Assessing Climate Change Vulnerability in East Africa

A case study on the use of CARE's Climate Change Vulnerability and Capacity Assessment (CVCA) Methodology within the Global Water Initiative[1] East Africa Program[2]

1. Introduction

This case study analyses the results, lessons learned and recommendations emerging from the application of the Climate Vulnerability and Capacity Assessment (CVCA) methodology. The assessment was carried out within CARE's framework for Community-based Adaptation (CBA) in the context of the Global Water Initiative (GWI) in East Africa, funded by the Howard G. Buffett Foundation.This program is being implemented in four countries in the East Africa Region (Ethiopia, Kenya, Uganda and Tanzania) by a partnership that includes CARE, Action Against Hunger, Catholic Relief Services (CRS), International Union for the Conservation of Nature (IUCN) and Oxfam America. The following sections present an overview of the programme, the areas of intervention by country, the results of the analysis itself, and lastly, the main lessons learned and recommendations that arose from the application of the different tools contained in the CVCA Handbook in the four countries.

The CVCA methodology is a tool developed by CARE to delineate the socio-economic aspects of vulnerability to climate change, particularly those factors that make women and other marginalized groups especially vulnerable. The results of the analysis provide a solid foundation for identifying practical strategies to enable community-based adaptation to climate change.

The CVCA process was rolled out in target communities in Tanzania, Ethiopia, Kenya and Uganda in 2009-2010 through training sessions on the process. Based on information developed through these CVCA activities, existing program activities will be modified with consideration to climate change.

2. GWI – East Africa overview

Climate change poses the single greatest threat in history to the objectives of development professionals in ending poverty and promoting social justice. Rising temperatures, increasingly erratic rainfall and more extreme weather events all have significant consequences for the protection of livelihoods, particularly within the world's most vulnerable populations.

The Global Water Initiative

A Partnership Funded by the Howard G. Buffett Foundation

Of particular concern are the anticipated impacts from climate change on the hydrologic cycle and the subsequent impacts to water availability at the local level. Community livelihoods depend heavily on the ability to obtain regular, sufficient, safe sources of water for personal health, livestock husbandry and successful crop production.

Development projects aimed at the improvement of water resource management and/or water and sanitation services must therefore consider their actions in the face of climate change, to ensure project activities do not aggravate future availability or access to water resources as climate shifts on a local, regional and national level.

The Global Water Initiative East Africa was established in 2006 in an effort to ensure that vulnerable populations world-wide have reliable access to clean water in such a way that their dignity, rights, culture and natural environment are not negatively impacted. The program focuses on the reduction of vulnerability to water-related shocks within the East Africa region as well as the improvement of livelihoods, health and overall welfare through Integrated Water Resource Management. The GWI's Strategic Objective 3 is of particular relevance for the climate change context, as the focus is to ensure that vulnerable rural communities will have increased resilience to water-related shocks. This resilience will arise from an approach that involves both local community action and policy-level changes.

In order to adapt program activities to climate change the objective was to first identify those most vulnerable to the impacts of climate change within a community or project area, based on which revised project activities would be developed to assist in reducing these vulnerabilities. This case study details some activities that have been modified in the face of a changing climate as well as lessons learned from the analysis of community vulnerability to climate change.

3. Areas of operation and projects in the East Africa Region

The East Africa Region is defined as primarily arid and semi-arid lands. Current observations of climate change impacts from 1900 to 2005 in East Africa demonstrate increasing temperatures. In general, rainfall patterns vary significantly both spatially and temporally across the region. While there are currently no records of significant past trends in rainfall for the region, it has been generally observed that during the last 30 years, the frequency, intensity and severity of droughts have increased. For example, the frequency has increased from seven years to five years to almost every other year (especially in the 1990s and 2000s).

Concerning future climatic projections, indications point to mean temperatures increasing even further. In addition, it is *likely* that the region will have an overall increase in average annual rainfall. However, the southern part of East Africa (from the Equator) is expected to experience *reduced* rainfall, while the northern part is expected to receive *increased* rainfall (which is likely to fall intensely and over short periods). It should be noted that there are uncertainties in climate projections for East Africa's rainfall, since the seasonal weather in the region is highly influenced by the El Niño Southern Oscillation (ENSO) phenomenon. Therefore it is likely that high inter-annual variability will continue to be observed in the region.

Men bring in water to sell in the Ting'wangi village in Western Kenya.

Overview of past and future trends in temperature and rainfall in East Africa

Temperature			Rainfall	
Country	**Past trends**	**Future trends**	**Past trends**	**Future trends**
Ethiopa	• From 1960-2006, Ethiopia was generally characterised by increasing temperatures as much as 1.3°C between 1960 and 2006.	• It is anticipated that temperatures will continue to increase by between 1.1 to 3.1°C by 2060.	• From 1960-2006, no statistically significant trend in mean rainfall was observed in any season. • In Central Ethiopia, increasing temperatures have been observed by communities in recent years.	• Currently, there is no indication of rainfall predictions for Ethiopia for the future due to lack of trends on past rainfall and data gaps. • However, if the region's climate predictions apply, then some parts of the country will experience increased episodes of intense rainfall. • In addition, rainfall seasons are increasingly unpredictable and some episodes of intense rainfall and flooding have been observed. Future climate projections for central Ethiopia have not been assessed currently.
Kenya	• At the national level, between 1960 and 2003, mean annual temperatures have increased in Kenya by 1.0 degrees centigrade per decade. • Daily temperature observations show significantly increasing trends in the frequency of hot days and a much larger increase in the frequency of hot nights. • Between 1960 and 2003, the average number of hot days has increased by 57, and the average number of hot nights has increased by 113. • The average number of cold days has decreased by 16, and the number of cold nights has decreased by 42 over the same duration.	• Future temperature projections indicate that the mean annual temperature may increase by 1.0 to 2.8 degrees centigrade by 2060. • The frequency of cold days and nights will continue to decrease.	• In terms of rainfall, there are no statistically significant trends observed. • It has been observed that the proportion of rainfall occurring in heavy events has increased since 1960 (though this is not statistically significant).	• Mean rainfall is projected to increase by up to 48% by the 2090s, and within this, the proportion of rainfall that falls within heavy events is projected to increase by 13% over the same duration.

Overview of past and future trends in temperature and rainfall in East Africa

	Temperature		Rainfall	
Country	**Past trends**	**Future trends**	**Past trends**	**Future trends**
Tanzania	• No data available.	• Mean daily temperatures are predicted to increase 3-5°C throughout the country and mean annual temperatures will rise by 2-4°C. • Within the Pangani River Basin, the predicted 1.8-3.6°C increase in temperature will result in 6-9% reductions in annual flow of the Pangani River.	• No data available.	• Areas with bimodal rainfall are expected to see an increase in rainfall of 5-45% and areas with unimodal rainfall will see a decrease of 5-15%.
Uganda	• Since 1960, mean annual temperature has increased by 1.3°C, with an associated increase in the frequency of hot days. • Additionally, the frequency of cold days has decreased and the frequency of cold nights has decreased even more dramatically.	• Projections for the country indicate further increases in the number of hot days and nights, and continued decreases in the number of cold days and nights.	• Trends across Uganda show a decrease in annual rainfall of about 3.4mm per month (3.5% per decade). • Extreme rainfall events are not showing significant shifts in frequency or intensity, with rainfall events varying by region and season.	• Precipitation projections are consistent and show an increase in annual rainfall, particularly in the short-rain season (Oct-Dec), with an increasing proportion of rain falling during heavy rainfall events.

Areas of operation in Ethiopia

In **Ethiopia**, the GWI's area of operation include two different areas, the Rift Valley and Borana. These regions were traditionally characterized by pastoralist reliance on an extensive resource management system involving herd mobility as a key coping mechanism for changing resource availability. More recently, these populations have shifted to a less mobile lifestyle resulting in marginalization through increasing food insecurity, poverty and conflict.

The Meki area of the Rift Valley is in a semi-arid area inhabited by poor and vulnerable communities under stress. Populations of this region are wholly dependent on agriculture for their livelihood and are, in turn, dependent on rainfall and access to water resources. Additionally, land degradation through deforestation and overgrazing is greatly impacting the livelihoods of these communities.

The Borana zone represents a high priority location for assistance because of its aridity, the existence of pastoral communities under threat, the low socio-economic status of its populations and its increasing vulnerability to water-related shocks. The Oromia Regional Government identified the water shortage in the region as one of the most limiting constraints, due to the importance of water for crop production and livestock maintenance. As a result, the water scarcity challenges the development and quality of livelihoods of the people in the areas. The region's line offices at *woreda* (district) level therefore promote and encourage other development partners to focus on water-based development interventions in these locations.

Salo Boru, a grade 4 student, age 18, stands in front of an established rooftop rainwater harvesting system at the Cherituruta Primary School. The Global Water Initiative has improved Salo's and her class-mates' hygiene and sanitation, and also saved students from having to fetch water every day for the feeding program at the school.

Areas of operation in Kenya

In **Kenya**, the geographical area of operation is the Northern Tana River Catchment (including Garissa District and Tana River District), which is classified as Arid and Semi-Arid Lands (ASAL), where insufficient, erratic and poorly distributed rainfall results in chronic water shortages and food insecurity.

The area receives an annual rainfall averaging 300 mm, and is prone to prolonged drought, which results in the drying up of seasonal water sources. A significant drought occurs once every three to four years while a major drought can be expected approximately every seven years. The pastoral communities in the area are most affected by chronic water shortages, which cause them to migrate regularly in search of pasture and water. Consequently, women, young boys and girls are usually forced to walk for an average of seven km daily to obtain water for domestic uses.

Overall, the existing water sources are prone to contamination from human waste as the majority of the households have no latrines, as well as animal wastes, particularly at earth dams. Lack of access to safe drinking water is considered a major cause of child mortality in pastoral areas of Garissa. Diarrheal diseases reported in the district average 76 cases per 1000 people and can reach over 20 percent prevalence among children under five. High diarrhea rates are mainly attributable to lack of access to safe drinking water and poor hygiene practices.

This borehole in Goriale Location was built by the Government but fell into disuse in the early 2000s. CARE approved the repair of the borehole and it now supplies 1,440 households with clean water for their family and animals. Due to the severity of the drought, however, the surrounding desert area is littered with the carcasses of many animals.

Areas of operation in Tanzania

In **Tanzania**, the area of operation, the Pangani River Basin (PRB), represents a high priority location for assistance because of its aridity, socio-economic status and increasing vulnerability to water related shocks.

Expected outcomes of shifting weather patterns associated with climate change (see table) include deforestation, flooding, crop destruction and increased disease transmission.

The overall institutional organization for the river basin is provided for under the Tanzanian National Water Policy, whereby water resource management is regulated by the Pangani Basin Water Office and water resource development facilitated through the local government administration.

The populations residing within the arid and semi-arid zones of the PRB are more vulnerable than those in the other zones; as a consequence their present capacity to adapt to and reduce the impact of water shocks is limited. The level of provision of basic water and sanitation facilities is below 50 percent, and schools are particularly under -served. Because water supplies are located far from users a particular burden falls upon women and children, having a profound impact on the universal access to primary education, health, gender equity and the empowerment of women.

Environmental degradation has also had negative effects within these arid areas. It is unfortunately the case that much of the basin outside of urban areas has very limited basic services. As a consequence there is an elevated occurrence of water-related disease and a poor knowledge of hygiene behaviors in these arid zones.

Areas of operation in Uganda

In Uganda, the Lango sub-region where GWI operates represents a high priority location for assistance because of its semi-aridity, socio-economic status, increasing vulnerability to water-related shocks and returning population that was previously displaced by conflict. The overall institutional organization for Ugandan water resources is provided for under the Uganda National Water Policy, whereby water resource management is regulated by the Directorate of Water Development and water resource development is facilitated through the District Water Office at the local government level.

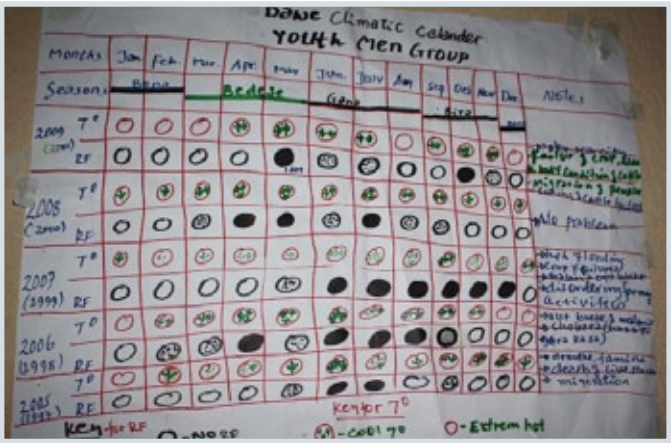
The lack of sufficient access to clean and safe drinking water places a heavy burden on women and children who bear the primary responsibility for collecting water in the majority of households in the sub-region. The most prevalent diseases afflicting the population have direct links to poor water supply and environmental sanitation. For example, the recurrent outbreaks of water-borne diseases (cholera, hepatitis E, dysentery) in the sub-region are a result of unsafe drinking water and poor hygiene and sanitation practices. In most of the return areas, sanitation facilities have all virtually collapsed over the period of displacement, resulting in nearly zero percent sanitation coverage.

The Kahokya wetland in Uganda is a sole source of water for more than 2,000 households in Katwe sub-county. The wetland is experiencing severe degradation that threatens its existence. The disappearance of the wetland will definitely have significant consequences on livelihood of inhabitants of entire sub-county.

4. Methodology followed to apply CARE's Climate Vulnerability and Capacity Assessment (CVCA)

CVCA methodology provides a framework for analyzing both vulnerability and capacity to adapt to climate change at the community level. At the same time, local and national policies and institutions play a critical role in shaping people's capacity to adapt to climate change. Thus, the CVCA process focuses on the community level, but incorporates analyses of issues at regional and national levels in an effort to foster an enabling environment for community-based adaptation.

Recognizing that local actors must drive their own future, the CVCA prioritizes local knowledge on climate risks and adaptation strategies in the data gathering and analysis process. Yet, it also stresses the need to combine local knowledge with scientific data to better enhance people's understanding about climate risks and adaptation strategies. The general vulnerability analysis process is as follows:



A young men's group in Ethiopia develops a rainfall calendar.

Step 1: Identification of sites to be assessed

Step 2: Training on use of adaptation tools and analysis for field personnel

Step 3: Community consultations using specific analytical tools as elaborated in the CVCA Handbook.

- Rainfall calendar
- Livelihood context - Information on key resources to support livelihoods
- Climate context – climatic hazards, impacts, coping strategies, whether these are working, possible alternative strategies

Step 4: Data analysis using the *Community-based Risk Screening Tool for Adaptation and Livelihoods* (CRiSTAL) tool. While this case study only details application of the CVCA, the CRiSTAL tool was also applied in all sites.

- Enter information gathered from communities through the CVCA assessment into Excel sheets along with facilitated discussion
- Define proposed outcomes – or a series of adaptation activities which improve communities' adaptive capacity to dealing with climate change impacts

Step 5: Prioritise adaptation activities (i.e. cattle troughs, early warning systems, etc.)

– Feedback meeting with stakeholders (i.e. communities, district, Basin staff) to prioritise adaptation activities

Step 6: Budgeting process

– Put together budget estimates for prioritised adaptation activities

Step 7: Implement and monitor adaptation activities

Step 8: Communicate results and process with decision-makers at different levels

Please note that this case study details the process on carrying out steps 1-3. This process was initially rolled out in Tanzania in March 2009 and was followed up with trainings and workshops in all focal areas of GWI – East Africa. After each assessment, a summary report was completed, documenting the findings as well as insights on the process as a whole. This document is a synopsis of those reports.

5. Analysis of vulnerability to climate change in the project areas using CVCA tools[3]

Interestingly, the vulnerability analyses carried out in the communities within all the East African GWI sites resulted in many common findings:

Community perceptions about changes in climate

Perceptions of climate change gathered from the communities in Ethiopia clarified that the short rainy season known as *Afarassa* is usually between March and May, and the long rainy season, known as *Gana,* is from July to the end of August. *Birra* is from September to November and *Bona* (dry season) is from December to February. In Dawe, it was observed that the temperature had been high in 2009 and there had been little rainfall. On the other hand, 2008 had had high rainfall and good crop production. The temperature was high with little rainfall also in 2006. Similar observations were made for Darara Delecha.

Among the communities in the Kenya site there were slight variations in rainfall observations for 2009. All groups indicated that it rained in May but some said that it rained in January as well. Generally, high temperatures were observed from January to March 2009, however, they were cooler compared to 2008. Nights are likely to get much warmer in the future. Wetter conditions are expected but rainfall may be unpredictable in the short term. This might result in flooding.

There will be positive but also negative impacts related to these conditions. Pocket areas may receive more rainfall, but other may have less. Rainfall changes have led to livestock diseases such as Rift Valley Fever, and with increased rainfall these conditions are likely to continue. This type of information can help improve livelihoods of community members.

As an example, it could help identify and scale up relevant interventions such as capacity building on livestock health, construction and installation of water harvesting infrastructure, and promotion of rainwater harvesting.

For the communities of Odike and Obanga in Uganda, consensus among the working groups showed decreasing rainfalls over the last three years and a greater number of very hot days. For 2009, it was noted that crops had been lost and there had been less rainfall than usual. It should be noted due to conflict in the areas, community members did not return to Obanga Ngeo and Odike Alimok until 2006 and 2007 so information was only available from these years.

Saro Konsole, 42, and her son in front of their latrine and shower that she built in Ethiopia. She learned about proper health and sanitation practices from Global Water Initiative training.

Relation with scientific information

A frequent barrier to accurate climate predictions on a local and even regional scale is the lack of reliable information about climate history, particularly for the underdeveloped and rural areas of the world. This is coupled with inadequate information about climate impacts at these levels. It is therefore important when conducting climate vulnerability assessments to also examine and document the perceptions of community members to inform the design of adaptation response activities. The process of gathering and analyzing information with communities serves to build local knowledge on climate issues and appropriate strategies to adapt. The participatory exercises and associated discussions provide opportunities to link community knowledge to available scientific information on climate change. This will help local stakeholders to understand the implications of climate change for their livelihoods, so that they are better able to analyze risks and plan for adaptation.[4]

Climate perceptions as captured in the previous section can be compared to the nationally available information for each country. In the case of Ethiopia, the communities detailed a general increase in temperature, which coincides with the expected rise in temperatures throughout Ethiopia over the next few years. Further, the erratic rainfall pattern observed by community members falls in line with the increasingly unpredictable rainfall patterns expected for the country. Within Kenya, there was general consensus that the rainfall patterns were unpredictable but seemed to be coming in less frequent, more intense episodes. These observations about the past align well with predictions for the region. Alternately, community observations indicate fluctuating temperatures in place of the general increases predicted for the country.

This highlights the importance of not placing too much emphasis on the year-to-year changes as these may differ from the longer-term patterns for the region or community. Finally in Uganda, community perceptions highlighted an increase in the number of hot days and a general decrease in rainfall. These observations are well supported by the climate predictions made for the country.

Impact on livelihoods

Climatic changes can have a cascading effect on the livelihoods of communities reliant on natural resources for subsistence. As global and regional climate patterns shift, so do local weather patterns which can then alter the availability of resource such as forest products or water. Within the East Africa Region this cascade effect can be characterized as follows:

- Less frequent and more intense rainfall impacts a community's livelihood by limiting the ability to properly plan for crop production as well as by causing damage to crops and homes alike through flooding.
- An increasing number of hot days and nights results in increased evapotranspiration, which more rapidly reduces the quantity of surface water sources. In some instances, such as Kenya, this is causing more frequent migration

and an increased amount of time spent collecting water. In Ethiopia, the decrease in surface water sources has resulted in a decrease in pastoralism, because they can no longer sustain their livestock.

- More frequent and intense drought periods are causing an increase in desertification and land degredation, reducing the amount of viable land for crop production.

- Increases in infectious diseases to both humans and livestock have been noted in some communities as well as decreases in both the number of working days (due to human illness) and the number of livestock individuals and families are able to maintain.

- Decreases in both surface water availability and springs result in conflicts over access for both human and livestock consumption.

Most vulnerable groups

Vulnerability is not a static phenomenon. Some community members may be more vulnerable than others, despite the entire community being vulnerable. One focus of the CVCA is, therefore, to capture those groups that are most vulnerable to the anticipated impacts from climate change. Of particular note in all the project sites in the East Africa Region, women, girls and young boys are traditionally responsible for the collection of water for the family. As water resources become scarcer, the distance these groups must walk to retrieve water increases, resulting in greater vulnerability to personal safety issues and diminished ability to attend school or perform other money-making activities.

In Kenya, gender dimensions of vulnerability were highlighted: the strong cultural, religious, and traditional beliefs and practices of the community in Garissa have generally marginalized women.[5]

The analysis captured how women tend to have lower levels of education compared to men. In addition, they don't own cattle and other critical livelihood assets, and have no say in decision-making on the acquisition and disposal of assets at household level.

Also, women do not yet have a strong voice at community level meetings and cannot articulate important issues affecting them in front of men. As a result, their potential in development remains untapped. Due to reduced mobility, women and children also tend to suffer more when droughts occur. This is because men often migrate to other areas in search of water and pasture or to nearby towns to seek employment.

In Ethiopia[6], it was found that water and sanitation improvements were key factors in the empowerment of women. Through activities such as reducing the amount of time spent collecting water and increasing the amount of time for socializing or income generating activities, a greater sense of equality in the home was felt by many women. Additionally, improving control over household resources, such as hand washing stations, allowed for an increased sense of empowerment.

Cultural traditions of communities in Uganda[8] highlight the role of women as indebted to their husbands due to the bride price paid for the woman upon marriage. A belief among the men is that a woman should work accordingly to how much was paid for her hand in marriage. Historically, this has created domestic violence as more time was spent collecting water than was thought to be necessary by husbands. Increasing access to water points resulted in a reduction of this domestic violence as women were able to focus more time on other activities within the home.

Children and women gather at the only water collection point in Kahokya Village, Uganda.

Such anecdotes as described here indicate the importance of considering more vulnerable groups within the communities of interest when examining vulnerability as a whole to climatic impacts. If reductions in access to water, diminished control over household resources or increased need for mobility arise from the impacts of climatic variation, supplemental measures to encourage women's empowerment should be included in broader adaptation measures to prevent an increase in domestic violence within the female populations of target communities.

Institutional context related to climate change

Institutional involvement in the management of impacts from climate change varied slightly across the four target countries of the GWI Program in East Africa. Involvement ranged from low to moderate from the local and national levels, with a focus on improving access to water resources.

Lack of harmonization between management approaches of traditional clan-based systems and modern committee-based approaches creates conflicting directives and impedes the process of development in the water sector. Where institutional involvement is high and well defined such as in Kenya, incorporating climate change can still be difficult due to resistance to change within the institutional construct.

On-the-ground operations can be further complicated by incomplete work or local actors that do not adhere to the national recommendations.

Finally, inclusion of the private sector is limited in management practices and there remains a significant gap between local, community-level entities and national level-policy. Regionally based institutional involvement is almost non-existent in most instances.

6. Lessons learned and recommendations for how to improve the CVCA process[7]

Based on the experiences of field personnel in the implementation of the CVCA, some recommendations on the utility of the CVCA Handbook and its suggested tools, as well as on the process as a whole, have been summarized here for future personnel to consider.

Recommendations for improving the CVCA process

Recommendation No. 1: Application of the tools should be done in a context-specific manner. Essentially, local examples and scenarios capturing culturally relevant concepts should be incorporated into the general framework of the process in order to bring the information home and present it in a manner that will grab the participants' attention and hold it for the duration of the process. Demonstrating how the framework applies to a particular community, group of individuals or identified issue allows for the participants to be engaged in addressing a situation in which they may have a particular interest.

Recommendation No. 2: The importance of local knowledge from both the community members and local governing officials in the development of coping strategies and alternative coping strategies cannot be stressed enough for success in vulnerability analyses. The availability of country-level information concerning the anticipated climatic change for an area does not accurately capture the experience that may be felt by a particular community. This is particularly true in the large (area-wise) countries of the East Africa region, where variability in altitude, latitude and ecological zone may significantly impact the weather patterns of each community. Additionally, issues such as the use of an annual calendar in Ethiopia that differs from the more commonly used Gregorian calendar must be considered in order to interpret what impacts may be felt during which part of the year.

Recommendation No. 3: The adaptability of the tools makes them useful in a multitude of scenarios and facilitators should take full advantage of this adaptability. Not all portions of the tools may be necessary or relevant for every scenario and the process should be customized to highlight the desires of the community involved as well as the skills of the facilitation group.

Recommendation No. 4: Local involvement from both community members and local/regional institutions is essential. In order to properly incorporate recommendations 1 and 2, local knowledge is necessary. Key local partners and involved community members should be sought out during the planning process portion of the tools. Efforts should be made to ensure that representatives from the different sub-groups of a given community (men, women, youth, the elders, etc.) can actively participate and contribute to the process.

Recommendation No. 5: Including time for reflection on the process (after the process has been completed) allows for further development of lessons learned and can result in development of more inclusive recommendations for a particular region or for the process as a whole. These reflections should be documented in a structured manner and included as both a way forward for the community of interest and a recommendations/challenges section of any report generated for that project.

Recommendations for improving the CVCA process

Recommendation No. 6: Given GWI's emphasis on water, local, regional or national experts on water resources are crucial. Local data on weather patterns, climate shifts and water cycle alterations are typically not available and must be provided from local counterparts (i.e. water resource manager or watershed hydrologist or other science-based expert) and should be sector-specific.

Recommendation No. 7: Some clarification on the difference between longer-term climate related changes in weather versus normal weather variability must be included at the opening of a training or vulnerability assessment. This will focus the discussion on those topics that are most relevant within a climate change context and will avoid prolonged discussion of the impact from normal weather patterns. Yet, it should still be stressed that it does not take extreme climate changes and climate-related disasters to create serious stresses on a community. Often slow-onset climate variability will result in more vulnerability in poor communities that climate shocks will.

Recommendation No. 8: Non-climatic impacts on livelihood resources, such as conflicts, government policies and the economic climate, should be included in the vulnerability analysis as a means to identify those resources most important to the community at different points in time. While planned project interventions may not be able to address all these other impacts, it is important to understand that poverty and vulnerability is not only caused by climate change in isolation. Consequently, adaptation measures must take these factors into account.

Recommendation No. 9: One key component of the process that is not well captured in the current program framework deals with access of the target communities to the livelihood resources that are being recorded. For instance, expanding tree planting may not be possible due to land ownership issues. Similarly a concerted effort to expand rain catchment in an area may negatively impact the downstream flows of a watershed, which may thereby impact downstream municipalities. These issues of access are best addressed in the presence of regional and potentially national representatives to ensure proper guidance is given in development of alternative coping strategies.

Challenges encountered

With the development of new approaches and processes previously described above, reflection on their strengths, as well as on the challenges encountered is important for further modifications to be made. A brief review of some of the challenges experienced by the GWI field personnel is presented here:

- The process as a whole is quite time-consuming, requiring a minimum of three, but preferably five days to inform the community, perform the workshops, collate the data and disseminate findings to the community.
- There is some confusion and potential redundancy in the process with regard to non-climatic impacts that the community may feel are associated with climate change or may be impacted by climate change, i.e. land use change.
- While alternative coping strategies were developed, a disconnect was created, as the old barriers and synergies related to the initial coping strategies were not updated as well.

Young men help with piping as part of the GWI project in Nanighi community in North Eastern Kenya.

7. Conclusions and next steps in the GWI areas of operation

The vulnerability assessment process, as applied within the context of the GWI – East Africa focus, has been well received by the target communities. It has been an engaging, logical process that guided the participants through a thought process that allowed them to frame climate change in a context-specific manner. The framework that is developed through this process is inspiring and systematic, creating awareness on issues that otherwise may not be well articulated by community members with limited experience in these areas.

Moving forward with the goals of the GWI, CARE and other in-country counterparts have used the CVCA findings to apply the Community Risk Screening Tool – Adaptation & Livelihoods (CRiSTAL) tool to clarify where project activities may be modified to minimize future vulnerabilities as identified through the CVCA process.

As of March, 2010 the CVCA and CRiSTAL methodologies had been implemented in all four countries of the region and results are currently being utilized to clarify specific way forward documents for each country. The way forward will incorporate appropriate adaptation measures to ensure that the larger infrastructure and behavioral components of the GWI program as a whole do not neglect the impact climate change will have on those components.

For more information: www.globalwaterinitiative.com *and* www.careclimatechange.org.

References:

1 The Global Water Initiative (GWI) addresses the declining state of the world's fresh water supply and the lack of access to clean water services by the world's poorest people. GWI brings together a group of seven leading international organizations — Action Against Hunger-USA, CARE International, Catholic Relief Services (CRS), International Institute for Environment and Development (IIED), International Union for the Conservation of Nature (IUCN), Oxfam America and SOS Sahel - UK — to work out effective solutions. www.globalwaterinitiative.com

2 *Assessing Climate Change Vulnerability in East Africa: A case study on the use of CARE's Climate Change Vulnerability and Capacity Assessment (CVCA) Methodology within the Global Water Initiative East Africa Program* prepared by Shannon Oliver, CARE USA; Tine Rossing, CARE International; and Katharine Cross, International Union for Conservation of Nature (IUCN) with inputs from Tamara Plush, CARE International.

3 Section primarily based on country-specific reports detailing GWI activities in the East Africa region. http://water.care2share.wikispaces.net/Climate+Change

4 *Climate Vulnerability and Capacity Analysis Handbook (May 2009)*, CARE International, pg. 2.

5 *CARE Case Study on Integrating Adaptation into Projects, Kenya, East Africa: The Global Water Initiative: Sustaining School Children's Access to Safe Water (SaWa) in Garissa District, Kenya.* CARE International.

6 *How water, sanitation and hygiene interventions empower women – A study from Ethiopia.* CARE Ethiopia Millennium Water Program brief.

7 *Water can bring love but not understanding.* Malaika Wright, Global Water Initiative in Uganda brief.

8 Recommendations compiled from interviews, notes and presentation materials. Katharine Cross, IUCN.

Community members in Ethiopia rehabilitate a traditional well in the Borana region. Through GWI, thousands of people have been given access to clean water sources. For example, in the Kebe subdistrict in Ethiopia alone, the program has provided access to clean water sources to 1,500 people.

Photographs (in order of appearance): ©CARE/Josh Estey; Allen Clinton; Lemessa Demie; Georgina Cranston; Malaika Wright; CARE Uganda; Cynthia Awuor; Malaika Wright; Georgina Cranston; Sintayehu Messele; CARE Uganda; CARE Kenya; Tamara Plush and Stuart Dunn.