COPING WITH DROUGHT AND CLIMATE CHANGE IN ETHIOPIA

March 2012

<table>
<thead>
<tr>
<th>Country</th>
<th>Ethiopia [<a href="http://www.adaptationlearning.net/country-profiles/et">http://www.adaptationlearning.net/country-profiles/et</a>]</th>
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<tbody>
<tr>
<td>Region</td>
<td>Eastern Africa</td>
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<td>Key Result Area</td>
<td>Agriculture/Food Security, Natural Resource Management, Water Resources, Disaster Risk Management</td>
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<td></td>
<td><em>Keywords: Farmers and pastoralists, Adaptive capacity, Drought, Sustainable development</em></td>
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<td>UNDP PIMS ID</td>
<td>3787</td>
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| Project Activity Dates | Start: March 2009  
|                     | End: December 2012                                               |
| Key Stakeholders | Rural community in KaluWoreda, the South Wollo Zone in the north eastern part of the country. |
**ABSTRACT**

Vulnerability analyses for Ethiopia suggest that environmental changes over the coming decades present a serious threat to economic and social sectors. Water is a specifically fragile resource with the frequency and intensity of drought projected to increase. Addressing long-term climate change is thus required to reduce the impacts on livelihoods and bolster major economic sectors such as agriculture, which is the mainstay of the country. In response, and as part of a set of three other Coping with Drought and Climate Change projects in Kenya, Mozambique and Zimbabwe, this project is working to improve the livelihood strategies and resilience of farmers. Through enhanced farming practices and improvement of community-based natural resource management, rural communities are adapting to water scarcity and drought. This project is also establishing the use of early warning systems to bolster resilience in the agricultural sector.

**BRIEF DESCRIPTION OF ISSUES**

*Background*

Kalu Woreda in the South Wollo region of Amhara National Regional State, North East of Addis Ababa by around 400 kms, is highly degraded, drought prone and chronically-food insecure, and is known as one of the safety net program woredas in the region. Projected increases in temperature and declines in rainfall will negatively affect agricultural production, deteriorate infrastructure and worsen the livelihoods of the rural poor, who are reliant on subsistence agriculture. Kombolicha is the capital of the Woreda and is situated at 376 km from Addis Ababa It has 34 local administrative kebeles, of these, 30 are rural and 4 are urban kebeles. The total number of households in the woreda is 39,187 (with an average of 5 people per household), where 20% are female-headed. The dominant crops grown in the district are sorghum, teff, vegetables, moung bean, haricot bean, chickpea, and maize during the wet and belg seasons. Cultivated land accounts for 31% of total land area, forests and bush land for 59% ad grazing around 1%. The altitude of the woreda ranges from 1400 to 1850 m above sea level.

**BRIEF DESCRIPTION OF PROJECT**

*Solution: Adaptation Approach, Components and Description*

The project objective is to develop and pilot a range of effective coping mechanisms for reducing the vulnerability of farmers, particularly women and children in KaluWoreda/District to current and future climate shocks. The project will benefit 41,421 people (in 6 Kebeles/villages) in the KaluWoreda (District), Amhara Regional State. Replication value is expected to improve the adaptive capacity of 186,000 people in the region, which comprises the population of the other 24 Kebeles in KuluWoreda plus five other Woredas in the Afar and Amhara regions. Regular interaction among the project teams in Ethiopia, Kenya, Mozambique and Zimbabwe is promoting peer-to-peer learning.
## Project Targets

<table>
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<th>RESULT</th>
<th>TARGET</th>
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<tbody>
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<td>Objective: To develop and pilot a range of effective coping mechanisms for reducing the vulnerability of farmers particularly women and children in KaluWoreda/district to drought</td>
<td>20% reduction in vulnerability to climate change of men, women and children living in pilot sites.</td>
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| Outcome 1: Livelihood strategies that enhance the resilience of vulnerable farmers to cope with drought and climate change adopted and sustained. | 25% of households (disaggregated by gender) adopt alternative livelihood strategies introduced by the project.  
25% of the target villages adopt sustainable land management practices introduced by the project. |
| Outcome 2: Enhanced use of early warning information in agricultural systems at the selected pilot sites | 90% of pilot sites (DAs/Kebele administration) disseminate weather/drought information.  
50% of households (disaggregated by gender) receive and use weather forecast information. |
| Outcome 3: Farmers/agro-pastoralists outside the pilot sites were exposed to successful approaches and practice of the pilot kebeles | 20% of farmers/agro pastoralists (disaggregated by gender) outside the target area that adopt/replicate best practices |

## Lessons Learned

### Results and Learning

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<th>BASELINE LEVEL (APRIL 2009)</th>
<th>IMPACT DUE TO PROJECT</th>
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| **86% of households vulnerable to climate change.** | A vulnerability perception survey will be conducted at Terminal Evaluation.  
3959 people (516 children, 1686 women, 1757 men) have access to safe water in 6 villages through the development of 6 water points. Water fetching time has been reduced by 5 times, freeing up women’s time to do other things. Disease occurrence has been reduced by 20%, improving children’s learning capacity. Animal health has improved leading to reduced veterinary costs  
**Target:** 20% reduction in vulnerability to climate change of men, women and children living in pilot sites. |
| **Zero households have adopted alternative livelihood strategies.** | 300 households benefited from installation and operation of 300 beehives and 130 bee colonies. Each farmer earned 4000 Birr per year from honey production  
**Target:** 25% of households (disaggregated by gender) adopted alternative livelihood strategies introduced by the project. |
Zero area of the target villages covered by dryland farming and sustainable land management practices

| Zero area of the target villages covered by dryland farming and sustainable land management practices | 1652 households have increased their family income using improved seeds and techniques. Productivity increases of 22% for sorghum to 100% for teff, with productivity increases for other crops in between. Rotational system practiced from first level beneficiaries to second level beneficiaries and so on.

Increase in river flow and reduction in floods, as well as increased crop productivity from re-vegetating watersheds with forage grasses, and from 205 meters river flood protection. 500 hectares of land are protected per year. This estimates 2,500,000 Birr protected per year

Production capacity of 4460 households has increased by 75%, which will increase household income by 75% because of irrigation and use of improved seeds. Gully crossing structures helped to irrigate 56 ha of land, benefitting 850 households. 150 water storage ponds and related pumps and water delivery hoses irrigate 400 m² each, helping 280 farmers to irrigate 23 ha of land.

Household food security has improved through vegetable growing and rice promotion. 264 farmers grow rice and have earned good incomes, 22-40Q/hectare. 2540 farmers produce vegetables which has improved food security.

268 farmers were given 570 sheep and 760 goats - rotational system practiced from first level beneficiaries to second level beneficiaries and so on. Farmers created assets without incurring costs.

Livestock productivity improved through forage production in farmer’s fields and 6 watersheds.

1000 ha croplands have been treated with bio-pest control methods and damage of crops has been reduced. It reduces production losses by, on average, 20%.

**Target**: 25% of area of the target villages covered by dryland farming and sustainable land management practices introduced by the project.

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Weather/drought info is not disseminated to households.

| Weather/drought info is not disseminated to households. | Rainfall and temperature data is collected from households and reported monthly to agriculture office, which, together with remote sensing data, develops the risk assessment, and then disseminates to the community. The project is working to make the messages reliable and simple to understand.

**Target met**: 90% of pilot sites (villages) disseminate weather/drought information.

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Zero households receive and use information on weather/drought situation from kebele administration.

| Zero households receive and use information on weather/drought situation from kebele administration. | Farmers started to plough, sow and harvest their lands based on the information that has got from the forecast and/or from raingauges/plastic and ordinary

**Target exceeded**: 90% of households (disaggregated by gender) receive and use weather forecast information.

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**Key lessons learned:**

**Outcome 1**

Under Outcome 1, farmers now have access to safe and dependable water as a result of the spring development. This activity benefits especially women by saving time to fetch water at least 40 mintos to one hour to their homes. Furthermore, women were forced to dig sand to get water in the Borkena River. Women were also gone to river to fetch water in the night starting from 3 am by struggling with Hayna’s. As a result of the spring development and the possibility of saving time, women can cook their family meal on time early in the morning and the husbands are able go to their farm activities on time. The health of the community members are also becomes improved.

The revolving fund system for livestock and seeds has proved beneficial in extending the project support to more households. Farmers were able to create assets without incurring costs. The CwDCC project has supported many farmers by supplying improved, early maturing and high yielding cereal seeds, procured from Sirinka Agricultural Research Center, and through training. Rice has also been considered as a good alternative for coping with drought and climate change. Farm-based approaches such as the System of Rice Intensification are reported as showing promising results in farmers’ fields. These approaches are ecology-friendly and also save large quantities of water if adapted at the river basin level. The NERICA variety has been found to be tolerant to water logging and it is early-maturing.

Farmers formed groups for integrated pest management (IPM) who are working on experimental IPM techniques, biological pest control liquids and selection of plants for bio-pest control, with support from Office of Agriculture and Kombolcha Pest Surveillance and Study Center. The project has assisted six IPM groups to get equipment, skills and knowledge. Farmers have been able to reduce expenses for purchase of artificial pest control chemicals. Organic farming is also compatible with bee keeping.
The project mobilised the community in six watersheds. Planning teams and soil and water conservation technicians were formed and trained on the preparation and implementation of watershed management activities. Different plants have been planted as soil conservation and forage plants. These plants have been placed over different physical soil and water conservation structures. In this manner about 3049 ha land has been covered by these physical and biological soil and water conservation methods, resulting in an increase in the discharge capacity of springs and rivers, the development of forage grasses from formerly degraded lands, the reduction in floods and more moisture availability in cultivable lands. With these advantages the farmers are enjoying an increase in the productivity of crops through the improvement of soil moisture conservation and reduced erosion. As well, livestock production in higher, and sales of livestock have increased, raising household incomes.

Jatropha plants are being used to slow down deforestation and to control erosion rates, which contribute to poor agricultural productivity. Jatropha is a bio-fuel plant, evergreen, resistant to drought, planted easily in degraded lands. Jatropha has reduced the amount of charcoal used by 50 percent. It has saved women’s and girl’s time in fetching fire wood. Oils can be extracted for cooking and lighting, saving money, and this also provides a means of generating income.

The forage and tree plants and gully rehabilitation by gabions and sacks on the selected watershed have good performance. Pigeon pea, Acacia Policanta, Jatrofa, Sasibania and lablab are found on the selected watershed on a good performance on hill side tracing and eyebrow basin.

**Outcome 2**

The CWDCC project is working to make the early warning system of the woreda a strong and successful structure. This is happening by developing strong partnership among the stakeholders especially among the Woreda Office of Agriculture (early warning section) and Kombolcha (the region’s capital) meteorology branch office, and building the capacity of the information communication system. At the kebele level, household rain gauges and thermometers have been installed. The early warning data is collected from Kebele, and reported monthly to the Agricultural Office, where the risk assessment is carried out. The Kombolcha meteorology office collects data from satellite sources, results which are also transferred to Agriculture Office. Messages for farmers are designed so that they are reliable, systematic and simple to understand by the farmers.
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GEF Grant: US$995,000
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Project Cost: US$2,861,667

UNDP-ALM Project Profile / Case Study
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GEF Database: http://gefonline.org/projectDetailsSQL.cfm?projID=3154
Adaptation Learning Mechanism: www.adaptationlearning.net
ALM Project Website: http://adaptationlearning.net/projects/ethiopia-coping-drought-and-climate-change
UNDP Project Website: http://www.undp-adaptation.org/portfolio/projectR.php?id=35