

Impacts/Results

Pilot projects are designed to test adaptation options on a small scale in order to strengthen the resilience of communities to climate change and increase their adaptive capacity. The projects are also meant to provide lessons learned from the field to develop practical approaches to community-based adaptation to climate change which can then be implemented on a larger scale. Lessons learned have also been incorporated in recommendations for federal policy on adaptation to climate change which is currently being developed.

As with any community-led intervention, it is recognized that community members must continue to solve their own issues related to environmental social and cultural change. The project partner, Greenwatch Initiative, provides facilitation, guidance, training and encouragement but change ultimately comes from the members of the community themselves, who are the ones to sustain the benefits from the project. Learning is partially through listening, but more by doing and being involved.

Projects implemented with full community participation have been a learning experience for all involved. The short time frame for these projects may not, however, allow enough time for the long term impacts to be understood and recorded - the real test will depend on whether the work done on a small scale can be scaled up to influence policy so that more communities benefit.

Some of the lessons learned from these communities include:

- New technologies introduced to communities should be adequately backed up with necessary inputs to ensure high adoption, such as the spaghetti machines that require both market research and training in maintenance.
- Raising awareness of climate change within the community and ensuring full community participation are crucial for the success of any intervention.
- Farmers are good researchers and their opinions must be taken into consideration when designing a trial using, for example, improved crop varieties.
- The formation of Project Implementation Committees (PIC) with equal representation by women and men in project communities enhances local ownership, improves monitoring of project activities, improves the selection and coordination of beneficiaries and increases overall project success and sustainability, because the community has invested time and effort and want to see the project succeed.
- A good understanding of the norms, values and beliefs of community members earns respect and commitment from the people which mitigates most areas of potential conflict.

Promoting climate change adaptation in two communities in the Guinea and Sudan savanna ecozones in Nigeria: Greenwatch Initiative

Since August 2009, the Nigerian NGO Greenwatch Initiative has been working with two communities on pilot projects to test community identified adaptation options to climate change impacts. The goals of the project are to enhance the awareness of climate change impacts in two project communities and to increase the resilience to climate change impacts through livelihood diversification strategies, improved access to water and increased food security. This pilot project is a component of the Building Nigeria's Response to Climate Change (BNRCC) project.

Country context

Nigeria is vulnerable to the impacts of climate change largely because approximately 70% of Nigerians are engaged in small holder rain-fed agricultural production, population growth is very high and infrastructure is being strained beyond its capacity.

Local context

The community of Daudu in Guma Local Government Area (LGA), Benue State, is a rural agricultural settlement of about 7,000 people, largely Tiv speakers, in the Guinea savanna ecozone. The area is generally dry, with a rainy season of only about 5-6 months in a good year. The main crops produced include yam, rice, cassava, sorghum, maize, melon, sesame seed and groundnuts. The men are engaged in other activities such as mortar/pestle production, charcoal making and sale of trees for timber, while the women sell firewood and produce *gari* (processed cassava). The second community that Greenwatch works with is Falgore, a community of 6,000 located in Doguwa LGA, Kano State in the arid Sudan savanna



Rehabilitated dam in Daudu to provide water for washing, irrigation and drinking

ecozone. In this largely Hausa speaking community, more than 90% of the active male population is engaged in farming, while the women are confined to domestic work close to home. The main agricultural crops are rice, guinea corn, vegetables, maize and groundnuts - crop cultivation is usually mixed with livestock production. The women engage in indoor activities such as groundnut milling, tailoring, making bean cakes called "*Kwese*", local pottery and poultry raising to supplement the family income.

The Problem

The Daudu community now suffers from acute water scarcity due to a shorter rainy season, which has resulted in the drying of streams and lowering of the water table. This means that during the dry season, women and children spend around 3 hours every day in search of water. In addition, there is consistent crop failure from

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lack of water as well as the proliferation of pests, causing prolonged hunger. The community is also experiencing strong heat waves in the dry season, causing heat stress. The children in the community experience more diseases like malaria, meningitis and cholera due, in the minds of community members, to the higher temperatures. Vulnerability is increased by the loss of large tracts of land from damage by migrating cattle that cause soil compaction. This has resulted in conflicts that have claimed several lives. The situation in Falgore is similar, with shorter duration rainfall, heat waves and acute water scarcity, coupled with heat related epidemics such as meningitis, cholera and diarrhea. Crop failure is occurring at a greater scale in Falgore

adaptation strategies, the project implemented livelihood diversification strategies, improved access to water, increased food security and initiated ecosystem rehabilitation. Greenwatch Initiative, the partner organization, began by conducting a series of meetings using Social Analysis Systems (SAS) methods to work in partnership with the communities, ensuring full participation so that the projects were responding to specific needs as identified by community members. Adaptation options with women and men as equal beneficiaries were chosen and include increasing water supply, testing low cost fuel efficient wood stoves, early maturing seed varieties and alternative livelihood strategies.



Rainwater harvesting to underground tank in Daudu

than in Daudu. These changes have posed a great challenge for both communities. Overall, the impacts are contributing to water scarcity, food insecurity and loss of livelihoods. The pilot projects were therefore initiated to assist with implementing community identified adaptation responses to climate change on a small testable scale, with the intention of scaling up to include more communities in the future.

The Project

In order to enhance awareness of climate change impacts in the communities and to increase resilience to climate change impacts through

Water resources development

Increasing water supply has been the main goal for Daudu, while for Falgore, the increased water supply has been for irrigation (discussed below under alternative livelihoods). Water resources development has taken place through a range of practical solutions in order to improve household water supply and to reduce the risk of crop failure during drought. In Daudu, an existing dam was rehabilitated and a rainwater harvesting system was constructed for rainwater storage in an underground tank.

Energy solutions: improved fuel efficient stoves

To reduce deforestation in the Daudu area and to reduce the labour load for women, 30 women were trained on the use and construction of low cost fuel efficient stoves. Many additional women have since replicated the stove in their households, based on the success of the first ones introduced. The stoves are constructed using locally available materials - stones or bricks as a base which are then molded with a mixture of clay and water. Fine tuning the use of this stove is needed to ensure that it is built in a covered kitchen to protect it from rain - many stoves were washed away during the last rainy season. These stoves have been shown to reduce the workload for women, reduce the amount of smoke and associated respiratory

problems of women and children, and they have reduced the amount of fuel wood needed, thus relieving pressure on the local forests. The project has also started planting over 17,000 *Jatropha caucous* seedlings in Daudu. Once mature, people will be trained to process the seeds into biodiesel, used for cooking and for light.

Food security: planting of early maturing seed varieties and *Moringa* for nutrition

The level of food production is largely dependent on the amount and duration of rainfall. When one of these conditions is inadequate, crops fail to mature resulting in food scarcity and hunger. To adapt to a shorter rainy season, Greenwatch Initiative introduced 4 different early maturing varieties of crops, obtained from PROSAB (Participatory Research on Sustainable Agriculture in Borno), a Canadian funded seed research project implemented by IITA. The early maturing varieties



Jatropha, the seeds to be processed for oil

of maize, rice, soybean and cassava were distributed and planted by both men and women in Daudu and by men only in Falgore (where most women do not farm). Seedlings of *Moringa oleifera* were given to women to plant in their compounds and to men to plant on the farms. *Moringa* leaf is a high protein vegetable which is intended to enhance nutrition in these communities.

Ecosystem rehabilitation

Tree seedlings of *Gmelina* and *Teak* were distributed to 79 beneficiaries in Daudu who planted trees around their farmlands and streams to



Fuel efficient wood stove made of locally available materials

both protect the watershed and their farmlands against erosion, and encroachment by livestock.

Alternative livelihoods

Increased diversification of livelihoods is an adaptation option that increases the resilience of people by providing alternatives when traditional livelihoods are threatened by climate change impacts. Options embraced by the Daudu community include a beekeeping project to diversify income and to protect mature trees. Twenty-two households benefitted from this project. The men harvest the honey and the women process it. Citrus plantations were established in both communities: 1000 seedlings were distributed to 25 men in Daudu and 2000 distributed in Falgore to 3 women and 55 men. The income from the sales are to provide a "cushion" against poor crop yield, diversify sources of income for the community members and address poverty in the community on a long term basis. In Falgore, livelihood strategies include dry season farming for 79 male beneficiaries, using irrigation from 20 shallow wells and diesel pumps, as well as the provision of 50 spaghetti making machines for women. Falgore community beneficiaries are now able to engage in farming onions and other vegetables throughout the dry season, thus creating continuous income from crop sales, enhanced food security for the community and further reducing dependency on the forest ecosystem. Dry season farming is also seen as important to reduce rural unemployment for the landless youth, thus reducing the vulnerability of youth and their families.