.

2.4 Advocacy on climate change

Some of the CSOs are involved in advocating for climate change adaptation and mitigation measures. The most notable ones in this field are the Kenya Forests Working Group (KFWG), Kenya Climate Change Working Group (KCCWG), Wetland International (WI), World Vision, Transparency International (TI), Kenya Climate Change Women Champions of Justice (KCJWC), Pan African Climate Justice Alliance (PACJA), BirdLife International,

Indigenous Information Network (IIN), Kenya Alliance of Residents Association (KARA) and Green Belt Movement (GBM). Notable activities by these organisations include:

- KFWG has been involved in advocacy for sustainable management of forests in Kenya since 1995. Its main focus had been on advocacy on policy changes and management (including co-management approaches). KFWG was instrumental in advocacy for conservation of the Mau Complex Forests – leading to formation of a Task Force and an Interim Coordinating Secretariat to implement recommendations of the Task Force report in 2009, better forest management practices in Mt. Kenya and the Aberdares – through monitoring of the five water towers among many other forests in Kenya;
- TI advocacy addresses improved governance of the natural resources sector;
- World Vision empowers communities to speak up for their rights, locally and globally;
- KCJWC is a network for advocacy on climate justice in Kenya. It specifically works on conflict over natural resources. The KCJWC brings women together in various ways to address the issues concerning climate change and gender, and on how women, given their vulnerability, can adapt to the changing climate;
- PACJA is a continental coalition of civil society organisations on the African continent brought together by a common agenda of promoting and advocating for climate justice;
- Through its advocacy programme, BirdLife International is working with local groups to enhance the communities' understanding and preparedness to cope with climate change;
- IIN is another CSO involved in lobbying for adoption of a fair, equitable and just climate regime and reduction of emissions, as well as calling for support for communities to adapt.
- KARA has been involved in environmental governance, an issue that has a direct bearing on climate change in many parts of the country and has conducted several sensitization meetings and workshops.
- In Aberdares and Mau Forest Complex, GBM is promoting local advocacy for forest protection by CSOs. In these two areas, GBM works with constituency networks comprising of local communities.
- KCCWG, together with other CSOs, has been involved in organisation of public hearings, concerts, breakfast meetings and mobilisation of youth and university students as advocacy and awareness campaign tools. Examples of some of the climate hearings held in 2009 are provided in the box below.

Box 1: Awareness-raising activities undertaken by KCCWG and partners

- **Farmers – Kanyaa Village, Mwingi, Eastern Kenya**

The theme of the farmers' hearing was *"Micro Projects: Farmer's Practical Solutions to Climate Change and Sustainable Livelihoods"*. The hearing in June 2009 was organised by the Kenya National Federation of Agricultural Producers (KENFAP), Oxfam GB, Road to Copenhagen (COP) on behalf of the Kenya Climate Change Working Group (KCCWG) and RISE from the community. The hearing attracted over 3,000 people from Kanyaa village and its environs.

- **Agro-Pastoralists – South Eastern Kenya**

Forest Action Network (FAN) and Oxfam GB organised 7 mini hearings in May and June 2009 focusing on regions near Tana River and Kajiado. The Tana River – the longest river in Kenya - experiences the twin climatic disasters of floods and droughts; sources of conflict between the pastoralist communities the *Wardei* and *Orma,* and the *Pokomo* farmers, due

to the scarcity of water and pasture resources. The hearings took place in the townships of Hola, Wenje and Moriani and Bububu villages along the banks of River Tana. In Kajiado hearings were held in Kisajoo, Il Bisil and Kajiado County Council.

- **Pastoralists – Wajir, Northern Kenya**

Arid Lands Development Focus (ALDEF), Wajir Sustainable Development Association (WASDA), District Pastoral Association, Wajir (DPA) and Oxfam GB, organised a series of climate hearings in greater Wajir - Wajir South: Abakore Village, East: Wara and Hadado water trucking sites, and West: Gerille Village in August. An estimated 500 people attended

- **Mombasa – Coastal Kenya**

The Coast climate hearing organised by Norwegian Church Aid (NCA) and Road to COP in August 2009 focused on the experience of fisher folk, and other communities living along Kenya's coastline on the Indian Ocean.

- **Kakamega**

The two day climate events held towards the end of the campaign in Kakamega in October 2009 dubbed *the Great Shivala Shieru Festival – Rauka ama Battuta Survive* was hosted by the Young Environmental Network in Africa (Western chapter), NCCK - Kakamega, Norwegian Church Aid (NCA) and Road to COP. The events attracted about 3000 people from the whole Western region. West FM publicised this event through a road-show and gave extensive coverage.

- **Climate Hearing and Concert at Dandora, Nairobi**

KOCH FM – Korogocho community radio station, the youth umbrella association of the Dandora Arts Centre, and Road to COP organised a road show and a climate hearing and concert in October 2009 at the Tom Mboya grounds in Dandora Phase 3. About 2000 mostly young people from Korogocho and Dandora attended the event. With a series of interactive Q and A sessions climate change information was disseminated and a lot of interest generated.

- **Emuhaya – Western Kenya**

In October 2009, a climate hearing and capacity building session was held in Emuhaya at the Trinity Fellowship, in collaboration with Hon. Dr Wilbur Ottichilo, the Bunyore Community Development and Environmental Organisation (BUCDEO) and KCCWG. 150 local leaders attended.

- **Malindi – Coastal Kenya**

A one day workshop and climate hearing was held in Malindi under the direction of the Tourism thematic group of KCCWG, in collaboration with the Parliamentary Network on Renewable Energy and Climate Change (PANERECC), Office of the Prime Minister, the Ministry of Environment and Mineral Resources and Magarini Community Development Programme (MACODEP) a community based organisation. The event brought together 150 participants.

- **Breakfast meetings**

To build consensus among key stakeholders, and particularly parliamentarians, private sector, the media and faith communities, KCCWG and other CSOs conducted a number of breakfast meetings. These meetings helped to develop strategies for more action and other practical issues related to fundraising, awareness creation and mobilisation towards COP 15. A key milestone was the revival of the Parliamentary Network on Renewable Energy and Climate Change (PANERECC) which was mandated by the Speaker of the National Assembly, in August 2009to bring forward climate change issues to the Legislature.

- **Mobilisation of University students**

The first campus mobilisation event was conducted at the Ufungamano House on 19 September 2009, dubbed the ***Campus Leadership Forum on Climate Change and Poverty*****.** The main aim of the forum was to present climate change as a critical issue that affects all aspects of life and as the key issue that has the potential to reverse all efforts to fight poverty and indeed lock us all into poverty. The forum also presented the on-going negotiations on Climate Change and the 15th Session of the Conference of Parties (COP15) which were to take place in December in Copenhagen, Denmark. In linking climate change with poverty, the forum also provided an opportunity for the student leaders and participants to take an active role and speak out against climate change and poverty. The event attracted over 200 youth leaders from 15 institutions from Kenyan Universities and Colleges. Other activities undertaken by university students included tree planting sessions and seminars on climate change.

- **Mobilisation of the Youth**

Kenyan youth actions on climate change and environment grew immensely during and after the 12th COP12 held in 2006 and the World Social Forum (WSF) in 2007 both in Nairobi. Several youth initiatives including the African Youth Initiative of Climate Change (AYICC) and the Kenya Young Greens (KYG) were established around that time. In December, the Kenya Youth Climate Network (KYCN) in coalition with the regional AYICC as well as the Global Youth Networks constituency to the United Nation Framework Convention on Climate Change (UNFCCC) converged in Denmark to undertake the largest youth advocacy on Climate Change during the COP 15. Other actions by the youth include holding of forums such as the Third National Youth Conference on Climate Change (NYCC3) in 2009.

2.5 Institutional and Human Capacity Development

To successfully address climate change adaptation, it is crucial to strengthen local institutions, develop locally, appropriate solutions and build institutional responsibility for adaptation strategies' (Locatelli et al, 2008). In relation to this, CSOs such as Transparency International (TI), Kenya Climate Change Working Group (KCCWG), IEW, Wetlands International (WI), BirdLife International, Care International, Participatory Ecological Land Use Management (PELUM), Act, Change, Transform - Act! (previously Pact Kenya), African Centre for Technology Studies (ACTS) among others are involved in institutional and human capacity development. Notable activities by these organisations include:

- TI has formulated a Climate Governance Programme that was launched in October 2011. Under the TI Climate Change Governance programme, e-learning tools are being developed to help in understanding of climate governance, both at institutional level and also at the community level. Community mobilisation and capacity building to form climate advocacy movement/ network especially in areas of projects implementation e.g. geothermal power and the Mau catchment will also be undertaken by TI. This will ensure communities build a movement that will monitor project benefits and be in a position to demand for benefits accruing from these projects. TI is also building accountability in disaster risk reduction projects and flood prone areas through local community based organisations and civil society organisations.
- KCCWG is helping grassroot organisations to build networks that sustain climate change adaptation programmes and projects in Kenya. At the Coast, CSOs are building the capacity for co-management of local fisheries, whereby the past approach to centralised fisheries management is giving way to sharing

responsibilities with local fisher associations. Elsewhere in Kenya, there are also over 350 Community Forest Associations (CFAs) that have been formed to help in co-management of forest resources in the countries. For wildlife, various wildlife conservancies have also been created. Capacity building of these associations and conservancies has also included management functions by communities such as monitoring.

- AWF is working to build the capacity of local and government partners to undertake vulnerability assessments, adopt ecosystem-based adaptation approaches, participate in forest carbon markets and strengthen policy. IEW is carrying out training on advocacy and climate change to build institutional capacities for gender mainstreaming in climate change, in order to create an enabling environment for gender responsiveness.
- At a local level, BirdLife International through its partners, such as Nature Kenya, is developing and building the capacity of existing or potential BirdLife partners and Site Support Groups. Site Support Groups are voluntary independent community groups who work in partnership with relevant stakeholders to promote conservation and sustainable development at IBAs and other key biodiversity sites.
- Care International aims to empower poor and marginalised people to take action on climate change at all levels and to build knowledge for global change. This is achieved through global policy engagement, adaptation, making carbon finance work for the poor and organisational change. Act! is building the capacity of local people, organisations, networks and coalitions working in one or more of the following four strategic platforms: (i) democracy and governance; (ii) conflict and peace; (iii) environment and natural resource management; and (iv) women's empowerment.
- PELUM - Kenya is a network of CSOs working with small-scale farmers in East, Central and Southern Africa. PELUM focuses *inter alia* on promoting participatory ecological land use and management practices and building the capacity of members and partners to respond appropriately to community needs.
- ACTS strives to strengthen the capacity of civil society in Least Developed Countries (LDCs) to adapt to climate change and fostering adaptive capacity among the most vulnerable groups. In this regard, ACTS has established an information and knowledge system to support countries to deal with the adverse impacts of climate change and mainstream adaptation actions into national planning processes.
- RECONCILE has an Environmental, Justice Programme that works to promote access to environmental justice through research, environmental legal education and awareness creation, capacity building, training and public interest environmental litigation.
- WI is empowering people and enhancing their capacity in climate change adaptation through activities aimed at reducing poverty and greening the economy. They are building local community capacity using different modules produced at regional level but domesticating them at lower community level. Some of the modules being used are:
    1. Responding to climate change through community and ecosystems;
    2. Assessing vulnerability;
    3. Integration of ecosystem into infrastructure for climate change adaptation;
    4. Community based adaptation approaches;
    5. Disaster risk reduction; and
    6. Financial mechanisms for climate change adaptation.

2.6 Policy Development

To enable local communities to co-exist with wildlife and other species, and to conserve forests and other ecosystems out of their own livelihood interests, development of favourable policies and provision of economic incentives that encourage local conservation efforts will be needed. With respect to this, most of the policies under review are focusing on co-management inside and outside protected areas. Some of policies being reviewed include the Forests Act 2005 and the Wildlife Act. Many CSOs including EAWLS, KFWG, FAN, WWF and AWF have been involved in the review of policy and legislation instruments. In addition, Kenya has adopted a National Climate Change Response Strategy. To implement this strategy, a draft climate change bill is being prepared and KCCWG has been instrumental in getting local communities views through public hearing all over the country. Other CSOs involved in policy development, include CORDIO and Climate Network Africa (CNA). CORDIO is working on policy responses needed to achieve project goals by focusing attention on specific opportunities for engaging with policy makers in individual projects and developing enabling conditions to support implementation of project recommendations. CNA facilitates communication among policy-makers, scientists, researchers, development agencies, NGOs and Community Based Organisations (CBOs) in order to increase participation of African NGOs and CBOs in national and international climate policy negotiations. The Network encourages and supports African NGOs to assess local implications of global climate change as a basis for the design and implementation of adaptation and mitigation projects and programmes.

2.7 Governance

CSOs active on climate change governance issues include TI, Institute for Law Enforcement and Governance (ILEG) and the International Commission of Jurists (ICJ). The aim of the TI Climate Governance Programme is to promote transparency, accountability, integrity and anticorruption safeguards in climate finance governance globally and nationally. This is being achieved through building stakeholders capacities to better engage, cooperate, advocate and contribute to climate finance governance, policy development, implementation and oversight. It is envisioned that this programme will help in setting anticorruption safeguards in climate finance governance in Kenya by having an informed civil society and private sector actively engaging in climate governance issues.

One of the strategies being utilised includes working with existing networks to add more value in climate finance advocacy, such as the Climate Governance Network (CGN). CGN is an online platform enabling shared-learning, information exchange, and cooperative Climate Finance Governance (CFG). The network design, membership participation and content are developed through dialogues at workshops, outreach activities and external meetings participation, direct verbal and written consultations with key partners and stakeholders and support from TI-Kenya.

Under the programme, TI is also pursuing the following strategies:

1. Transparent and accountable institutions of governance in Kenya. To better engage these institutions, a mapping and assessment will be conducted on climate related institutions, processes, policies and practises. This assessment will help identify key advocacy action points and areas to ensure transparency and accountability in climate governance.
2. Effective policy and legal frameworks that promote accountability and transparency in the implementation of the new constitution. TI – Kenya will work with existing institutions currently working on the climate change bill to ensure development of a

climate change policy that puts transparency and accountability in climate adaptation and mitigation. The primary target groups are global and national climate governance stakeholders including:

- International climate finance public organisations, mechanisms and processes;
- International and national climate financing institutions and agencies including the multi development banks and export credit agencies;
- National climate finance institutions of donor countries and recipient countries;
- Private sector actors engaged in adaptation or mitigation related investments of projects supported by public subsidies and other financial incentives; and
- Non-governmental organisations (CSOs, media, research institutions and other climate finance governance concerned actors) and affected communities.

The climate governance integrity programme aims to achieve the following outcomes:

- Stakeholders are more engaged in contributing to climate policy development concerning how climate finance is governed;
- Greater awareness of the need to address governance challenges to minimise opportunities for and risks of corruption in climate governance;
- Increased public demand that public and private sector private finance actors are acting with integrity and are complying with legally binding anti-corruption standards;
- Public and private sector climate finance sectors commit to adopting, implementing and enforcing integrity rules and legally binding anti-corruption standards in their conduct and operations; and
- Greater citizens' ownership, participation and ownership of climate policy development and implementation so that climate finance achieves desirable social and environmental benefits and it is not lost to vested interests.

ILEG and ICJ-Kenya advances the legal protection and enforcement of human rights, respect for the rule of law and entrenching democracy within the East Africa region, continentally as well as globally. Some of the socio-economic rights that ICJ-Kenya has championed include the right to a clean and safe environment.

2.8 Information (gathering, packaging and dissemination)

Climate change awareness is low countrywide, particularly, among the rural communities, who also happen to be the most vulnerable to the adverse impacts of climate change because of their high dependency on climate-sensitive natural resources and high poverty rates. Lack of awareness and sensitisation on climate change issues is a key concern in addressing climate change. There is a need to enhance climate change awareness among different groups (women and youth, disabled, farmers and pastoralists, etc.) so that they can be better prepared to deal with the issues. There is a need to improve understanding of issues related to climate change among communities and possible responses that should be taken or considered. Several CSOs are already involved in climate change information sharing activities. These include; KCCWG, IEW, AWF, EAWLS, PELUM-Kenya, ILEG, KFWG, Kenya Wetland Forum (KWF), the Kenya Wildlife Conservation Forum (KWCF), IIN and ERMIS Africa. Notable initiatives by these organisations are detailed below:

- Through the climate change hearings conducted in various parts of Kenya from 2009 (as detailed in Box 1), KCCWG and other CSOs have been able to create synergies, to harmonise and to strengthen efforts in the design and in the implementation of activities that address climate change. The purpose of climate hearings was to share knowledge, experiences and generate information that can advise decision-makers in various interventions in specific areas. The hearings were conducted in Marsabit, Kisumu, Narok, Malindi, Nanyuki, Loitokitok, Emuhaya Kakamega, Kajiado, Tana River, Wajir, Nairobi, Mombasa and Kyatune (Makueni), amongst other areas. Some of the objectives of the hearings were to:
    1. Bring the community together to discuss climate change issues and generate a way forward on interventions;
    2. Identify and outline ways of addressing climate change issues;
    3. Highlight the experiences from the ground on how climate change has affected communities;
    4. Mobilise the communities for climate change adaptation initiatives locally;
    5. Share information on, and contribute to, the draft climate change bill; and
    6. Create linkages and a forum for climate change education from KCCWG and government networks.
- AWF is working to increase understanding of likely climatic impact and adaptive strategies across Africa. AWF supports the integration of climate-induced risk assessment and scenario planning with water and soil conservation and reforestation, and identifying 'climate proofing' measures for wildlife corridors and affected communities.
- IEW is supporting the development of an online climate portal to facilitate knowledge and information sharing and learning among climate change actors, through blogs, forums and multi-stake holder dialogues and round tables. Creation of a gender working group is a part of IEW project to help in sharing of ideas through meetings, to strengthen the NSAs advocacy and lobbying work towards gender sensitive and inclusive programs and policies.
- FAN is implementing two projects: one to enhance the capacity of journalists to understand climate change and another to enhance the climate change adaptive capacity of communities. The Institute for Law and Environmental Governance (ILEG) has trained members of Kenya Correspondents Association (KCA) - a national media organisation for journalists largely based in major towns of Kenya - on environmental reporting in general and on climate change issues in particular. PELUM-Kenya has realised the important role that journalists can play in creating awareness and profiling issues related to climate change. In order to improve the capacity and skills of the Kenyan journalists, they have been conducting training such as the one held on 25th November 2011 for thirty journalists from all the media houses. This training aims to equip them with skills to progressively document, profile and share best practices from communities on how they are adapting and mitigating against a changing climate. The knowledge will further broaden their perspectives and enable them to report on pertinent matters aggravating climate change for either public or government attention. In order to promote this practice, PELUM-Kenya has established various prizes and an award for the journalists.
- EAWLS provides the secretariats of KWF, KWF and KWCFwith information and knowledge on climate change issues. EAWLS is currently facilitating formation of County Natural Resources Forums, which will also be useful in knowledge sharing.
- WI is also involved in sharing of experiences amongst communities through a "Linking Learning Programme" in Ewaso Nyiro North. This programme involves internal to internal sharing of experiences within a particular community; internal to

external and external to internal sharing of experiences between different community groups.

- Red Cross and Red Crescent Climate Centre (RCCCC) is another organisation that uses games to enable people to understand climate change.
- IIN also supports information sharing through support of vernacular radio programmes that broadcast climate change issues in listener-friendly language. The Network has also been facilitating people from the grassroots to participate in Climate Change forums at national and international levels.
- ERMIS Africa is involved in climate change education in about 120 schools.
- At the coast, there have been efforts to share climate change knowledge and to harmonize the management systems by forming regional management initiatives for coastal resources by CSOs. These include the formation of the Western Indian Ocean Marine Science Association and memberships to Global Coral Reef Monitoring Network (GCRMN) and the International Coral Reef Initiative (ICRI).

2.9 Gender Mainstreaming

IEW is developing a number of gender-related policy briefs and case studies aimed at climate change actors. It is also supporting the development of a documentary on the state of gender and climate change in Kenya.

Another CSO involved in gender-related issues is Care Kenya through its Global Water Initiative (GWI), Dadaab Host Community Program (HCEP) and Horn of Africa Emergency project, Hunger Safety Net Programme (HSNP) and Drought Response, working to provide over 500,000 people in Northern Kenya access to safe and clean water for household use and drinking – the majority of these women and children. Care Kenya also works with 10,000 farmers, many who are women, through Making Carbon Finance Work for the Poor project, to plant trees and earn allowances from protecting the environment from the harsh effects of climate change.

2.10 Monitoring and Early Warning

An important aspect of conservation of ecosystems is establishing their status in terms of real coverage and composition. This forms the basis for future management interventions. In the face of climate change threats, baseline information can be used to establish vulnerability assessments that determine the areas likely to be affected by climate change.

Since the coral bleaching event of 1998 (associated with El Nino), CORDIO has been on alert for repeat bleaching at the coast. They have put in place an early warning system that incorporate monitoring of internet-based datasets on global temperatures, the El Nino Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD). Various bleached sites along the coast show intermediate levels of recovery. These sites are the focus of research by CORDIO to understand what characteristics enhance their resistance or tolerance to bleaching, and/or high capacity for recovery and resilience. CORDIO has also been undertaking participatory GIS web-based monitoring in the Diani-Chale area on the South Coast as a strategy to create awareness among fishers and engage them to be more involved in resource management. ERMIS Africa is also involved in GIS monitoring at Mau Complex forests. They are currently profiling CFAs in Mau with the hope of getting communities to conduct monitoring of REDD initiatives using Mobile Phone Technologies.

A study by Recha *et al* in 2008, on perception of use of climate forecast information amongst smallholder farmers in Semi-Arid Kenya, show that a majority of farmers lack confidence in seasonal climate forecast but rate it useful. The study suggests a downscaled forecast product at local level as a way of improving forecast quality. Although most of the communities

receive this information through radio, there is potential in using Chiefs meetings and Community Based Organisations (CBOs) to disseminate climate forecast.

An important aspect of conservation of ecosystems is establishing their status in terms of areal coverage and composition. This forms the basis for future management interventions. In the face of climate change threats, baseline information can be used to establish vulnerability assessments that determine the areas likely to be affected by climate change. There is also need for a regional monitoring plan covering various ecosystems so as to document any climate change related impacts on these ecosystems and their ecological responses. Assessment of climate change impacts on coastal communities and their adaptive capacity has been initiated by EAWLS and CORDIO among other organisations.

Another organisation involved in monitoring is ACC, which is taking on the challenge of conserving the biodiversity of the Kenya-Tanzania borderlands in the face of climatic change and land fragmentation. The project brings together scientists and conservationists to map the distribution of animals, plants and human livelihoods and model their vulnerability to climate and land use change. Through a collaborative approach mitigating and adaptation strategies are subsequently recommended. The 60,000 square kilometre region, stretching across the Great Rift Valley from Serengeti-Maasai Mara in the west to Tsavo and Mkomazi in the east, hosts the one of the richest mammal and bird assemblages on earth. The borderlands account for 80% of the large mammals, 50% of the vertebrates and 25% of the vascular plants found in Kenya and Tanzania. The region also has many regional endemic species and threatened animals and plants.

ACC has compiled range maps for 2,700 East African mammals, birds, amphibians and reptiles, and selected 300 plant indicators plant species representing all the ecological and climatic zones of East Africa for the Serengeti – Mara to Tsavo – Mkomazi Tanzania and Kenya border. By working out the ranges and the environmental tolerance of each species, ACC can project how each will shift with land use and climate. To anticipate changes in land use, they have mapped current habitats and human activity of the borderlands from satellite imagery and plotted the changes of the last few decades. Using these data, they can project how future climates will affect biodiversity and human livelihoods under a range of climate scenarios.

Just as climate models must be calibrated against historical weather patterns, so models of biodiversity and land use change need testing. ACC is using the 42 years of animal, plant and land use change they have monitored in Amboseli over the last four decades. The results of the study were presented at a national conference on biodiversity and land use in Nairobi in September 2010.

2.11 Disaster Risk Reduction and Preparedness

Kenya is still ill-prepared in disaster preparedness and response, as shown by recent drought and flooding incidences. Data and information is usually generated by the Kenya Metrological Department (KMD). However, its interpretation to enable people, and farmers in particular, to respond or make appropriate decisions is limited. Sometimes the required information is not communicated in time to help people adapt, e.g. the regular flooding in Tana Delta when there are heavy rains in Aberdares and Mt. Kenya. To complement government efforts, several CSOs have been involved in disaster risk reduction and preparedness activities.

In Ewaso Nyiro North, WI is implementing a climate project on disaster risk reduction together with “partners for resilience” namely, Care Kenya, CORDAID and Red Cross. In this programme, WI is profiling disaster from this ecosystem and establishing response actions. They are also identifying traditional early warning systems among communities. The Kenya

Red Cross Society (KRCS), which traditionally focused on response, is currently including disaster risk reduction as one of their priority areas.

World Vision is working with communities to help them adapt to drought, floods, famine and changing disease patterns; fight deforestation and desertification, become more financially sustainable through the sale of carbon offset credits and supporting involvement in the international solutions to climate change. It also engages institutions, donors and the general public to address the global problems that perpetuate poverty.

A large part of Christian Aid's work is focused on disaster risk reduction, with emphasis on climate-related risks. In this regard, Christian Aid is working in areas such as: relating information from global models to the more medium-term programme planning process, how to cope with the uncertainty in weather and climate forecasting and how to access complex meteorological information in an actionable format to be used at community level.

The Famine Early Warning Systems Network (FEWS-NET) is another global initiative that supports national forecasting to coordinate water and climate information to forecast flooding risk across the continent of Africa.

2.12 Livelihood Support

Many of the CSOs involved in adaptation have a livelihood component in their strategies. These include those involved in monitoring, capacity development and information sharing such as EAWLS, ACC, CORDIO, AWF, BirdLife International, KENVO, WI and GBM.

BirdLife International is integrating climate change into most of it activities and has special projects relating to climate change. In Kenya, through a project called livelihood improvement, BirdLife International has facilitated sharing of information among local communities. This has seen some of the communities start income generating activities, some of which are linked to local coping mechanisms (Kuria, 2008).

KRCS is now providing alternative livelihoods in the form of irrigated agriculture, using Israeli technology and in collaboration with Amiran Kenya – one of the country's leading agricultural suppliers in Wajir District. This integrated food-security project – made possible with finance from the Safaricom Foundation, a charity funded by the country's biggest telecoms provider – aims to cushion more than 5,000 people in Wajir from water scarcity and food insecurity. A new irrigation and supply system feeding six large greenhouses and fields was constructed along with three shallow wells equipped with solar pumps and storage tanks. This project was launched in March 2012 in Wajir East District, where at least 30% of the population relies on food aid. The project is a prototype for nearly 30 others countrywide that KRCS launched after the very successful "Kenyans for Kenya" initiative that raised 10 million dollars in just two months to assist communities affected by drought.

Among other "climate-smart" Disaster Risk Reduction (DRR) projects coming to fruition is one in Machakos district, south-east of Nairobi, where they are eagerly awaiting the harvest of drought-resistant cassava in a few months – a variety developed by the Kenya Agricultural Research Institute (KARI).

A Socio-Economic Monitoring Pilot Project (SEMPP) conducted in 2002 by CORDIO in Diani-Chale and Msambweni in Kenya Coast shows that households in Diani-Chale have diversified livelihood options by having household members involved in multiple activities. This helps to subsidise fisheries, and may be a response to decline in fisheries in the area. According to the study, the most important of options to fishing were farming and tourism in Chale, beach tourism in Biga, and employment in Gazi (Wanyonyi, et al 2008). However, all along the coast, the low levels of education and literacy explains the apparent overdependence on traditional farming practices and artisanal fishing. Adaptive capacity is therefore very low in this area since the communities are poorly equipped to cope with any

interventions that may restrict their traditional farming activities (including cultivation on steep slopes) or the use of mangrove resources that form part of their main sources of livelihood. Development of adaptive capacity is a priority response to climate change. It requires investments in infrastructure, social capital, and alternative sources of income to alleviate poverty. Once local capacity is enhanced, the local communities will be able to take advantage of the opportunities arising from conservation and successfully implement management strategies that reduce degradation of the marine environment, diversify economic opportunities and curb the unsustainable farming practices to improve livelihoods.

Other examples of alternative livelihood options that have been initiated by CSOs and that are currently on-going in Kenya, which need strengthening and replication in other areas include: integrated aquaculture, bee keeping, terrestrial wood lots, seaweed farming, ecotourism and carbon trading, amongst others. Pilot projects are underway in Mt. Kenya region through the support of USAID funded TIST programme. TIST is a global NGO called International Small Group Tree Planting Programme (www.tist.org). It is a simple and effective programme that organises farmers in small self-help clusters to plant and grow trees supported by simple human based monitoring systems. The trees, including fruit bearing ones, are directly useful to the farmers.

AWF is another NGO working with communities across Africa to enable them to adapt to the impacts of climate change. This includes water catchment methods, fuel efficient technologies, solar power, dry-land agriculture, land use planning and alternative livelihood programs. AWF is active in Laikipia and Amboseli areas. With respect to livelihoods, ACC has initiated conservancies across its landscapes and developed different ecotourism products run by or on behalf of the community. These include Sampu Lodge in Olkiramatian Group Ranch, Shompole Lodge and Loisiijo Bandas in Shompole Group Ranch, Nekishon Women Camp in Siana group Ranch, ATGSA Campsite in Mbirikani Group Ranch, and Oloika Guest house in Shompole, among others. These community tourism projects initiated by ACC aim to:

- Increase socio-economic benefits to communities and landowners;
- Promoting sustainable management of the environment;
- Raise awareness of and support for conservation; and
- Increase a community's capacity to conserve and manage natural resources outside protected areas.

Most of the coping strategies on food security and livelihood have been promoted by international organisations/institutions with local organisations/institutions involved in promotion of nature-based income-generating activities. Community Based Organisations (CBOs) are the basic channels where the wider communities are reached. They offer links between the government/development partners and the communities on the ground. They raise awareness in local communities about the use of natural resources and the importance of ecosystems.

The Forests Act 2005 has clear provisions for the recognition and role of Community Forest Associations (CFAs) in forest management. The Act enables members of a forest community to enter into partnerships with the KFS through registered CFAs in state forests or local authority forests. This opens doors for local communities to directly participate in the protection, conservation and management of a given forest area subject to provision of a management plan for the forest. Some of these directly support climate change coping strategies and improve local livelihoods. These include: collection of medicinal herbs; harvesting of honey; harvesting of timber or fuel wood; grass harvesting and grazing; collection of forest produce for community based industries; ecotourism; and recreational activities. Others include: educational activities; plantation establishment through non-resident cultivation; contracts to assist in carrying out specified silvicultural operations; development of community wood and non-wood forest based industries; and any other

benefits which may from time to time be agreed upon between a CFA and the KFS. These rights have been given for as long as they do not conflict with the conservation of biodiversity (Kuria, 2009).

In Marsabit, one of the poorest Kenyan counties in the drought-prone Eastern Province, Care Kenya tries to help people overcome food insecurity through the Hunger Safety Net Program where roughly 5,670 women and their families get nutrition through cash transfers of Ksh 3,000, received every two months.

IIN raises awareness of climate change and its impact on livelihoods of indigenous peoples and communities at local, national and international levels. Due to food insecurity, IIN has encouraged communities, especially pastoralists, to have small home gardens where they can plant drought resistant crops to supplement family diet. The Network has trained communities on water harvesting and storage techniques.

International Organisation for Migration (IOM) is another organisation that has supported integrated response to food insecure vulnerable families in the Rift Valley and Northern Regions of Kenya. Care is also implementing the Livestock Purchase Fund (LIPFUND) Project in Munyo Yaya (commonly referred to as Munyo) ethnic group in Balich, a settlement 45km north of Garissa town in Northern Kenya along the Tana River. The project supported farmers with water pumps to irrigate portions of their land to grow fodder for sale and some food crops (Wario and Bowa, 2011).

There are many other CSOs involved in nature-based enterprises as an adaptation strategy. These include ERMIS Africa (honey value addition in Mau, Karima and Mukogondo forests), EAWLS sustainable fishery support to Beach Management Units (BMUs) along the coast, FAN and KFWG support to CFAs, amongst others.

The Green Belt Movement (GBM) through the support of the French Development Agency (AFD) is supporting a food security and tree planting programme in the Aberdares. Under this programme, GBM has for example enabled local communities in South Aberdares to get involved in livelihood activities such as bakery (Geta in South Kinangop) and beekeeping and farming of poultry and rabbits in Eastern Aberdares (Gatundu South Constituency). These programmes are providing alternative sources of food to people during difficult times. These are only a few of the many CSOs involved in livelihood support activities. Other programmes involving government and CSOs include:

1. Kenya Adaptation to Climate Change in Arid Lands (KACCAL) implemented by Ministry for Development of Northern Kenya and other Arid Lands. The Kenya Adaptation to Climate Change in Arid Lands (KACCAL) project is to assist Kenya in adapting to expected changes in climatic conditions that otherwise threaten the sustainability of rural livelihoods in its arid and semi-arid lands (ASALs). Based on an evaluation of the sustainability of livelihood of livelihood activities, KACCAL focuses on: (i) reducing the near-term vulnerability to current climate variability and trends, and (ii) strengthen the medium to long-term capacity to address climate change impacts. This is to be done through strengthening institutional and technical capacity to manage current and future climate risks across scales, by specifically including the risks of climate change into the local and national strategies and activities that affect sustainable livelihood in ASALs and by supporting innovative initiatives to diversify and improve long-term livelihoods by engaging local communities and the private sector. The project has an elaborate monitoring and evaluation framework with provisions for identifying appropriate indicators. This will help provide a framework for evaluating adaptation measures and a practical foundation for future adaptation work in the dry lands of Africa. The KACCAL project is being implemented in the following five ALRMP districts: Mwingi, Garissa, Turkana, Malindi, and Marsabit,

2. The Regional Learning and Advocacy Programme or REGLAP (which was known previously as the Regional Pastoral Livelihoods Advocacy Project) is funded by the European Commission Humanitarian Office (ECHO) and aims to reduce the vulnerability of pastoral communities through policy and practice change in the Horn and East Africa. REGLAP also seeks to promote the integration of humanitarian assistance with development interventions through disaster risk reduction (DRR) among governments, donors and national and international CSOs (civil society organizations). The project is implemented through the leadership of Oxfam GB.

2.13 Technology Transfer

Technology transfer is very important in climate change adaptation and the following CSOs are involved in this area:

- The Innovation Knowledge Foundation (THINK Foundation). Think Foundation is an international non-profit think-tank whose aim is to circulate knowledge on how digital technologies can enable innovation processes and sustainable development.
- ERMIS Africa is involved in a project that seeks to use Mobile Phone Technology in monitoring of REDD initiatives in Mau.
- The African Technology Policy Studies (ATPS) works to support mainstreaming of climate change in integrated water resources management in agriculture.
- Practical Action is an international development agency working with poor communities to help them choose and use technology to improve their lives today and for generations to come.
- The Arid Lands Information Network (ALIN) provides knowledge and information through innovative channels in remote communities throughout East Africa. Members of these communities use the technology and other tools at ALIN's Knowledge Centers to gain information.

Many CSOs and NGOs, such as AWF, support efforts to improve inefficient technologies and embrace newer, fuel efficient technologies, including efficient stoves, solar power, biogas and wireless communications to reduce the greenhouse gas emissions. IEW is also piloting technology transfer to secure access to safe drinking water in a changing climate while reducing greenhouse gas emissions at Kibera. This project is enhancing local's capacity to access safe drinking water through the use of solar water purifiers, called Solvatten, sold at a subsidised price to the residents of Kibera. The project has directly involved members of the community through using them to sell the water units. The members benefit economically as they get a percentage share from the sales, and health-wise because water borne disease occurrence has greatly reduced in the informal settlements.

2.14 Energy

Many of the established CFAs, Water Resource User Associations (WRUAs) and NGOs are involved in tree planting and promotion of energy saving devices. Alongside planting trees, Basecamp is a company that works with local communities in the use of solar energy for lighting, water heating, and management of liquid and solid waste through reduction, reuse and recycling projects. In addition, it promotes tree planting through planting of fifteen trees for every foreign guest at their camps. The current efforts of Basecamp is to lease 20,000 hectares of land in Maasai Mara, and manage it in a way that benefits local landowners and the environment, as an adaptation programme relevant to REDD.

The German Development Cooperation (GDC) through GIZ supports initiatives in Kenya that contribute to climate change mitigation and adaptation. Two of the initiatives are

implemented through the Kenyan-German agricultural development programme Promotion of Private Sector Development in Agriculture (PSDA). These initiatives are concerned with the energy-saving stoves project and Biogas. Additionally, GIZ supports two public private partnerships (PPP), one in the coffee industry and the other in the tea sub-sector. The project's main activities include:

- Working through non-government organisations or community based organisations to create awareness on energy-saving technologies. Two types of energy saving stoves are being promoted: the Jiko Kisasa and the Rocket Stove;
- Capacity building of stove producers, marketers, installers and all other stakeholders along the stove value chain;
- Conducting technical trainings with rural artisans who produce quality stoves in line with the Kenya Bureau of Standards (KEBS);
- Developing business skills of rural dealers and marketers to invest and market energy saving stoves;
- Supporting the foundation and strengthening of the energy saving stoves business association;
- Supporting cross-cutting issues related to energy saving stoves in the fields of gender, youth and HIV/AIDS mainstreaming; and
- Conducting studies on impact and indoor air pollution.

The activities are conducted in three clusters, which are located in Murang'a (Central Province), Kisii (Trans Mara) and Kakamega (Western Province). Two types of energy saving stoves (Jiko Kisasa and the Rocket Stove) were developed and are already being distributed. About 440 producers were trained in constructing the Jiko Kisasa and 1,395 for the Rocket Stove. At the same time 45 market groups have been supported and 450 Jiko Kisasa installers trained.

Significant impacts have been recorded from this energy-saving technology. Between 2006 and June 2009 roughly 400,000 energy-saving stoves had been built and sold to households. This is roughly 100,000 stoves per year and corresponds to a yearly reduction of pressure on fuel wood extraction by 360,000 tonnes of firewood, which is equivalent to an area of 25,000 ha of forest. This is tremendous success, makingthe Kenyan stove project the second most successful energy-saving stove project worldwide (Ochieng, undated).

The biogas project aims at improving the income and employment opportunities of the population and poverty reduction. The objective of the biogas project is to provide small to medium level rural dairy farmers and other beneficiaries with improved living conditions and adequate supply of energy, through use of biogas energy technology. Specifically, this translates to a quantification of the national demand for biogas technology; establishment of a pool of competent construction companies and artisans for biogas plant construction; supply and dissemination; consumer awareness and development of appropriate standards for biogas plants, equipment and appliances. This also includes up-scaling the use of biogas technology and establishment of reliable monitoring and reliable maintenance systems.

2.15 Humanitarian Support

There are many CSOs involved in humanitarian support. These include KRCS, Care International, Care Kenya, World Vision, Christian Aid and Catholic Organisation for Relief and Development Aid (CORDAID). Most of the humanitarian support targets the most vulnerable areas mostly in ASALs. For example, this year KRCS is intensifying its drive to find ways to reinforce the availability of food supplies in the aftermath of the latest drought that left an estimated 4 million Kenyans food-insecure because of the failure of the short rains at the end of 2010 and the lateness of long rains several months later. The area is mainly dependent on livestock, and over the years communities have been impoverished

by continual losses of animals. Former pastoralists who no longer have access to this traditional livelihood have now settled along main roads and are reliant on relief food.

2.16 Indigenous Knowledge

Globally, the inhabitants of dry lands have over the years learnt to cope with the droughts and unreliable rainfall that characterise their areas. Traditional institutions such as elders have played important roles in decision making when drought arises. However, in recent years these coping strategies have been thrown into disarray by increasingly unpredictable weather patterns, making the residents more vulnerable (Wario and Bowa, 2011). Both people and wildlife in East Africa are, in many instances, used to dealing with environmental shocks and changes, particularly in the region's extensive ASALs. For example, pastoralists have traditionally employed a range of resource management strategies, which enhance flexibility and resilience. Perhaps the most important of these strategies is the premium placed on seasonal mobility, which, as with many wild herbivores, allows pastoralists to adapt to unpredictable and patchily distributed rainfall patterns and pasture conditions. Traditional rules that reserve areas as dry season refuges- and which serve as a way of putting certain areas, such as forests, in the 'bank' for emergencies or crises- are another key method pastoralists have used. Because pastoralists, as well as many other groups of people depend heavily on wild foods and other products, have spent hundreds of years adapting to changing ecological conditions, they have a vast store of knowledge, which will be critical to adapting to future changes in climate and ecosystem conditions (Nelson, 2010). One of the strategies by pastoralists in coping with changing climate is migration. In the last few years, many of the pastoralists from Northern Kenya move their animals to Mt. Kenya forests and during the 2009 drought they moved livestock to Nairobi and its environs. The second early response system that allows them to overcome vulnerability is changes in composition of livestock including keeping of hardy species of livestock e.g. camels and goats, as opposed to cattle, and growing drought resistance crops. The third strategy is reduction of livestock size because of declining pasture and allowing off-take when animals have good body condition.

Many of the social and economic changes that have occurred in East Africa during the past century have served to destroy the types of local livelihoods and resource governance systems that are most well suited to adapting to change. At the local scale, growth in human populations has placed vastly greater stress on land and resources, and changing material values and needs have pushed some pastoralists towards more intensive forms of livestock or agricultural production. Government policies have consistently prioritised the very types of livelihoods- such as sedentary fenced ranching and large-scale commercial mono-cropping which are least adaptive in the face of change and which undermine traditional coping strategies such as mobility and diversification (Nelson, 2010).

A study by KENVO showed that the Kereita community in South Eastern Aberdares use a number of traditional ways of adaptation, including: protection of indigenous trees, non-application of inorganic fertilizers, planting of indigenous crops and use of traditional preservatives, traditional silos and traditional prayers (Kuria 2008). The other less traditional methods include use of drought resistance crops, such as sorghum and adoption of better farming methods. The communities indicated that the most common coping strategies included: diversification of agricultural practices, irrigation, improved water harvesting, enhancement of reforestation to improve rainfall patterns and temperature variations, and non-chemical fertilizers to reduce green-house gases. However, KENVO has noted that traditional coping methods are no longer commonly used. The community gave a range of reasons for this mainly resulting from changing lifestyles, reduced farm sizes and higher costs of living.

Through a combination of traditional customs and local indigenous knowledge, local communities around certain natural forests have managed to preserve forests. In Ngangao

Forest in Taita, the communities have harvested all types of medicinal plants inside the forest with the permission of village elders and medicine men. In Meru, the 20 acre Gitune sacred forest that lies in the eastern slope of Mt. Kenya is thriving thanks to the age-old traditional decree by the local Njuri Ncheke council of elders. If an illegal logger is caught defiling the sacred forest, the elders would convene and fine a hefty sum of money or, in default, invoke a traditional curse known as *gochiaro*. About 30km from the coastal city of Mombasa is the scared forests of Kaya. The Kaya forests are safeguarded by the Digo community through a set of rules, taboos and traditional beliefs. WWF is one of the NGOs implementing a forest conservation project in Kwale Landscape aimed at preserving Kayas through application of traditional knowledge. Promotion of indigenous knowledge by CSOs is important in conservation of natural resources, such as forests, because they provide resilience to impacts of climate change and enable communities to cope with adverse climate-related events.

2.17 Strategic adaptation partnerships

An Adaptive Collaborative Management (ACM) approach will be crucial in adapting to climate change. Multi-stakeholder forums are needed to allow stakeholders to communicate more effectively with each other. Some of the CSOs forums that exist in Kenya include: KCCWG, KWF, KWCF, KFWG and the emerging county natural resources forums and networks. The use of these forums can enhance communication and collaboration among levels and actors. Partnerships that facilitate information sharing at all levels and on various settings, especially highlighting what has worked in different localities, should be encouraged. Currently, there are many examples of communities/CSOs partnerships on climate change, some of which have been presented in this report.

Other partnerships include Public-Private Partnerships, to enhance collaboration on issues including vulnerability, mitigation and adaptation. An example is presented in Case Study 1.

Case Study 1: Public – Private Partnership: The AdapCC pilot group Michimikuru

The Area:

The Michimikuru Tea Factory and Estate are located approximately 280kms North East of Nairobi. It is located 40km north-east from Meru town. It is situated in Nyambene Hills and within Tigania Administrative District. Michimikuru factory is one of 60 factories that are under the management of Kenya Tea Development Agency (KTDA). It produces black CTC4 teas. Michimikuru is unique in that it qualifies to be about the only one that has a nucleus estate owned by the farmers. It has approximately 9000 small scale growers and produces an average of 4million kg of black CTC teas per year (an average of 444kg per farmer). 95% of which is exported to various destinations in the world. The Eastern Produce Kenya (EPK) established the estate and factory in 1960, but sold it to the local farmers in 1994. A desert like climate starts 10kms north of the factory and hence there is great vulnerability to climate changes. The tea area among the farmers is approximately 1700Ha and the tea in the estate occupies 201Ha. Tea accounts for close to 80% of the household activities and brings in 90% of the family income. The average tea farm per household is slightly less than ½ acre.

Threats and Issues:

The most severe risks for tea production, as identified by the farmers, are the changing

precipitation patterns, prolonged drought periods and increasing extreme weather events, which result in the loss of yields and income. Michimikuru farmers are highly vulnerable to climate change impacts because of their high dependence on tea cultivated in monoculture regime, the extremely high deforestation rates resulting in degraded land and eroded soils and the inefficient use of natural resources.

The initiative:

Cafédirect – a UK Company - and GIZ have been implementing a Public-Private-Partnership from 2005 at Michimikuru to strengthen smallholders' capacity to cope with climate-related risks, to manage uncertainties and to adapt to changing climate conditions. The main objective of the joint pilot initiative (Adapt to Climate Change – AdapCC) is to create transferable examples how pilot producer groups of Cafédirect's supply chain could cope with the impacts of climate change and how to improve their access to respective financial and technical support mechanisms. This has included supporting the development and implementation of site-specific adaptation strategy.

Following the need for risk management strategies and adaptation measures the following key components of the climate change adaptation strategy were identified:

1. Capacity building in climate change issues and environmental conservation;
2. Good tea agricultural practices and diversification;
3. Reforestation on degraded hills and sustainable forest management;
4. Improving the access to climate related information; and
5. Distribution of findings and accessing financial and technical support mechanisms.

Some of the activities being undertaken to enhance adaptation include environmental education to improve their understanding and actions regarding the conservation of nature, tree planting, enabling or improving the efficient use of energy, especially of fire wood, and the search for alternative energy sources is another main aspect to improve their living standards and agricultural production conditions. To reduce their high dependence on tea as a cash crop, Michimikuru farmers recognise the need to diversify their income and to revive traditional farmers' knowledge regarding good agricultural practices and the sustainable use of resources. To receive improved crop yields, tea framers also need to use good quality seeds and invest in their self-managed nurseries, not only for tea plants but also for native trees and other ecologically important plants for local biodiversity.

AdapCCs' expected impacts include:

- To contribute to long-term sustainability of coffee and tea production and thus saving revenues of the affected smallholders;
- To impact positively on climatic and environmental conditions by implementing adaptation and mitigation strategies;
- To develop tools and methodologies to identify and implement smallholder agricultural adaptation strategies; and
- To reduce the vulnerability of smallholder agricultural production practices against climate change.

2.18 Co-management

In the forestry sector, the Forests Act 2005 strongly supports the participation of stakeholders in the conservation and management of the forest resources through collaborative management. Currently, over 50 forest management agreements between CFAs

and KFS have been signed and are under implementation. Under these arrangements mostly supported by CSOs such as KFWG and FAN, CFAs are able to engage in forestry livelihood activities in forests such as Kerita, Lariak, Rumuruti, Ngare Ndare, Kibwezi and Upper Imenti forests.

In the fishery sector, Beach Management Units (BMUs) are legal bodies mandated under the Fisheries Act to undertake fisheries management in partnership with the Government and other stakeholders. With this role, they have the responsibility to develop and implement management plans in their areas of jurisdictions. BMUs have been formed to broaden participation to include resource users in the management of the fisheries resources. These are some of the many community-based approaches that should be strengthened to enable local communities adapt to climate change. EAWLS and CORDIO promote conservation of marine resources by working with BMUs.

2.19 Ecosystem-based management approaches

There are several CSOs that are involved in implementation of ecosystem based management projects. AWF believes that large conservation landscapes, such as African Heartlands, offer the best opportunities for adaptation. AWF supports ecosystem-based adaptation and community-based adaptation across its programs in Africa and in Kenya. Other NGOs involved in landscape approaches include WWF, ACC and IUCN. At the Kenyan Coast, WWF is implementing the Kenya Coastal Forest Protected Area System project which seeks to improve the efficacy and sustainability of coastal forest resources management within the Kwale Landscape which covers three new administrative Districts of Kwale, Kinango and Msambweni carved out of the former Kwale district at the Kenya Coast in 2008. The project objective is that coastal forests of Kenya are conserved, managed and sustainably utilised through a participatory system that optimises benefits for present and future generations at landscape scales.

By working with government and non-governmental partners, the project has contributed to the decline of illegal forest activities, protection of forests through marking of boundaries, restoration of degraded sites through tree planting and gazettement of more Kayas at the Kwale Landscape. The project has also supported local community livelihood activities such as ecotourism, village banking, tree seedling nurseries and processing, packaging and certifying of herbal and honey products.

WWF has also been involved in conservation of other landscapes including Lake Bogoria. Here, WWF worked with key local organisations to ensure the ecosystem and its biodiversity remained healthy, without affecting the livelihoods of people by:

- Developing a plan to protect Lake Bogoria National Reserve. This was adopted and ratified by the two local county councils of Baringo and Koibatek that make up the committee overseeing the reserve;
- Supporting local communities to manage natural resources sustainably while improving their livelihoods;
- Making government recognise that local environmental management committees have a valuable role to play in protecting the reserve;
- Setting up a mechanism to share the revenue generated by the Lake Bogoria National Reserve between authorities and community; and
- Establishing a Water Resource Users' Association, where communities can have their say about how water is managed in the area

The Northern Rangelands Trust and South Rift Association of Landowners are two associations involved in conservation of large landscapes and restoring the land and

rebuilding its ecological resilience. FFI is exploring ways of formation of similar association for Lamu and surrounding environs. In Amboseli, a coalition of conservation organisations, government agencies and the tourism industry have drawn up an ecosystem management plan and established a trust to oversee it.

To promote conservation of large ecosystems, conservation leases and easements are being used by CSOs. AWF is already implementing conservation leases to secure the wildlife corridor for the Nairobi National Park.

2.20 Forest restoration

CSOs are also involved in rehabilitation of degraded forests using more climate resilient species and enhancing degraded forests by removing stresses that caused their decline. Green Belt Movement (GBM), ERMIS Africa, CFAs, and WRUAs, KFWG, EAWLS Tupande Pamoja Facility and Nature Kenya are some of the CSOs supporting forest restoration programmes.

2.21 Building resilience of coral reefs

To enhance the resilience of coral reefs, the reduction of anthropogenic stressors including sedimentation and overfishing; protection of key ecosystem features; protection of replicate areas; restoration of coral habitats; identifying coral refugia; and relocating organisms is needed. One of the strategies adopted by EAWLS, and which is being replicated in other areas, is closing off sections of the over fished and coral damaged areas for some time thereby enabling them to recover and be more resilient to impacts of climate change (see Case Study 2). Given the uncertainties associated with the future path of climate change and how climate will interact with other stressors to impact coral reefs, managers need the flexibility and authority to apply dynamic management approaches that can be periodically readjusted as new information becomes available (Bosire et al., 2010).

Sites with high coral cover and low disease prevalence should have a high priority for protective measures as a precautionary approach to management. Areas with threatened species should receive special protection consideration. Marine reserves, in conjunction with comprehensive fishery regulations, appear to be a wise strategy for sustainability, irrespective of climate change.

Case Study 2: Building the Resilience of Corals as a climate change adaptation strategy: The Kurawitu Marine Conservation initiative

The Area:

Kuruwitu Beach Management Area lies on the Kenyan coast, within Kuruwitu and Vipingo sub-locations, Junju location of Kikambala Division in Kilifi District, Coast Province. The area covers six landing sites (Mwanamia, Kijangwani, Kuruwitu, Kinuni, Vipingo and Bureni) and includes areas where sustainable fisheries practices are conducted as well as closed area, Kuruwitu Marine Conservation area, a 30 ha community managed marine protected area. The population of the area is approximately 40,000 people. The Kuruwitu-Vipingo is characterised by two distinct ecosystems, which include a terrestrial forest and a fringing reef that lies parallel to the coast, close to shore. The fringing reef and the coastal strip are characterised by sandy beaches, coral reefs, lagoons, cliffs/coral platforms and

caves. The lagoons situated between the reef and the beaches are important habitats and breeding grounds for a myriad of molluscs and crustaceans. The marine waters of Kuruwitu-Vipingo area are a very important biodiversity hotspot along the Kenya coast. The distinct coral reef ecosystem plays host to diverse coral assemblages populated by many species of ornamental fish and endangered sea turtles. The various ecosystems support many species of birds, fish, mammals, plants and other organisms some of which are endemic.

Threats and issues:

Previous assessments have indicated that there are a number of threats and issues facing the communities and the environment within the area. This includes a range of environmental, social and economic factors. Chief amongst these are widespread poverty and subsistence lifestyles, climatic variability and seasonality, lack of access to finance and technology, a restricted access to resources or assets, particularly a lack of land tenure, and the need to balance minimising risks against maximising productivity. Community livelihoods continuously face the threat of limited access to financial capital, access to knowledge and training opportunities, acquisition of efficient technologies and equipment important to creating an enabling environment for income generation. A further, key issue limiting income generating opportunities is the lack of land tenure. The environment faces an increased threat from illegal fishing, unplanned/unauthorized developments, unregulated influx of visitors, pollution, both solid waste and waste water, coral bleaching due to climate change and other ecological perturbations.

The Initiative:

Past community efforts to address natural resource management have included formation of a community based organisation in 2003 called the Kuruwitu Conservation Welfare Association (KCWA) - a membership environmental conservation and welfare association registered under the Ministry of Culture and Social Services. KCWA was formed to address the two key problems of environmental degradation and extreme poverty. The local community felt compelled to take control of their future by facing the reality that their socio-economic well-being is dependent on the health of the environment, especially marine. They resolved to achieve this by attaining sustainable use through self-governance.

However, with time the community realised that achievement of their project goal was limited as they lacked the capacities and technical knowledge to achieve their stated objectives, since their concept was new to the Kenyan coast. Support from the East African Wildlife Society (EAWLS), enabled the local community to develop the concept to first phase of the community marine conservation area between 2003 and 2006 titled "*Building stewardship and foundation for a community managed marine conservation Area at Kuruwitu Vipingo, Kilifi District, Coast Province*". During this phase, EAWLS and KCWA worked together to build a strong foundation and enhance sustainability for this pioneering community initiative. To achieve this, several activities were undertaken, including:

1. Community mobilisation and sensitisation;
2. Numerous community feedback meetings;
3. Socio-economic survey by Wildlife Conservation Society (WCS) and CORDIO;
4. Educational tour by stakeholders to Tanga Coastal Zone Conservation and Development Project (TCZCDP) in Tanzania to learn about community initiatives on integrated management;
5. Analysis of the legal and policy framework for community managed conservation areas;
6. Assessment of the area biodiversity resources by CORDIO, WCS and other marine and coastal resources researchers; and
7. Alternative livelihood options assessment for Kuruwitu-Vipingo.

Information generated from the socio-economic, legal and scientific information laid the

foundation for a Community Managed-Marine Conservation Area in Kinuni and Kuruwitu and the implementation of the second phase of the project *"The Kuruwitu Community Marine Conservation Project"* (KCOMACP) between 2008 and 2010. It was funded by the Community Development Trust Fund-Community Environmental Facility (CDTF-CEF). The second phase funding was geared towards ecosystem rehabilitation and support to local community enterprise activities as incentives. This included providing support to the community groups to purchase equipment and acquire skills like management and marketing, establishment of an offshore micro-enterprise and training of the BMU and development of a management plan covering the six landing sites. This has improved resource governance within the area by establishing governance structures and processes to ensure that the local community are capable of participating in sustainable environmental conservation and management. Training programs targeting the community through the BMU and KCWA have built skills in self-governance, management, leadership and project management. Targeted marine education and awareness programs have enhanced community cohesiveness, community rights and participation enabling the community to mobilise for collective action.

A number of nature-based enterprises have been established and are currently running successfully. This include offshore fishing enterprise with one fishing boat of a capacity of 3 tonnes, fishing gear, freezers (2); a safari dhow with a capacity for 30 people and a glass bottomed boat with a capacity of 10 people. Funds generated from this activity are directed back into the organisation to cater for running the day-to-day activities of the organisation, including payment of wages. The initiative was also aimed at protecting key sites, habitats and ecological processes enabling their recovery while providing the local community with a sustainable means of livelihood. This included closing of one of the overfished sites in Kurawitu to enhance recovery. This area has now been gazetted as a Community Conservation Marine Area under the 2007 Beach Management Unit Regulations. Recovery of degraded habitats i.e. coral reefs and sea grass beds has been observed within the closed areas and documented through scientific reports as well as on film on the Kuruwitu Conservation Area titled 'Between a rock and a hard place'. Based on a baseline of 1999 (immediately after the coral bleaching effect brought about by El Nino), corals (hard and soft) and sea grass beds have recovered by a margin of between 200% (for both hard and soft corals) and 60 % for sea grass beds. Closing of parts of the Community Conservation Areas (CCAs) has led to recovery and increased resilience of ecosystems, restoration of degraded habitats, increased fish catches and reduction in poverty and vulnerability of communities to climate change.

Use of illegal fishing gears has also been drastically reduced. Currently, no beach seines or aquarium fishing takes place within the area (both closed and open). Use of spear guns though, is still rampant in the open waters. These measures have led to increase in fish numbers/biomass by 120 % within the closed area (2005 baseline). Recovery of fish populations and increased nesting of turtles has been observed and documented through scientific research. Generally, the project has ensured that the environment is conserved through safeguarding critical habitats, preservation of genetic diversity and conservation of endangered species.

In addition, the project has significantly contributed to the economic and social well-being of the community through providing a means of income of the local community members through employment of community members as scouts and fishers for the conservation area and the offshore fishing enterprise. Through initiation of nature based enterprises, the community is slowly diversifying income sources whereas capacity building programs have enabled community members to acquire new skills and enhanced knowledge related to environmental conservation and entrepreneurship.

The concept of a community marine protected area by the Kuruwitu has currently been replicated by a total over 11 coastal communities stretching from Lamu to Vanga in Kwale.

Though the Kurawitu area is closed for restoration of coral and marine resources by the communities such areas can be opened for sustainable fishery once they recover.

Photographs 1,2 and 3 above shows the recovery of degraded corals at Kurawitu CCAs – now a tourism area in North Coast. Source EAWLS

2.22 Promotion of better agricultural practices

Some of the recommendations that are aimed at addressing climate change are simply good management practices, such as improved agricultural water management, efficient use of fertiliser and manure, and linking and improving the market access. Such practices, while enhancing the productivity and profitability of the systems, have the potential to sequester atmospheric CO_2 in biomass and soils, decrease the rate of land clearing for agriculture, increase efficiency of farm inputs such as fertilizers, and pesticides, and decrease N_2O and methane emissions. Case Study 3, undertaken by Care Kenya and WWF, illustrates how improved farming practices serve as a climate change adaptation strategy.

Case Study 3: The Malewa River Basin Initiative

The Area:

Lake Naivasha is the only inland freshwater lake of economic importance in Kenya. Apart from being a vital source of water in a seemingly semi-arid environment, the lake supports a flourishing business in horticulture and floriculture. These activities earn the country a substantial amount of foreign exchange in the form of exports. The lake is also famous for sport fishing, tourism and recreation. One of the three rivers feeding Lake Naivasha is River Malewa. River Malewa originates in the western slopes of the Aberdares ranges in central Kenya and flows south through highly manipulated small and large-scale farms before making its entry into the lake on the northern shores.

Threats and Issues:

The River Malewa basin is under serious threat from unsustainable land-use practices. Some of these threats include deforestation, siltation, increased abstraction of water and pollution by agro-chemicals used by farmers along its course. This has serious implications for the social, economic and environmental health of the river basin and Lake Naivasha.

The Initiative:

To enhance the conservation of Lake Naivasha and promote better farming systems that would reduce pollution to the lake and along the river, Care Kenya and WWF are involved in Payment for Environmental Services (PES) activities in the area. WWF for example is implementing the Lake Naivasha - Malewa River Basin Integrated Water Resource Management (IWRM) Programme, while Care Kenya has been involved in supporting sustainable agricultural activities in the area. This initiative involved working with upstream farmers involved in farming activities that were contributing to increased sedimentation of River Malewa and increased siltation of Lake Naivasha. It involved working with these farmers on activities that would ensure that there was less sedimentation in River Malewa so that downstream water users would also benefit. Initially the main activities involved cleaning of the river. Over time, other activities that would improve water quality were initiated through a voluntary PES. The approach used involved development of criteria by Care Kenya that identified/prioritised the farms to pilot the project. These were mainly the farms that had a lot of effects to sedimentation of River Malewa. The owners of the farms were identified and engaged in project activities that would help them realise better value from their farms or status quo remains. Once identified, the 981 farmers selected were trained on activities that could be undertaken on their farms and have positive effect to their livelihoods and reduce siltation of River Malewa. These farmers were from two Water Resource User Associations (WRUAs). These are the Upper Turasha Kinja WRUA and the Wanjohi WRUA. To reduce sedimentation, grass strips were planted across the farms to reduce water flow and clean water flowing to the river. They were also encouraged to plant trees on their farms. By doing so, clean water started flowing to downstream water users who were then enticed to make a token of appreciation to the farmers to what one can call PES. Two associations were targeted for PES; the Lake Naivasha Water Resources Association and Lake Naivasha Outgrowers Association. In June 2010, the Lake Naivasha Outgrowers Association made a total of USD 3,300 to the 981 farmers (each grower paying Kshs 1,300 per year). In June 2011, they paid USD 10,000 (each paying Kshs 1,470) and the payment is expected to increase in 2012.

Prior to the project, most of the upstream farmers did not grow fodder for livestock and suffered severely during the 2009 drought. They did not grow grass and instead grew oats. The introduced Napier grass was the best in the region. Two varieties were introduced; the Kakamega Napier grass and the Rhodes grass. After introduction of the grasses, they were encouraged to commercialise the activity by selling the grass as hay and the overgrown grass as cane. Later growing of fruit trees and other crops was introduced to enable them sustain their activities and conservation values even in absence of any payment from the downstream users. Today many other farmers are joining even without payment from the downstream farmers (of those joining none was paid in 2010 and 2011, but may be paid in 2012 depending on funds available). In complementing the above activities, Village Environmental Committees have been set up in the basin and a management plan prepared through the support of WWF. This initiative can be viewed as an adaptation case study that can help communities realise hidden values from their farms by practicing better land management practices. The case study is being replicated on land neighbouring the Ndakaini Dam.

2.23 Carbon credit markets - Green financing

For a developing country like Kenya, which has low carbon emission, it can benefit from carbon credits from countries with relatively high emissions through compensation for tree planting both on farm and in designated gazetted forest. Several communities in Kenya are already benefiting from carbon financing. Some green financing mechanisms that are being undertaken include:

1. Reducing Emissions from Deforestation and Degradation (REDD)

The Kenyan Government has embarked on a national process of preparation for an international climate change regime that would reward countries for REDD. Kenya obtained the support from the Forest Carbon Partnership Facility (FCPF) to prepare and implement a Readiness Preparation Proposal (R-PP), which summarizes the activities that would need to be undertaken to make the country 'ready' to participate in REDD[1]. The Kenya Forest Service is the nodal agency and is working in collaboration with the REDD Technical Working Group. The R-PP has already been drafted and approved by the FCPF. The next step is to implement the R-PP.

The first step towards developing an effective REDD project is the determination of baseline information and data sets that meet REDD standards particularly important is an estimate of forest biomass, to determine the carbon stocks available at the baseline level. Currently, in the region, there is very little data collected to the extent necessary due to the remoteness of forests, few resources for data collection, as well inadequate capacity and inefficient relations between institutions involved. Community involvement is also necessary to create a truly successful REDD project, while continuing access of forest resources to the poor. Therefore there should be deliberate attempts by relevant government agencies and partners in Kenya to conduct baselines studies to determine carbon stocks in various forest blocks, which then will be traded in international market as carbon credits. In Kenya, there are several successful Payment for Environmental Services case studies. The most successful case study is that of Kasigau REDD project. The case study of Amboseli is presented in this report.

Case Study 4: The Case Study of Mbirikani Carbon Project, Kenya

The Area:

Mbirikani Group Ranch covers an area of approximately 320,000 acres, bordered on the eastern edge by the Chyulu Hills National Park. Mbirikani is owned and run communally by approximately 4,500 members of Maasai pastoralists. There are just over 15,000 people living on the ranch, along with some 60,000–90,000 head of livestock. Permanent water is scarce. Rainfall is erratic and averages between 350 and 500mm per year, making it one of Kenya's driest areas. This, in turn, makes it difficult for the community to generate income from other means besides pastoralism. Developing alternative income generating mechanisms is critical to ensuring livelihoods in this area. The Mbirikani community is dependent upon the forest and the rangelands for their livelihoods. Mbirikani contains lava, dryland and cloud forests, which provides important refuge to wildlife, including elephant, lion, cheetah, leopard, giraffe, buffalo, impala, gazelle, hyena and jackal.

The initiative:

[1] These activities include: a) development of a national REDD strategy specifying the activities to reduce deforestation and degradation; b) establishment of a reference scenario of emissions from deforestation and forest degradation; c) establishment of a monitoring, verification and reporting system for the country's forest cover and forest cover change; d) design of an implementation framework for REDD; e) establishment of a consultation and participation mechanism for the national REDD process.

Given the national and local importance of Mbirikani's forest, AWF embarked on a regional and local carbon offset programme with the community. The Mbirikani REDD project has been designed to deliver positive climate change impacts by avoiding forest degradation and deforestation, while delivering numerous other livelihood and ecosystem benefits to the community. The Mbirikani REDD project has been set up to:

- Protect more than 20,000 hectares of forest from further unplanned, mosaic deforestation and forest degradation;
- Prevent future greenhouse gas emissions from deforestation and forest degradation;
- Promote and develop systems for sustainable forest product utilisation with forest-dependent communities;
- Develop alternative livelihoods with forest-dependent communities;
- Build local capacity and understanding of REDD mechanisms;
- Develop systems to facilitate replication in other locations based on the successful application of these methods; and
- Sell carbon credits to benefit the community and support the conservation of the forest.

AWF has an MOU agreement with the Group Ranch and has completed the following:

- Drivers of deforestation study;
- REDD training for the community and group ranch committee;
- Project Idea Note (PIN) Project Development Document (PDD); and
- Alternative livelihood assessment completed and some projects initiated. These include: alternative cookers (fuel-efficient jikos); improved rangelands and income from livestock through enhanced market linkage; reforestation; tree planting; and sustainable charcoal.

TIST Kenya has also been instrumental in the area around Mt Kenya in terms of carbon-related projects such as tree planting, which is likely to address several issues among them climate moderation, carbon sequestration, fuel wood, biodiversity habitat rehabilitation and enhancement of local community livelihood in the area. The Green Belt Movement (GBM) also has many carbon projects in the Aberdares and in Enoosupukia in Mau. Under the GBM project, farmers are paid depending on the number of tree seedlings planted and survived. Under these projects local communities have planted millions of trees and wait to benefit from the carbon credits.

2. Carbon credits and agriculture

Another important sector in carbon financing is agriculture. Most farmers in Kenya depend on rain-fed agriculture, so changing rainfall patterns could have devastating effects on agricultural production in general and food security in particular. By promoting land management techniques that enhance the storage of carbon in agriculture soils, Kenya can at the same time greatly contribute to global mitigation efforts, enhance long-term agriculture productivity (and thus food security), and generate revenues from the carbon markets estimated to be potentially in excess of US$ 2.5 billion by 2030. Early results from two pilot agricultural carbon finance projects in Western Kenya show that agriculture can be integrated successfully into carbon finance. Case Study 5 is a mitigation and adaptation synergy example by Care Kenya.

Case Study 5: Nyando River Basin

The Area:

Along the River Nyando, there are several sections where degradation has occurred. These sections have been mapped by ICRAF and KARI, who have previously undertaken projects along the river. Included in the mapping are what are referred to as the Lower and Middle Blocks. These are the blocks where Care Kenya is implementing a climate change adaptation and mitigation project.

The initiative:

The initiative involves planting of trees for sinking of carbon, with plans to sell the sequestered carbon in future. Being a long term investment, tree growing is complimented by introduction of climate change adaptation activities through the adoption of Climate Change SMART Agriculture. The idea behind is that tree growing is a long term activity that community cannot in isolation wait to depend upon and hence, as a mitigation measure, they are being encouraged to practise SMART agriculture that would support their livelihoods in the short term. They have been trained on SMART agriculture, including growing of high value crops such as butter nuts, green gram and bulb onions (which are very marketable and used for subsistence). Cassava has also been re-introduced in the area. This project provides an inter link between climate change mitigation and adaptation measures. Similar initiatives should also be tried elsewhere including areas of high poverty levels. Turkana for example, being currently the poorest county in Kenya according to statistics, requires special climate change adaptation projects focussing on water harvesting and utilisation, diversification of livelihoods, capacity building and purposefully designed mitigation projects including solar and wind energy, tree planting and other drought preparedness and disaster risk reduction programmes.

3. Lessons Learnt

This study has provided some good lessons on how CSOs and local communities have been involved in climate change adaptation and mitigation measures. In summary, the following are some key lessons learnt from this study.

1. Many CSOs (especially the national NGOs) activities in climate change adaptation on vulnerability and impact assessment studies are helping CSOs to understand climate change vulnerability and impacts as a basis of developing climate change response strategies.
2. Research is important in understanding climate change, but it may not be useful if it is not supported by education and outreach programs on potential climate change impacts and ways to respond.
3. CSOs work especially on advocacy and awareness has profiled climate change issues in the country and provided input to development of a climate change bill and NCCRS.
4. Capacity building and information sharing activities by CSOs has been central to understanding of climate change impacts and in adaptation/coping mechanisms by CSOs and local communities.
5. Monitoring and early warning is an important component in adaptation. However, information generated is not being used in policy decision making and many people are not aware of results of monitoring and early warning in order for them to respond to changes on time. Embedding early warning information in decision making and policies is therefore critical.
6. CSOs activities show that communities are aware of climate change impacts including traditional/inbuilt mechanisms on adaptation. Many local communities, farmers, fishermen and pastoralists have traditionally employed a range of resource management adaptation strategies which enhance flexibility and resilience. However, these traditional coping methods are disappearing as a result of changing lifestyles, reduced farm sizes and higher costs of living.
7. Adaptive capacity has been found to be low in coastal and marginal areas where communities are poorly equipped to cope with any interventions that may restrict their traditional way of doing things. This is attributed to low education and human and capital resources.
8. Improved farm management practices and protection of ecosystems (as illustrated by case studies in this report) is one important adaptation measure in enabling people to cope with changing climate and building ecosystem resilience in climate change.
9. Diversification of livelihood options, use of hardy animals and drought resistant crops and use of improved hybrids and other adaptation strategies should be well thought out to avoid maladaptation, such as use of inappropriate hybrid seeds and construction of dams in inappropriate areas and settlement in areas that historically are known for flooding.
10. Adaptation on its own may not be adequate in addressing climate change and hence the need for synergies between mitigation and adaptation measures.
11. There is need to build regional research and collaboration and partnerships in climate change adaptation programmes.
12. There is need to strengthen the country and CSOs capacity in disaster preparedness responses.
13. Capacity building and awareness among local communities and CSOs in understanding and adopting best practices in adaptation is needed.

4. Conclusion

Though climate change is real and happening, uncertainty prevails over the exact nature and consequences of climate change especially at local level, making it difficult to plan and develop appropriate adaptation strategies, programs, and technologies. The predicted impacts of climate change therefore calls for adaptation and mitigation strategies. The Care Kenya 2012 study has established that climate change adaptation investments are extremely slow in Kenya and will be difficult to implement given competing short term needs and a lack of capacity in key ministries and other key actors to assess adaptation requirements. Therefore, it is inevitable that core capacities of these actors will need to be strengthened in the areas of climate forecasting and scenario planning. The broadening nature and increasing severity of potential climate impacts in a given area and the unavoidable uncertainties associated with predicting these impacts require innovative approaches to management and development that go beyond centralized prediction and control practices. This calls for adoption of adaptive and flexible management approach to adaptation (Care Kenya, 2012).

This report shows that research and application of vulnerability and livelihood assessment tools to gather information on climate change especially in areas most vulnerable and identification of possible adaptation and mitigation strategies are needed. Lessons learnt from CSOs such as ACC work in the Kenya/Tanzania border rangeland areas and Care Kenya work in Northern Kenya are crucial in understanding climate change impacts and development of appropriate response strategies. Several adaptation options have been identified by CSOs. These include use of indigenous knowledge, seasonal mobility, creation of grazing reserves for dry season grazing, integrated agriculture, product value addition and diversification of livelihoods and livestock herd composition.

CSOs role in advocacy, awareness creation and capacity building especially in the following areas has helped in understanding of climate issues and taking appropriate measures to address them:

- Sensitisation among communities on impacts of climate change and possible mitigation measures.
- Advocacy for implementation of sound environmental governance programmes and development of appropriate policies.
- Capacity building to enhance institutional capacity and understanding on climate change impacts and response strategies

This report also highlights the need to upscale use of efficient technologies especially on energy. It also shows the need to establish early warning systems and effective use of information generated to respond to climate change impacts. The early warning alert by CORDIO on climate change impacts on marine resources is an example of early warning systems that should be employed in other ecosystems. Appropriate strategies and mechanisms to ensure usefulness of information generated should be developed. This will enable communities vulnerable to flooding for example take appropriate measures before the event occurs. There is also need to upscale CSOs programmes on ecosystem based management approaches such as the WWF Coastal Landscape and ACC Kenya/Tanzania cross border approaches as well as improved management of degraded natural resources and their support systems. Such initiatives should integrate climate change adaptation strategies to reduce vulnerabilities and improve local community livelihood support systems. The case studies presented in this report provide examples of initiatives that should be up-scaled and replicated in many parts of Kenya to enable communities adapt to climate change and engage in appropriate mitigation measures. It is also important to have clear thought out adaptation strategies to avoid maladaptation.

The policies objectives should promote ecosystem adaptation by encouraging the adaptive management of ecosystems; and second, promote ecosystem adaptation, by linking them with the sectors that benefit from their ecosystem services.

References

AWF (undated): Building resilience into conservation programming: Lessons Learnt from AWF's Climate Change Adaptation activities

AWF, 2011: AWF Climate Change Adaptation Strategy, 2011

AWF, 2011: The Mbirikani Brochure: Mbirikani Carbon Community and Biodiversity Project

Biotope, 2011: Progress report on socio-economic study of the Aberdares Rehabilitation Project, 2011

Bosire, J.; J. G. Kairo, B. Kirui, J. Uku, G. Okemwa, J. Ochiewo, J. Maina 2010. Impacts of climate change, and vulnerability assessments and adaptation/mitigation measures on wetland, marine and coastal resources in East Africa. EAWLS.Nairobi. 61pp

Business Daily, 2012: Kenya's emerging carbon trade to benefit new regulations: April 18,2012

C. W. Recha C. W., Shisanya, C. A., Makokha, G. L. and Kinuthia, R. N., 2008: Perception of use of climate forecast information amongst smallholder farmers in Semi-Arid Kenya

Care Kenya (undated) Powerful Ways to Reduce Poverty: CARE Kenya Empowers Women and Girls!

Care Kenya, 2012: Building Climate Resilience in Kenya: Key Actors, Programmes and Initiatives A study commissioned by CARE Kenya March 2012

Charles B.L. Jumbe , Kenneth A. Wiyo, Evans Njewa & Frederick B.M. Msiska, 2008: The role of government, donors, civil society and the private sector in climate change adaptation in Malawi: Scoping Study 2008, Centre for Agricultural Research & Development, Bunda College

Conservation International, WWF, Co-operative Programme on Water and Climate, and Wetlands International, 2010: Ecosystems and community based climate change adaptation Training Kit: December 2010

Daily Monitor (undated): Scientists tap climate knowledge to spur regional farming practices: an article based on a report by the Consultative Group on International Agricultural Research programme on Climate Change, Agriculture and Food Security titled "Climate Analogues: Finding Tomorrow's Agriculture Today," International Centre for Tropical Agriculture. An article in Daily Monitor

David Western, 2010: Conservation in an age of climate change, 2010:1

Dino Martins, 2010: Voice from the dust: A cry from the frontline of climate change in Swara, 2010:1

EAWLS, 2010: Final Report for Kuruwitu Community Managed Marine Conservation Area Project

Nelson F., 2010: Adapting Conservation Strategies in an Era of Climate Change in Swara 2010:1

Gachanja, M. K., 2010: The Improved Conservation and Governance for Kenya Coastal Forest Protected Area System Project: Mid-Term Review Report, UNDP_GEF and WWF

GBM, 2009: AFD-GBM Annual Report, 2009

GOK, 2012: The National Environment Policy, 2012, Revised Draft 3, 2012

GTZ, 2008: Strategy to adapt to Climate Change for Michimikuru Tea Farmers in Kenya (draft- 2008)

Hussein Wario and Emma Bowa, 2012: Adaptation Learning Programme in Kenya In the Margins of Society: A snapshot of the climate change impact on the Munyo Yaya community: Care Kenya, 2012

Karuturi P. Rao, 2010: Climate change: What it means for Agriculture in Eastern Africa in Swara 2010:1

Katharine Cross, Cynthia Awuor and Shannon Oliver (Undated): Climate Change Vulnerability Assessment Global Water Initiative-Kenya report.

Katrina M. Allen, (undated): Community-based disaster preparedness and climate adaptation: local capacity building in the Philippines, Social Research Associates, UK

KCCWG, 2010: Climate Change: Campaigning and Advocacy in Kenya: Road to COP Report

KCCWG, 2011: Summative Report on the Climate Change hearings

KCWA, 2003: Kurawitu Draft Beach Management Plan

KRCS, 2012: Hope is a harsh landscape, April 2012

Kuria, David, 2009: Coping with Climate change: Understanding local communities' knowledge and their coping strategies to climate change: A Climate Change Policy Fellow, 2009, A project report to SysTem for Analysis, Research and Training (START)

Mclanahan et al, 2011: Associations between climate stress and coral reef diversity in the western Indian Ocean, Global Change Biology.

Mutimba, S. Et al 2010: Climate Change Vulnerability and Adaptation Preparedness in Kenya. Heinrich Boell Foundation.

Nyabuti Risper, 2008: Kenya Climate Change Forum (KCF) report on the Planning Meeting at Kenya School of Law, 3-4 April 2008, Nairobi Kenya

Ochieng, B. O., (undated): Climate Change adaptation and mitigation: what other organisations are doing: ILEG, Se 2009.eu, UNEP

Saleh Maalim and Mutunga J. K. 2009: From Kyoto to Copenhagen and beyond World Mayors, Power Point Presentation

Dialogue 14 12 2009 Copenhagen, NSC /KCCWG

Transparency International, 2011: Report of the Transparency International Climate Governance Programme, 2011

Wanyonyi, I. N., Obura, D. and Melleret-Kind D., 2008: Coastal communities in adaptation and resiliency to vulnerability: An analysis of livelihood activities in Kenya in Coastal Oceans Research and Development in the Indian Ocean, Status Report 2008

Worden J., Western D., and Waruingi L., 2009: Exploring potential economic and livelihood impacts of climate change and possible adaptation mechanisms in the Kenyan rangelands. ACC

Websites of CSOs presented in annex 2 of this report

Appendix 1: Some of the Civic Society Organisations involved in Climate Change adaptation and mitigation programmes

Name of the CSOs	Climate change activities
Kenya Climate Change Working Group (KCCWG)	Kenya Climate Change Working Group (KCCWG) is a forum that brings together civil society organisations, donor partners, government departments and agencies working in climate change and for climate justice for the purpose of creating synergies, harmonising and strengthening the efforts in the design and implementation of activities that address climate change, as well as advocating for favourable national policies in the promotion of climate justice for all, especially the most vulnerable.
The Climate Network Africa (CNA)	CNA is a non-governmental organization registered in Kenya and has been in operation since May, 1991. The Network was started as an initiative of non-government organisations and institutions to lobby and advocate for relevant policy on Climate Change related issues in Africa. With time, the Network has changed its strategy and focus and expanded its horizon to encompass other Climate Change issues such as sustainable agriculture, renewable energy, gender, water and sanitation as well as environmental impact assessment and energy audit with the objective of addressing vulnerability, impacts, adaptation and sustainable development.
Care Kenya	CARE International in Kenya has been operational in Kenya since 1968. It currently carries out major initiatives in Refugee and Emergency Operations Water and Sanitation and in HIV/AIDS. CIK also carries out significant initiatives in Civil Society Organisational Strengthening, Environmental services and Livelihoods. Its priority regions are Nyanza Province (with a sub-office in Kisumu), Kibera in Nairobi and North Eastern Province (with sub-offices in Garissa, Dadaab, Elwak and Marsabit).
Pan African Climate Justice Alliance (PACJA),	Kenya is currently host to the secretariat office of PACJA which is a coalition of African civil societies working on climate change and sustainable development. The alliance was formed in August 2008 after a series of workshops held around the continent. The alliance undertakes activities that, primarily, seek to advocate, lobby and create awareness on the urgent need to integrate climate change into laws, policies and practices in broader sustainable development.
The Forest Action Network (FAN)	FAN is implementing two projects: one to enhance the capacity of journalists to understand climate change and another one to enhance the climate change adaptive capacity of communities.

Name of the CSOs	Climate change activities
Nature Kenya	Nature Kenya is the Birdlife partner in Kenya and is involved in biodiversity conservation. The aim of Nature Kenya is to promote the study and conservation of the natural environment, in Eastern Africa.
Transparency International	Transparency International Kenya is a not-for-profit organization founded in 1999 with the aim of promoting a transparent and corruption-free Kenya through engagement in good governance and social justice initiatives. TI-K is involved in climate governance.
Heinrich Böll Foundation	The Heinrich Böll Foundation's Regional Office for East Africa and the Horn of Africa is based in Nairobi, Kenya, since 2001. Our focal areas of work are gender equity, ecology and sustainable development, and the promotion of peace and dialogue.
Kenya Youth Network for Rio+20 and Beyond.	The Kenya Youth Network for Rio+20 and Beyond is a coalition of youth organizations in the country bound by the Nairobi Declaration and working to enhance good governance, innovations, advocacy and public education towards achieving Green Economy; pathway to sustainable development. It was formed after the Organisation of African Youth in partnership with Youth Alive! Kenya and Peace Child International convened the Kenya Youth Strategy Meeting for Rio+20 in October 2011. The Network aims to advocate, mobilize and provide young people with a platform to actively participate in the preparatory process for Rio+20. It also seeks to advocate for long term national transitional plan towards a green economy in Kenya.
Coastal Oceans Research and Development in the Indian Ocean (CORDIO)	CORDIO programme was started in 1999 as a programmatic response to the impacts of global warming on coral reefs over the years. It has since then improved knowledge and management of coral reefs in the East Africa and other regions. It works in the areas of long term monitoring and research to improve environmental and resource management. The objectives of CORDIO are to sustain research on coastal and ocean ecosystems function, goods and services; to strengthen social and economic assessment and research for integrated coastal management processes; to improve the livelihoods and well-being of coastal populations; to improve policies and the use of scientific and technical information in local to national and regional policy; to foster networking and integration of science, management and policy; and finally, to build necessary capacity to meet these objectives.
East African Wild Life Society (EAWLS)	EAWLS is a conservation organisation involved in policy advocacy and promotion of conservation of biodiversity and natural resources in the Eastern Africa region. EAWLS and

Name of the CSOs	Climate change activities
	Fauna and Flora International (FFI) are implementing a project on the sustainable management and conservation of marine and coastal resources at the Kenya Coast. Some of the activities related to climate change implemented include: Conservation and management of critical coastal and marine ecosystems – Coast Conservation Areas (CCAs), Research to avail information for management of coastal and marine resources – Vulnerability assessments on the impacts of climate on coastal ecosystems within EA and socio-economic and biodiversity assessment, Building local communities capacity through Beach Management Unit (BMU) trainings, Advocacy Identification and support to sustainable marine livelihood options- Ecotourism, offshore fishery, etc. Education and awareness
The World Wide Fund for Nature East and Southern Africa Regional Programme Office – WWF ESARPO.	WWF has been mainstreaming climate change in its conservation work, It has been doing mitigation and adaptation, albeit inadvertently all along. All the activities they undertake such as rehabilitation, protection, sustainable management, energy projects all contribute to addressing climate change issues even though these are not the stated objectives of such undertakings in many cases.
African Conservation Centre (ACC)	ACC is a conservation organisation involved in biodiversity conservation, climate change and land use. They are currently involved in research on the impact of land fragmentation and climate change on the peoples and biodiversity of the Kenya-Tanzania borderlands.
PELUM	PELUM-Kenya is a membership network and part of the bigger PELUM-Association which covers Eastern, Central and South Africa in 10 countries. The membership currently in Kenya is 38 member organizations. PELUM-Kenya is active in promoting ecological land use and management and this makes climate change a key issue to all the activities of the network members and target beneficiaries; the small scale farmers.
TIST	TIST is a global NGO called International Small Group Tree Planting Programme in Mt. Kenya region
Centre for Science and Technology Innovations (CSTI)	The Centre for Science and Technology innovation (CSTI) is a UNESCO associated centre based at the Kenya National Academy of Sciences (KNAS) established in 1998 aimed at improving life through science, technology and innovation. It focuses on vulnerability and adaptation assessments

Name of the CSOs	Climate change activities
	especially in the health sector
African Wildlife Foundation	The African Wildlife Foundation (AWF) is an international conservation organization headquartered in Kenya, working on landscape-scale Conservation issues across Africa. AWF has a three part climate change programme – monitoring, mitigation and adaptation, and is working closely with partners on a series of pilot response projects. AWF relies on secondary climate change modelling data for its vulnerability assessments and keeps a practical focus on identification, prioritization and field testing of adaptation responses.
Institute of Environment and Water Management (IEW)	IEW is strengthening institutional capacity for integration of Gender and social issues in climate change in Kenya. IEW is also involved in climate change activities in capacity development, outreach and technology transfer.
Kenya Forest Working Group (KFWG)	KFWG is a network of individuals, institutions and organizations (government and non-government, local, national and international) concerned with forests conservation in Kenya. Its mission is to promote sustainable forest management in Kenya through research, advocacy, networking and partnerships development for improved livelihoods for all Kenyans.
Kenya Wildlife Conservation Forum (KWCF)	KWCF is a young forum recently created to facilitate dialogue among stakeholders on wildlife management issues dealing with economic incentives; compensation for livestock, crop and human losses; land-use and land-use planning; how people living in wildlife zones want critical issues addressed; and wildlife versus other biodiversity.
Kijabe Environment Volunteers (KENVO)	KENVO is a youth volunteer Community Based Organisation involved in forest conservation activities in the Aberdares forests.
Birdlife International	Birdlife International is an organisation working with partners to promote conservation of bird habitats and ecosystems
Wetland International (WI)	WI is a conservation organisation working in over 100 countries including Kenya through partnerships to promote water resources

Name of the CSOs	Climate change activities
CORDAID	CORDAID - The Catholic Organisation for Relief and Development Aid is a Dutch development agency operating worldwide to fight poverty and exclusion in fragile states and areas of conflict and extreme inequality.
Kenya Alliance of Residents Association (KARA)	The Kenya Alliance of Residents Association (KARA) sensitises neighbourhoods' leaders associations countrywide.
Indigenous Information Network (IIN)	The Indigenous Information Network (IIN) raises awareness on Climate Change and its impact on livelihoods of indigenous peoples and communities at local, national and international levels.
African Centre for Technology Studies (ACTS)	The African Centre for Technology Studies (ACTS) is a regional policy and capacity building organization in the areas of biodiversity and environmental governance; energy and water security; agriculture and food security etc.
International Commission of Jurists (ICJ)-Kenya	ICK-Kenya advances the legal protection and enforcement of human rights, respect for the rule of law and entrenching democracy within the East Africa region, continentally as well as globally.
Institute of Law Enforcement and Governance (ILEG)	ILEG is a non-profit organisation involved in environmental and social justice, land, natural resources, climate change science and technology
Green Belt Movement (GBM)	The vision of GBM is to raise the percentage of forest cover in Kenya to a minimum 10%. GBM is one of the few organizations which has the capacity to mobilise large sections of communities in tree planting.
Beach Management Units (BMUs)	Beach Management Units (BMUs) are legal bodies mandated under the Fisheries Act to undertake fisheries management in partnership with the Government and other stakeholders.
Community Forest Associations (CFAs)	CFAs are community associations registered under the Society's act for purposes of engaging with the Kenya Forest Service in forestry activities under a signed management agreement.
Resource Conflict Institute (RECONCILE)	RECONCILE is a regional policy research and advocacy NGO registered in Kenya and implementing programmes in Kenya, Uganda and Tanzania.

Appendix 2: List of People Consulted

1. Julius Muchemi – ERMIS Africa
2. David Kuria - KENVO
3. Elius Kimaru – WWF ESARPO
4. Kiunga Kareko - WWF ESARPO
5. Fredrick Njau - HBF
6. Njoroge Maina – Care Kenya
7. Bowa Bowe – Care Kenya
8. Annabell Waititu - AEW
9. Oliver Nasirwa – Wetland International
10. Rudolf Makhanu – KFWG
11. Dishon Murage – EAWLS
12. Cecilia Mueni - KCCWG