The Road to Resilience

Case Studies on Building Resilience in the Horn of Africa

CASE STUDIES

CRS
CATHOLIC RELIEF SERVICES

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LIST OF ABBREVIATIONS

CBSD	Cassava Brown Streak Disease
CHF	Common Humanitarian Fund
CMD	Cassava Mosaic Disease
CMD-UG	Cassava Mosaic Disease Ugandan variant
CM-DRR	Community Managed Disaster Risk Reduction
CRS	Catholic Relief Services
DRR	Disaster risk reduction
FaIDA	Fafi Integrated Development Association
FEWS NET	Famine Early Warning Systems Network
GLCI	Great Lakes Cassava Initiative
IDP	Internally displaced person
IITA	International Institute for Tropical Agriculture
IWM	Integrated Watershed Management
IWRM	Integrated Water Resources Management
JFSP	Jonglei Food Security Program
NARO	National Agricultural Research Organization
NOSD	National Organization for Services and Development
RRDO	Relief, Reconstruction and Development Organization
SIDO	Sub-Saharan International Development Organization
SILC	Savings and Internal Lending Communities
TIST	International Small Group and Tree Planting Program
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
USAID	United States Agency for International Development
USDA	United States Department of Agriculture

INTRODUCTION

In recent years, recurrent crises threaten to undercut important development gains, particularly in the greater Horn of Africa. Extreme weather events are increasing both in frequency and severity, likely as a result of climate change. Drought occurs more often, degrading land further, which leads to flooding when rains finally come. These hazards can become disasters if communities are unable to cope with the resulting impacts using their own resources—a risk that increases as each event further depletes the resources required to respond and rebuild.

For communities to escape chronic poverty, they must increase their resilience to withstand shocks. The United States Agency for International Development (USAID) defines resilience as the ability of people, households, communities, countries and systems to mitigate, adapt to and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth. Catholic Relief Services (CRS) has been helping to build people's resilience for decades across the Horn of Africa through traditional food security programs as well as emergency response activities. In 2001, CRS began implementing Integrated Water Resources Management (IWRM) programming in Ethiopia, expanding over time to seven other East Africa country programs. Now CRS helps communities to enhance their resilience through a wide range of initiatives that reduce disaster risk and increase community skills, assets and incomes.

This CRS publication presents seven resilience case studies from Ethiopia, Kenya, South Sudan, Sudan, Tanzania and Uganda. Each case study provides project details, including community involvement, key actions taken, achievements and recommendations. CRS' aim is to promote the use of best practices and joint learning among development professionals implementing resilience initiatives by sharing these studies as part of its Community Managed Disaster Risk Reduction (CM-DRR) Learning Alliance.

By building resilience between and throughout hazard cycles, we can save lives and reduce the cost and scale of future humanitarian responses. Moving forward, CRS will continue to work toward long-term food security by building resilience through agriculture, water supply, health and nutrition, income generation and natural resource management projects.

Communities will become less vulnerable to disasters over time, paving the way for sustainable long-term development across the Horn of Africa and the globe.

DROUGHT-RELATED CLIMATE CHANGE

Overview

Drought is the most common natural hazard in the world's arid and semi-arid regions, and its prevalence is growing. In the greater Horn of Africa, minor and major drought seasons have changed dramatically during the last decade. Minor droughts, previously experienced every three to five years, now occur every year. Major droughts, previously experienced every five to 10 years, now occur every two to three years.

According to the Famine Early Warning Systems Network (FEWS NET), there have been six seasons of poor rains in the eastern Horn of Africa since the year 2000. This increase in drought, likely related to successive seasons of very low rainfall and rising temperatures, is impacting areas in eastern Africa that have served as bread baskets for generations. Rains fail, agricultural productivity drops and food insecurity increases. Failed rains also force pastoralist communities living in drought-prone areas to migrate further to water their animals, which weakens their livestock and can result in animal losses.

Inter-communal conflicts are also on the rise as people fight over extremely limited water and pasture resources. When conflict prevents residents from tending to their fields, food insecurity increases, with reduced harvests leading to hunger and higher food prices. Compounding these problems, the increased frequency of drought gives families insufficient time to recover and rebuild assets, further crippling communities.

Drought kills crops and livestock, which can lead to increased food insecurity.
PHOTO BY DAVID SNYDER FOR CRS

As drought becomes less predictable and more severe, communities that often teetered on the edge are losing their ability to cope. Communities can no longer take mitigation measures, such as allocating specific grazing lands by season or taking larger animals further away to greener pastures—even across borders—as these areas no longer exist. Lands deteriorate at a rapid pace under the barrage of drought, overgrazing, growing populations and poor resource management.

Recognizing the severe impact of drought across the Horn of Africa, CRS is working with local partners and communities to implement disaster risk reduction (DRR) initiatives in the most affected areas. By using the CM-DRR process, CRS places community members at the center of these initiatives. Working together, community members identify drought risks and other climate change impacts, plan and implement risk reduction measures, and monitor, evaluate and learn from actions taken. As a result, communities build their resilience so they are better able to weather future crises.

KENYA:
Drought Safety Net in Garissa County

In northeast Kenya, a vast majority of the population relies on pastoralism as their primary source of income. This semi-arid, hot desert region is also known for perennial drought. Diminishing water supplies for both domestic and livestock usage greatly impact area residents. During severe drought, pastoralists can lose animals and even their own lives.

When families have insufficient clean water to drink, they resort to using contaminated water and are consequently exposed to water-borne diseases. Livestock—pastoralists' primary livelihood—also face immediate risk when water sources dry up and fodder in pastures become depleted. The animals weaken and may die as they are taken further out in search of pasture and water. The risk of disease outbreak also increases for animals due to weakened immune systems and for people if they prioritize providing water to their livestock over personal uses, such as bathing, drinking and cooking.

Livestock losses deal a heavy blow, as livestock is equivalent to currency for pastoralists. In times of stress, animals are sold when cash is needed for food, clothing, shelter, school fees, medical costs, and wedding or funeral expenses. Shocks such as drought cause pastoralists to sell their livestock at a faster rate than they would normally. When herds diminish, families often have no other source of income. Many pastoralists incur even greater losses than necessary as their dependence on livestock makes them hesitant to reduce herd size by selling animals for cash even when the animals are clearly at risk of dying from insufficient water and fodder.

The Road to Resilience

In 2011, the failure of two consecutive rainy seasons in the eastern Horn of Africa led to the most severe drought in 60 years, affecting more than 13 million people. Famine was declared in southern Somalia, displacing 1.4 million people. Farming and pastoralist communities in Djibouti, Ethiopia, Kenya, eastern Uganda and northern Tanzania faced critical food and water shortages, crop failure, and substantial livestock losses. Low rainfall in the spring of 2012 exacerbated an already severe crisis.

In early 2012, CRS began working in northeast Kenya to respond to the urgent needs of pastoralist communities stricken by the extended

drought. With funding from Caritas Australia, Baptist World Aid Australia, and private funds, CRS partnered with two local organizations: Fafi Integrated Development Association (FaIDA) and Relief, Reconstruction and Development Organization (RRDO). Together, they undertook the year-long Emergency Assistance to Drought-Affected Pastoralists project to restore and protect the livestock assets of residents in Garissa County.

Garissa County is vast, with a poor road network that renders most of the county inaccessible. In addition to residents, at the time of the 2012 response, the county hosted more than 470,000 refugees, primarily from Somalia. This increase in population growth put added pressure on the already fragile desert environment.

CRS, FaIDA and RRDO first conducted a study to determine the impact of the drought on livestock and livelihoods. They also identified communities hit hardest by the drought. By targeting communities hosting refugees, CRS hoped to reduce the growing tension between refugees who often receive multiple services and host communities that receive few or none. Working with community leaders and the Government of Kenya Ministry of Livestock Development, the group identified 13 villages for project implementation, eight in Fafi district and five in the Dadaab area.

CRS next facilitated a mapping exercise with community members to identify the most vulnerable host community households. Of the 10,360 host community households in the project area, it was determined that 1,744 households were still severely affected by the 2009-2011 drought. Target households were determined by criteria set by community members and included the disabled, the chronically ill, pastoralists with five goats or fewer, and female-, child- and elderly-headed households. The field assessment revealed significant and uniform livestock losses of more than 50 percent across all income levels, with loss rates of more than 90 percent in some communities. Families that typically had more than 100 goats and anywhere from three to 50 heads of cattle were left with just a few animals, making people extremely vulnerable.

Although the majority of losses were attributed to a lack of water and pasture due to drought, the assessment also revealed that further losses occurred due to an outbreak of livestock diseases when the rains finally came. (In situations of prolonged drought, flooding is common when rains arrive because the ground is too hard to absorb rainwater.) Flooding from

heavy rains in October 2011 led to Contagious Caprine Pluro Pneumonia, anthrax, bloating, foot and mouth, and *Peste des Petits Ruminants (*Ovine rinderpest).

Two pressing issues emerged from the community-based participatory assessment: the need to rebuild goat herds and improve livestock management skills. Goats are a key food and income source in Garissa County. People prefer having goats to cattle or sheep for many reasons, including a long tradition of goat herding, lower purchase price, relative ease of management, greater resilience to drought, meat for household consumption and milk to drink or sell. Goats also have a more rapid gestation period compared to camel and cattle, enabling vulnerable community members to grow their herds more quickly.

Working with the local partners and community leaders, CRS determined that livestock fairs would be an appropriate way to help families rebuild their livestock herds. Livestock fairs were selected as the methodology to restock goats because people would be able to use project vouchers to choose their own animals from a supply of local goats.

The project partners, community leaders and CRS coordinated livestock fairs for the 13 villages. Eighty local vendors who still had livestock to sell brought goats to the fairs. Beneficiaries then selected the goats they wanted using vouchers with a value sufficient to purchase five to 10 goats. The cost of each goat depended on size, sex, color and age. By using fairs to redistribute livestock already in the area, CRS made sure that the animals would not exceed the land carrying capacity. Use of local goats also prevented the introduction of livestock disease from other regions.

Livestock disease management was also a priority. FaIDA and RRDO worked with the District Livestock Production Officer and the District Veterinary Officer to procure drugs for vaccinations. Sidai Africa, an affiliate of Farm Africa that provides private veterinary services, was also invited to participate in the fairs. Goats were inspected before being allowed into the fairgrounds. Selected livestock then received vaccinations and deworming at each fair exit. Beneficiaries were able to purchase additional vet medications from Sidai with any remaining voucher credit.

Vaccinations help keep goats healthy. PHOTO BY MOHAMED ABDINOOR/CRS

To help ensure that the goats remained healthy, all 1,744 beneficiaries received training on animal husbandry and management from government officers. They learned to provide nutritious food to the goats, provide access to a salt lick and maintain manageable herd sizes. In addition, the officers trained 42 volunteer community animal health workers. These volunteers deliver basic veterinary services and provide guidance to community members on animal health, animal husbandry practices and marketing skills. Project partners also provided training on hosting livestock fairs and the voucher methodology to six government livestock and veterinary services officers to enable them to organize future livestock fairs when deemed appropriate.

Beyond livestock restoration activities, project partners helped 12 of the villages to improve management of their water systems (the 13th village had no water system). The villages already had water user associations that collect small water fees for domestic and livestock use to cover the cost of any needed repairs. CRS trained these associations on governance and business management skills to reduce mismanagement of fees and unfair rationing when water was limited. Project partners also trained 12 water technicians in basic

repair, maintenance and operation skills, providing each with a tool kit for daily use.

In most pastoral communities, men dominate decision-making processes. Because women typically shy away from voicing their opinions in forums that include men, the project team organized separate sessions where women freely expressed themselves. Project staff also encouraged the involvement of female water user association members, goat vendors and water technicians, but found that cultural practices tended to restrict female participation. To help counter this, the project encouraged the registration of women as heads of household. As a result, more than half of the beneficiaries receiving goats were women. This was culturally acceptable, as communities were used to women occasionally owning some animals, typically given to them by their parents.

Achievements

Thanks to project interventions, 1,744 pastoralists in the 13 villages served restored their livestock herds. Each household received a minimum of five goats, with a total of 8,872 goats purchased and selected at the livestock fairs. Sixty-six percent of these beneficiaries were women, an empowering change as women in Somali communities typically do not own livestock (see Fatuma Abdi Mohammed's story below). The livestock fairs also gave the local economy a boost through an injection of $743,991 paid to the goat suppliers.

Beneficiaries have benefitted from the increased availability of goat milk. They can sell it and provide the milk to vulnerable family members to drink, especially children, the elderly, pregnant and lactating women. Families expressed appreciation for the livestock fair approach and voucher system, which allowed them to choose goats of their liking with dignity during a difficult time.

Pastoralists now have the knowledge to better protect their livestock from disease and increase their herd sizes through improved husbandry skills, even in times of drought and flood. They can also turn to the 42 trained community animal health workers or Sidai professional veterinary services for timely guidance on animal care, disease diagnosis and treatment. In addition, inter-communal conflict may lessen through better management and maintenance of water systems.

> “The goats have given me back my pride and dignity in the village. People who used to look down on us now treat us with respect. In our culture, women had no voice in when to sell livestock.”
>
> — FATUMA ABDI MOHAMMED, MOTHER OF SIX, WELDONI VILLAGE

These project activities strengthened community coping mechanisms. Community members built resilience against future drought, gained knowledge and skills for increasing their household assets, and ultimately improved their overall quality of life.

A beneficiary household being interviewed at the goat fair in Allinjugur

PHOTO BY MOHAMED ABDINOOR/CRS

“After the 2011 drought when my husband lost most of his livestock, I used to rely on other people in the village to get milk. After I received seven goats, I am now able to have milk for my family from the goats. This has improved the nutrition of my family, especially for the young children. Three of the goats have also kidded, and four are pregnant and will give birth soon.

The goats have given me back my pride and dignity in the village. People who used to look down on us now treat us with respect. In our culture, women had no voice in when to sell livestock. Now, I decide what to do with the goats as they are mine. I own them and my husband cannot sell them

without consulting me, unlike before when he used to sell livestock without consulting the family. We have a Somali saying that women are like birds. This means that when a woman gets some food or money, she shares with her children, just like the birds share food with their chicks. If the goats continue to give birth, I will be better prepared for the next drought as I will have milk for my family and will sell some to buy food and fodder for the other goats. I am a very proud woman to own goats, and my husband can now concentrate on his cows and camels. The goats have greatly reduced dependency and increased self-reliance among women pastoralists. We now have something to be proud of and keep us busy."

— Fatuma Abdi Mohammed, mother of six, Weldoni village

Recommendations

A number of recommendations emerged after an external evaluation was completed in January and February 2013 to assess the project's implementation and success. These include the following:

- Restoration of goat herds is an excellent resilience-building initiative that can help pastoralists recover quickly from drought. Goats serve as a form of savings and can be sold live or for meat. Young children benefit from improved nutrition through goat milk. Household assets also continue to increase as the animals reproduce at least twice per year, helping families to improve their livelihoods and food security.
- Livestock fairs using the voucher system are a safe, secure and appreciated approach. However, support needs to be provided to beneficiaries with low literacy and math skills to make sure they understand how vouchers work and ensure that they receive full value for their vouchers when negotiating with vendors.
- In drought-affected areas, water access must also be considered for long-term project success. Effective and efficient management of community water resources promotes greater peace, productivity and health. In some cases, additional water systems are needed as community members can wait as many as six hours to collect water when it is being rationed. In many communities, efforts need to be taken to involve women more in water management, as the current gender balance is often biased toward men.
- Because drought recovery takes time, two-year projects can be more effective than one-year initiatives. The longer timeframe will

allow communities to receive additional support, monitoring and technical assistance. In addition, two-year projects can provide sufficient time to evaluate the impact of project activities and determine if new skills are still being used.

Adapting to Climate Change in Mbeere County

Building resilience is not a 'one-size-fits-all' approach. Communities need to tailor resilience initiatives to their specific needs and environment. Mbeere County in eastern Kenya is a semi-arid region experiencing frequent droughts. Here though, rather than livestock, residents rely on rain-fed agriculture as their primary source of livelihood.

Drought now occurs every 18 months to two years compared with every seven to eight years in the 1960s and 1970s, according to the Kenya Ministry of Agriculture. With each drought, communities lose more vegetation and tree cover. This leads to erosion, which consequently reduces soil quality due to the loss of organic soil matter. Pest infestations are also frequent, which further reduce harvests. As the environment degrades, food insecurity and poverty increase.

Farmers increased their harvests by planting drought-resistant green grams.
PHOTO BY MWENDE KUSEWA/CRS

In 2009, CRS Kenya partnered with Caritas Embu and the International Small Group and Tree Planting Program (TIST) to respond to climate

change impacts in Mbeere. The goal was to increase food security through innovative agricultural and livelihood diversification initiatives. The privately funded, three-year Green Gram Value Chain project introduced a number of diverse, complimentary activities to build resilience, which included the following:

- **Strengthening the green gram value chain**
  Building on the prior Lucrative Legumes project funded by the United States Department of Agriculture (USDA), CRS and Caritas Embu helped 2,200 farmers to mitigate against climate change by planting drought-tolerant green grams instead of less hardy maize and beans. The project team formed 29 producer marketing groups to develop criteria and select beneficiaries, oversee distribution of improved seeds for drier agriculture conditions, create a seed storage program to provide seeds to additional community members in the future, and negotiate with traders for higher green gram prices.

- **Promoting conservation agriculture**
  In response to reduced rainfall, to minimize soil disturbance and maximize water retention for better harvests 1,050 farmers received guidance in low-impact, high-reward conservation agriculture techniques. These farmers continue to share skills with other farming households today.

- **Planting trees for carbon credits, shade and wind breaks**
  CRS worked with TIST to introduce on-farm tree planting in Mbeere. The trees act as wind breaks and cool temperatures for better crop production. Once the trees mature, they will also provide 2,400 farmers with a new source of income through carbon credits to be paid annually for the life of each tree. TIST auditors regularly collect data about the planted trees and will use this data to determine future payments by calculating the amount of carbon dioxide stored in each farmer's trees. The farmers participated in the tree-planting activities and received training on nursery establishment, transplanting and tree management practices. For maximum impact, the project team selected locally-adaptable trees—included acacia, mango, avocado and bottle brush—known to have multiple uses.

- **Forming Savings and Internal Lending Communities (SILC)** CRS and partners helped establish 79 SILC groups, which gave farmers access to small loans by pooling together the savings of group members. These loans enabled farmers to invest more in their crops, such as hiring additional manual labor, to increase their incomes. SILC groups also provided a social safety net for members, enabling them to help each other to meet basic needs.

Community members responded enthusiastically to each of these activities. Achievements to date include increased harvests, thanks to the drought-resistant green grams. The improved seeds even allowed beneficiaries to harvest enough crops for both household use and for sale, despite the very poor rains of 2011 and 2012. In contrast, community members who were not part of the project had to rely on relief food during this period, as traditional maize and bean crops provided zero yield. The farmers who participated in the producer marketing groups found the groups to be extremely useful and continue to carry out activities on their own after the project end.

The region also increased its tree cover, with more than 40,000 tree seedlings planted and still growing. Many homesteads that previously did not have a single tree now have several trees planted, with most beneficiaries planting around 25 seedlings each. Once the trees are of sufficient maturity, the 2,400 farmers will receive annual carbon credit payments. TIST reports that farmers who were previously resistant to tree-planting activities now understand the environmental and economic benefits. They are forming new groups to plant more trees in order to improve soil conditions and increase their own resilience by taking advantage of the future carbon credits.

ENVIRONMENTAL DEGRADATION

Overview

Growing populations and limited natural resources can quickly lead to environmental degradation if communities fail to manage their resources wisely, especially in marginal lands and arid areas. Environmental degradation can stem from many causes, including human activities such as overgrazing, over farming, deforestation and mangrove destruction as well as natural occurrences such as wildfires, desertification, drought and flood. As environmental degradation increases, lands become unproductive and unable to sustain local residents. Families may no longer be able to grow sufficient food or earn enough money to support their needs in areas where they were previously productive.

Communities can reverse environmental degradation, but to do so requires significant effort and a strong commitment. Since 2001, CRS has been helping Ethiopian communities turn deserts into oases by protecting their natural resources through Integrated Water Resources Management (IWRM) initiatives. IWRM projects increase resilience and food security by addressing development issues in a comprehensive manner, using watersheds as the primary focus for project interventions. By protecting and managing the natural resources within a watershed area, communities become stronger thanks to increased food supplies and improved livelihoods. Initial success in Ethiopia led to the spread of IWRM projects across seven out of the eight East African countries served by CRS. The community is placed at the center of all activities, with community members determining what they want to achieve and agreeing on actions to take to garner success.

ETHIOPIA:
Integrated Watershed Management in Harbu

Back in 2001 in the Harbu watershed of Ethiopia's northern Kalu district, environmental degradation could be seen in almost every direction. The hills were bare, with few plants or grasses growing on the steep slopes, which historically were green, fertile lands.

This degradation came about over many years. As the region's population grew, farmers cleared away the natural forest to grow crops. They also cut trees for timber and firewood, resulting in extreme deforestation. Rains began to carry away the top soil as water rushed down hills. Farmers found it very difficult to keep rain-fed crops watered in these conditions. Yields dropped accordingly, a major concern for the majority of residents depending on subsistence agriculture for survival. Families could no longer produce enough sorghum for their needs, resulting in chronic food insecurity.

The Road to Resilience

In 2001, CRS joined forces with Water Action, local leaders and the local government agricultural office to implement an Integrated Watershed Management (IWM) project targeting 570 households in Harbu. Water Action is a local NGO with considerable experience in natural resource management, water supply and livelihoods. The project's objective was to work with the community to reduce land degradation and the risks of drought. At the start of the Harbu IWM project, the surrounding vegetation cover was estimated at just 7 percent. Now, long stalks of grass bend in the breeze on regenerated hillsides. Achieving this in just a few years was a significant accomplishment.

When the project started, the hills were bare. Now they are covered in vegetation.

PHOTOS BY CRS PARTNER WATER ACTION

Knowing that community involvement would be the key to success, project staff hosted community consultations to determine priority problems. Participatory tools used included a transect walk, trend analysis, key informant survey and focus group discussions. The need to increase

harvests and access safe, clean water quickly rose to the top of the priority list. Women and children were traveling more than two miles to collect water from rivers and unprotected springs for drinking, cooking, cleaning and to water livestock. This time investment reduced their ability to attend to other tasks and at times prevented girls from attending school.

Together, the project team and the community members decided to construct one small-scale irrigation scheme, build two new water supplies and rehabilitate selected degraded hillsides through area closures. To ensure ongoing community involvement, project staff encouraged the community to form a watershed development committee that would coordinate the project planning, implementation, monitoring and asset management. Community members formed a committee of five men and five women, with elders and community leaders also represented. Over time, the community also formed an irrigation water user association to oversee use of the irrigation scheme, four area closure management committees, two agro-enterprise groups, and two water and sanitation committees to collect fees and oversee maintenance of the water schemes.

Project partners trained committee members in the overall principles of Integrated Watershed Management, community mobilization, participatory decision making and group leadership. Trainings were also held to increase committee members' skills in natural resource management, management of water supplies and irrigation schemes, maintenance, recordkeeping, agricultural production, postharvest crop management and agricultural marketing. In addition, project partners assisted the committees in developing by-laws, taught them how to enforce the by-laws and linked the committees with relevant government line offices for ongoing guidance and support.

Although project staff coordinated the construction of the irrigation and water schemes, community members participated in each project activity to foster a sense of ownership and to better ensure future sustainability. Residents contributed manual labor for digging irrigation canals and trenches for the water pipes. They also collected and provided locally available materials, such as stones, sand and gravel. In addition, the community agreed to maintain the rural feeder road leading in to one of the water supply points.

A farmer shows his bumper harvest of peppers—the result of irrigated fields.
PHOTO BY KIFLE ABEGAZ/CRS

The Harbu community also implemented a number of soil and water conservation measures to further strengthen their resilience. The watershed committee identified households facing the greatest food insecurity to participate in cash-for-work projects aimed at improved soil and water conservation. Measures included physical interventions, such as hillside terracing, soil and stone bunds, check dams (small dams that slow water runoff and reduce soil erosion), gully rehabilitation, cut-off drains and micro basins to collect surface runoff. Community members also undertook biological measures, including planting trees, legumes and grasses to reduce erosion and stabilize the physical structures. The community also agreed to close four areas to both human and livestock use to regenerate vegetation and rejuvenate ground water.

In most of Ethiopia, it is common practice to let animals freely graze. To rehabilitate degraded land, this practice would need to end. At the same time, community members needed to gain benefits from the closed areas to ensure ongoing support for the rehabilitation initiatives.

Project staff and local authorities facilitated community discussions on how to designate and use the conserved land. Community members identified four communal lands to close. They also determined the rights of individuals residing near the closed areas. Instead of restricting use of all resources within each closed area, the community decided that residents who had allocated plots in the closed areas could occasionally cut firewood and wood for construction from trees as long as they planted a seedling in the same site in return. The community also established a cut-and-carry feeder system once 80 percent of a degraded area rejuvenated. Although residents living around the closed areas are not able to let their livestock graze freely, they can cut grasses from the protected areas to feed to their animals.

Achievements

CRS conducted an evaluation of the project in 2009, five years after the end of the project. The evaluation demonstrated a number of achievements:

- Sixty percent of project beneficiaries reported improvements in their overall living conditions, highlighting increased food security and incomes. Beneficiary households had more food, with annual food supplies increasing on average the equivalent of one month's worth of food.
- Farmers using the small-scale irrigation system earn three times the amount of farmers who are solely dependent on rain-fed agriculture. Some farmers have used the extra income to buy additional livestock, farming tools and other inputs, while others have built homes or been able to send their children to school.
- The Harbu watershed has significantly better vegetation cover, with coverage in protected areas increasing from 7 percent to 80 percent. Community members are still protecting the four closed areas and using grasses from these areas to feed their livestock. Some farmers with plots in the closed areas even earn extra income by selling cut grasses to other farmers. In addition, levels of spring water and ground water have increased.
- The small-scale irrigation scheme and two water supplies established during the project are still functional. These systems allow beneficiary families to be more resilient to drought compared with other families in areas where water systems have not been

constructed. Beneficiaries of the irrigation scheme are also growing vegetables, which improve family nutrition and provide a source of new income.

- Forty-four miles of terraces on cultivated land has reduced soil erosion and increased water retention, leading to increased agricultural productivity. Project partners introduced improved varieties of sorghum, chick pea, pigeon pea, groundnut and sesame, which further increase farmers' yields. Sorghum yields alone increased on average by 20 percent.
- The committees that oversee the irrigation scheme, water supplies, and closed areas are still functional, stable and strong many years after the project ended. Of the households surveyed, 82 percent said they felt these community institutions are doing a good job managing the water systems and closed areas.

Land that was degraded to the point of being useless has become productive again. Thanks to project activities and ongoing community support, residents have increased agricultural production, improved their health and built greater resilience in the face of drought. In fact, beneficiaries report that they weathered a localized drought of 2009 better than neighbors outside the project area.

Recommendations

Although the Harbu IWM project is a resounding success, a strong recommendation emerged for future IWM projects to be implemented over five years instead of three. Institution building requires significant time and effort. Typically, it takes a full year to build community support and prepare for activities. The final year should focus on evaluation and transitioning the project to community and local government hands. This leaves only one year for implementation in a three-year cycle. As a result of this feedback and learning, CRS Ethiopia now designs IWRM projects with a five-year duration.

Other key recommendations include the following:

- Project success and sustainability depend greatly on the strength and skills of community committees. Strong community institutions can take forward and even expand project interventions after the project ends. To foster this, sufficient time and effort must be invested in training committee members on needed skills. Be sure

to also link the committees with relevant government offices for ongoing guidance and support.

- Using staff who speak the local language and are familiar with and respectful of the local culture promotes increased community support of a project.
- Involving local officials from the very beginning helps them to better understand project interventions and approaches. Local officials can also provide technical support after the project ends, helping to enhance project success and sustainability.
- In highly food-insecure areas, the most vulnerable households will need additional support to build their food resources and household assets.

TANZANIA:
Soil and Water Conservation at Saramay Hill

In 1961, the Qaru Lambo Dam was built in the Karatu District of northern Tanzania. The water provided by the dam enables area residents to earn a better living by irrigating their fields and watering their animals more easily. As a result, the area's population keeps growing. The dam now serves as the primary water source for 38,000 people and their livestock from seven villages.

This population growth has placed ever-increasing pressure on the natural resources in the surrounding Saramay Hill water catchment area. Seeking land and unused resources, people moved higher and higher up in the hills. They cut down trees for firewood and construction and allowed their animals to graze indiscriminately. Recurrent drought and very limited available resources resulted in even greater land degradation.

As the land degraded, heavy rains eroded the soil and caused siltation in the dam. Water volume reduced to such a degree that the dam could no longer meet the demands of the residents, leading to resource conflicts. In addition, the strong force of the water rushing down hill during rains created large trenches that flooded homes and separated families from their farmlands. Residents had to walk long distances to tend to their crops and could no longer respond quickly to neighbors' emergencies. The flooded fields and depleted soil left many families with little land to farm.

The Road to Resilience

In 2010, CRS launched the five-year, privately funded Saramay Hill IWRM project in Karatu and Longido districts. Familiar with the Karatu area, CRS designated the Saramay Hill water catchment area as a key project site. Partnering with the Catholic Diocese of Mbulu, CRS reached out to over 3,000 residents of Qaru village to garner support for rehabilitating the land surrounding the dam. The goals of the project are to increase the available water supply, reduce disaster risk and improve resource management to increase community resilience in the face of future hazards.

After mapping the water catchment area with Google Earth and identifying highly degraded lands, CRS and the Diocese of Mbulu began discussions with community members about improving management of natural

resources in the Saramay Hill water catchment area. At first, villagers were not convinced of the value of soil and water conservation activities, which would take considerable manual labor to implement. Residents were also very hesitant to offer communal land for protection as it would mean they could no longer cut trees or graze livestock in the closed areas. To help change these perceptions, CRS invited residents to watch videos that showed the success of a soil and water conservation initiative in India. After six months of awareness-raising activities, community members decided that they wanted to undertake a similar initiative.

During a village assembly, Saramay Hill residents selected 15 members to serve on a water catchment committee. The committee has equal representation of men and women, includes local government officers and represents a range of social and livelihood groups, such as farmers, herders and people running small businesses. The committee's primary responsibility is to protect the water catchment by overseeing management of natural resources and any needed soil and water conservation work.

CRS trained the committee and other selected community members on soil and water conservation techniques. Committee members also learned how to determine safe and equitable use of natural resources within a catchment, such as the timing and amount of grass allowed to be cut in protected areas.

As a first initiative, the villagers agreed to work together to build contour bunds and infiltration trenches to better retain rainwater, recharge ground water and reduce erosion by slowing water runoff downhill. The water catchment committee took the responsibility to organize community members to complete the cash-for-work project over a period of nine months.

Saramay Hill catchment committee secretary Yasinta Amsi stands in a ridge that her community constructed to prevent soil erosion.

PHOTO BY SARA A. FAJARDO/CRS

Achievements

The community-built contour bunds reduced flooding and surface runoff and allowed Saramay Hill's top soil to rejuvenate, enabling residents to reclaim 50 acres of formerly degraded land for agriculture. Community members further reduced soil erosion by adding check dams to two major ravines. This work also rejuvenated the natural vegetation, which will help prevent future erosion. Already, community members report that water no longer rushes down the hill during heavy rains.

The water catchment committees continue to identify emerging land degradation issues on communal lands and promote soil and water conservation on farmlands. As needs arise, they work with community members to plan, implement, monitor and evaluate additional soil erosion preventive measures. CRS provides technical supervision and guidance to the committees to support ongoing project activities.

> "In the next 20 years, we're expecting soil erosion to disappear. I'm preparing a good environment for the future generations."
>
> — YASINTA AMSI, SARAMAY HILL CATCHMENT COMMITTEE SECRETARY

Thanks to the recharging of the ground water, the dam is once again holding a greater volume of water. In addition, traditional wells that had remained dry since 1985 now provide increasing amounts of water in the rainy season. A number of wildlife species, including jungle fowl, hares, hyenas and foxes, are also slowly returning to Saramay Hill.

With improved water access, local residents can spend more time on farming and other income-generating activities. Residents are reporting greater agricultural yields thanks to reduced flooding and improved soil fertility. An increase in available fodder and grass also enhances livestock health. All of these gains—and the reduced flooding in particular—has led neighboring communities, local government authorities and development agencies to seek out the Saramay Hill water catchment committee for guidance in implementing similar projects in other catchments.

Stone bunds help retain water and prevent soil erosion.

PHOTO BY EHSAN RIZVI/CRS

Recommendations

The following recommendations emerged from activities undertaken to date at Saramay Hill:

- To implement successful conservation initiatives, project staff will require strong support from community members and their high involvement. It can take on average as long as three to six months to garner this support through educational outreach about the benefits communities can gain from the conservation measures. Sharing case studies and videos from other communities that successfully implemented similar projects is very helpful.
- Written agreements that detail all aspects of protected lands and management of natural resources can help prevent community misunderstandings and future conflicts.
- By documenting all of the processes involved in implementing soil and water conservation measures, other communities can undertake similar initiatives with minimal support from development partners.

FLOODS

Overview

During a drought, people pray for rain. When rains finally come though, they often result in flooding due to the inability of land impacted by drought to absorb water, in addition to poor land management, deforestation and land degradation. Heavy rains can cause powerful flash floods, which wipe out crops, kill livestock, destroy property, and displace (and even kill) people. Floods can also damage water supply systems, which can lead to outbreaks of water-borne disease.

In East Africa, seasonal flooding is becoming a recurrent event in many regions. This flooding causes significant damage, including, at times, loss of life. In the aftermath, families struggle to rebuild livelihoods and asset bases.

Fortunately, communities can take a number of measures to mitigate the impact of floods. By restoring degraded land, moving structures away from flood routes and strengthening early warning systems, communities can better weather flood events. To this end, CRS is implementing CM-DRR initiatives to help communities analyze their disaster risk, determine and implement mitigation measures, and monitor the impact and results of their mitigating actions. These activities help communities to increase their capacity to prepare for and respond to floods (as well as other hazards) and bounce back more quickly when they occur.

SOUTH SUDAN:
Community Participation in Flood Management in Bor County

The new nation of South Sudan came into existence holding a bag of mixed fortunes. On one hand, people have great hopes for South Sudan's prosperity thanks to oil reserves that promise riches. On the other hand, the country suffers from a long history of tribal conflicts, with pastoralists in particular fighting over limited water resources. In Bor County, a community called Baidit has experienced the worst effects of such resource-driven conflict.

Seventy-five percent of the 7,500 Baidit community members rely on livestock as their primary source of livelihood. Before South Sudan's independence in 2011, this community lived in scattered groups of homesteads. Herders moved freely through the surrounding area, taking livestock herds of around 25 cattle, sheep and goats per family to pasture and available water sources. In this land of plenty, community members also engaged in subsistence farming, fishing and petty trade.

Over the years, climate change made drought a recurrent event. Baidit pastoralists began overgrazing pastures, as their movement became limited first due to the war and more recently due to cattle raiding. This overgrazing degraded the land, which led to flooding whenever rains caused the Nile River to overflow. The combination of limited grazing pastures, an acute water shortage and intermittent flooding caused tempers to flare, resulting in violent conflict over natural resources.

The Road to Resilience

In 2012, CRS partnered with Baidit community members to implement a three-year CM-DRR project as part of the Jonglei Food Security Program (JFSP), funded by the United States Agency for International Development (USAID). The JFSP aims to reduce hunger and risks associated with disasters across South Sudan, helping thousands of South Sudanese to increase their resilience and protect their livelihoods.

Through the JFSP, Baidit community members formed a DRR committee comprised of men, women, youth and the elderly. This committee then worked with local leaders to mobilize community participation around a robust DRR process, starting with a community-wide assessment to

prioritize food-security related hazards and risks. Flooding emerged as the number one hazard due to its highly debilitating impact. Occurring three to four times a year, floods damage crops, houses, roads and schools. People lose assets and at times even their homes. The recurring nature of the floods also prevents families from fully recovering before the next event hits.

Community members attempt to cross a road by boat during a flood.
PHOTO BY CRS STAFF

The project next helped communities to assemble disaster action plans. Reducing conflict was the primary goal, followed by flood mitigation activities and increasing food security. Residents agreed to construct dykes to prevent the river from flooding, rehabilitate a rural feeder road, build a livestock watering pond and establish an early warning system to monitor climate-related factors contributing to food insecurity. CRS supported the action plan by providing food-for-asset activities and offering technical support and training.

As a first food-for-work activity, residents pitched in to shovel dirt to create and repair a 20-mile dyke. CRS provided needed tools and food in exchange for their labor. Community members also constructed a water storage pond, which now reduces flooding by channeling excess

water through canals into the pond. The pond stores water for two to three months during the dry season, enabling pastoralists to water their livestock close to the homesteads more easily.

The DRR committee also coordinated a food-for-asset initiative to restore eight miles of the rural feeder road that connects to the main Bor road. Community members provided manual labor to clear and level the road. These road improvements now allow residents to bring their livestock and crops to market and access social services more easily—critical for improved community health and livelihoods. The project involved the State Ministry of Physical Infrastructure at the start of all activities to ensure the construction was monitored to meet government standards.

In addition, the DRR committee took measures to strengthen an existing climate early warning system. Through training and awareness raising, the project team fostered a new commitment by community members to participate in warning and response activities. Residents now inform committee members when river water levels rise. The committee then mobilizes youth from each family to construct diversion canals and restore dykes wherever needed.

Community members also keep an eye out for livestock disease, which can break out and spread quickly in the wake of floods. Residents now immediately isolate any sick animals and coordinate with the DRR committee to receive treatment assistance from the government.

To further strengthen the resiliency of communities, the JFSP has also helped increase access to financing by integrating CRS' highly successful savings-based microfinance model into project activities. CRS and partner staff help groups form Savings and Internal Lending Communities (SILC). SILC members save small amounts each month and provide microloans for micro-businesses to group members from the pooled savings. As part of the approach, CRS works with the groups to agree on ground rules for the SILC, trains members on strong financial management and transparency practices, and guides groups on creating a social safety net fund to assist members in times of need.

Basic tools and hard work can significantly reduce disaster risk.

PHOTO BY SARA A. FAJARDO/CRS

Achievements

The JFSP DRR project will run through 2014 in Baidit. Already, CRS and the Baidit community have successfully introduced the CM-DRR approach, enabling community members to document and analyze local hazards and create a DRR action plan:

- The DRR committee successfully mobilized community members to rehabilitate and construct 20 miles of a flood protection dyke to protect villages close to the river. Farmers are now able to increase their production thanks to this protection.
- The community developed an evacuation plan to direct residents in case of a flood to a narrow land corridor not affected by rising waters.
- Community members restored eight miles of a rural feeder road to improve market access for their livestock. Families can now access social services more easily.
- The newly constructed livestock watering pond and training of community animal health workers enable pastoralists to take better care of their animals. The pond also reduces conflict over water resources.
- Approximately eight SILC groups were formed in Bor County, with a total of 136 members, helping to increase the resilience and income-generating opportunities of group members through access to micro loans and a social safety net fund.
- The community meets regularly to monitor seasonal early warning indicators, such as water levels and the movement of livestock to pasture. The DRR committee also updates the DRR action plan quarterly and mobilizes community members to undertake new initiatives as needed.

Project staff continues to work with local government officials to build the capacity of the DRR committee. Additional trainings will include guidance on conflict mitigation, rangeland management, reforestation and mitigation of livestock disease.

Baidit and many other communities across South Sudan are now better prepared for flooding and other hazards. Other JFSP activities are also helping residents to increase crop production, grow livestock herds and increase income through agro-enterprise. Thanks to these initiatives, residents of South Sudan are becoming more resilient to better weather future shocks.

Recommendations

Although the Baidit DRR program is ongoing, a few recommendations have emerged:

- It is important for community members to be very aware of project objectives, scope, timeframe and expected community involvement to appropriately manage expectations and ensure residents rely on themselves instead of outside partners to achieve success.
- Because South Sudan is a new nation, considerable attention must be directed toward increasing agency, partner and government staff capacity for project success.
- To maintain new structures, such as the watering pond, dykes and feeder road, a support system needs to be in place to ensure the community has access to needed tools, technical support and refresher training. Relationships must also be built with local government officials for ongoing guidance and support.
- DRR committees need to be encouraged to monitor and evaluate changes quarterly in order to update DRR action plans accordingly.
- Savings and Internal Lending Communities work well in post-conflict situations, but more intensive training and mentoring is required as residents are still rebuilding lives after many years of conflict.

SUDAN:
Reducing Disaster Risk Within IDP Communities in Khartoum

The capital of Sudan is home to hundreds of thousands of internally displaced people. These IDPs live in camps and settlements established in the 1980s and 1990s to provide people with refuge during the long civil war. Additional families arrived during droughts and the more recent Darfur conflict. As the years passed, the camps became these people's homes, with many children being born in the camps. Even though South Sudan is now an independent country, many families choose to remain in the camps due to their extensive personal and business ties in the Khartoum area.

Conditions in the camps are poor, and access to social services is minimal. Many IDPs still live in makeshift shelters that were meant to be temporary. Many homes are made out of mud bricks, which can disintegrate under the deluge of heavy rains. The situation worsened after South Sudan became independent in July 2011 when many aid agencies ended the camp services they had been providing. Even today, living conditions become deplorable when heavy rains cause flooding. Latrines collapse, mud houses dissolve, temporary shelters become unsanitary and sludge covers every surface.

Khartoum state is prone to flooding whenever the Nile River bursts its banks. This flooding has increased and now occurs one to two times each year. Town dwellers feel the effects as well, but the IDP settlements get hit the hardest due to poor infrastructure. For example, when heavy rains fell in the fall of 2009, canals quickly filled with soil and garbage, preventing the rainwater from draining out of the flat camps. The resulting flooding completely destroyed 10,800 shelters and 10,917 latrines.

The Road to Resilience

In 2007, CRS began working with the most vulnerable IDPs by helping them to reconstruct their shelters. In 2009, this shelter program expanded to include flood mitigation and response activities. CRS also modified its approach from responding to immediate needs to proactively collaborating with community members to identify, plan and implement priority CM-DRR activities.

In 2011, CRS undertook a 10-month project funded by the Common Humanitarian Fund (CHF) of the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA) to implement an emergency flood preparedness response project. The project focused on 60,000 households in four flood-prone IDP settlements: Soba El Aradi, Mayo Mandela, El Rasheed and El Fateh. The project goal was to increase IDPs' resilience by enabling them to cope better with heavy rains and floods. CRS partnered with Sub-Saharan International Development Organization (SIDO) and the National Organization for Services and Development (NOSD), local organizations familiar with the IDP populations.

CRS' partners first reached out to the communities by coordinating multiple flood preparedness meetings. Both community leaders and residents supported the idea of flood mitigation work and promised strong participation and support. Working together, community members analyzed the causes and consequences of floods. They then used these findings to identify high-risk sites and design effective interventions.

Community leaders in each of the targeted areas received training in emergency preparedness, including emergency response, infectious disease prevention and control, and mobilizing residents for voluntary work. The IDPs then established an emergency committee for each target site comprised of 12 to 15 members with at least three female members. These committees selected beneficiaries based on vulnerability criteria to participate in food-for-work projects to clear debris and garbage from existing canals and dig new canals to improve drainage. Community members also established emergency units to maintain the canals and respond on the spot to any flooding event. CRS equipped the units with tools, including spades, rakes, pickaxes and wheelbarrows, to effectively maintain the canals and respond to any flooding.

A community member stands in a canal he helped build in the Soba El Aradi IDP camp. PHOTO BY BASHIR MANSOUR/CRS

In addition, the IDPs identified 165 of the most vulnerable families for shelter assistance, prioritizing families with female, sick, elderly, disabled or orphaned heads of household. These families received materials—including reinforced mud blocks created using four press block machines—to improve their shelters so they could withstand heavy rains and possible flooding.

CRS, SIDO and NOSD also coordinated with government engineers in each target location to guide and supervise construction of bridges and crossing points over the newly dug canals. The bridges improve vehicle access, while the crossing points enhance IDP movement within the camps.

Achievements

The IDP communities served now have a much better understanding of community-based disaster risk reduction planning. They have also improved their ability to cope with disaster by increasing their emergency skills and taking flood mitigation actions. The four committees and emergency units continue to monitor any new drainage work needed and are ready to respond whenever waters start to rise. As a result, floods no longer have such a major impact, resulting in improved health, living conditions and overall community resilience.

During the project, IDPs constructed 14 miles of drainage canals and rehabilitated other sections in the four target settlements. Working with government engineers, they also built three bridges for vehicles and 30 crossing points for people. These improvements enable camp residents to more easily access markets and basic services year round, including during the rainy season.

The flood mitigation and preparation activities have already paid off. In July 2012, CRS responded to one of the worst floods to hit Khartoum in 25 years. The flooding affected more than 50,000 IDP households, but its impact was significantly less in sites that had previously undertaken flood mitigation activities with CRS. Khartoum commissioners commended CRS and its partners for their interventions and asked that similar CM-DRR projects be implemented in other vulnerable Khartoum communities.

Recommendations

A few recommendations emerged from the project implementation:

- Involving government officials early in the process can speed project planning and implementation.
- DRR initiatives that focus on community interventions—such as clearing canals and constructing bridges and crossing points—provide more lasting value than direct response activities, such as providing roofing materials.

- Giving hand tools to flood response committees greatly increases project success and sustainability.
- Although community members requested cash for work instead of food for work, the food payments attracted more female beneficiaries. This indirectly empowered women by giving them greater control over household assets.

CROP PESTS AND DISEASES

Overview

For generations, farmers have waged a battle against crop pests and diseases to protect their harvests. Disease spread is particularly hard to control in the case of plants that rely on vegetative propagation. In these cases, a part of a plant can fall to the ground and create a clone of the parent plant, or a farmer can plant a simple cutting to create the clone. The new plant inherits any diseases present in the parent plant, enabling disease to spread quickly across fields.

A number of staple crops in the Horn of Africa rely on such vegetative propagation, including sweet potato, yam, cassava and banana. These crops benefit from easy growth but are also highly vulnerable to rapid disease spread. To reduce this risk, it is essential for farmers to monitor the health of their plants, remove infected plants and only use cuttings from healthy plants. Unfortunately though, diseases are sometimes not easily identified until the new generation of plants is harvested.

Cassava is especially prone to disease transmission through vegetative propagation. A starchy root plant, cassava accounts for more than one third of all food produced in many parts of the Great Lakes region of sub-Saharan Africa.

Cassava Mosaic Disease (CMD) has been present in African fields for more than a century, but crop losses were typically low. In 1990, a severe strain of the disease emerged. Known as the Ugandan variant, or CMD-UG, this strain quickly spread into neighboring Kenya, Tanzania, Burundi, Rwanda and the Democratic Republic of Congo. Within two years, cassava yields in the region dropped by more than 80 percent. This decimation of cassava fields led farmers to abandon cassava farming altogether. Many farmers failed to find a strong replacement crop, resulting in increased food insecurity.

Cassava roots show signs of disease. PHOTO BY CRS STAFF

Over the years, cassava regained a foothold as research organizations bred CMD-resistant cassava varieties and provided cuttings to farmers. But another disease, Cassava Brown Streak Disease (CBSD), emerged and began spreading across the highland areas of East and Central Africa. The combined effects of these two diseases ravaged cassava fields again, creating a crisis for millions of farmers heavily dependent on cassava as both a staple food and cash crop.

UGANDA:
Innovative Responses to Cassava Disease

When the CMD-UG strain began decimating fields in the 1990s, cassava production dropped dramatically in Uganda. Farmers lost 30 percent to 100 percent of their crops, devastating the food security and income of millions of cassava-dependent farm families. The poorest and most vulnerable were left unable to grow sufficient food for their families' needs.

In Uganda, cassava is a primary food source, second only to the banana species called *matooke* that is traditionally cooked for food. Cassava was initially introduced as a 'famine-reserve' crop, as the edible roots can remain underground for a few years if desired until needed.

Over time, cassava grew in popularity. Now it is a common food in Ugandans' daily meals, being cultivated by almost three quarters of farming households, often by women. Cassava is particularly popular with poor farmers who have few resources. The root crop requires no special care, often survives even when rains are poor, and is easy to plant in new fields from cuttings.

The Road to Resilience

In 2007, the Bill & Melinda Gates Foundation funded the five-year Great Lakes Cassava Initiative. Building on the prior USAID-funded Crop Crisis Control Project and led by CRS, the GLCI initiative aimed to help more than 1 million farmers across six countries to mitigate the impact of CMD and CBSD.

CRS teamed with renowned agricultural research institutions, including the International Institute for Tropical Agriculture (IITA) and the National Agricultural Research Organization (NARO), to conduct research, grow disease-resistant varieties and disseminate clean cuttings to farmers. CRS also worked closely with local partners and each community served to actively involve cassava farmers in disease identification and prevention.

List of partners:
Caritas Lugazi
Caritas Kasanaensis Luwero
Nakasongola District Farmers Association (NADIFA)
Farming for Food and Development – Eastern Uganda (FADEP-EU)
The Hunger Project Uganda
Volunteer Efforts for Development Concern (VEDCO)
National Crops Resources Research Institute (NaCRRI)

In Uganda, CRS partnered with seven local organizations to provide clean planting materials to 47,082 farming households. During initial project assessments, it became clear that farmers lacked the knowledge needed to identify infected plants. They also lacked information on where to access clean, disease-free cuttings. The GLCI program addressed this by helping communities to form and train 292 farmer groups. Project partners also trained voluntary field agents to create a grassroots network for mentoring farmer groups and sharing new information on disease management.

Using posters, leaflets and training manuals provided on rugged laptops, project staff and field agents taught farmers how to detect early signs of disease infestation. The trainings also taught farmers how to reduce disease spread. Farmers learned to identify and remove diseased plants, plant new disease-tolerant fields away from infected fields, check for signs of infection before giving or receiving cuttings, and sterilize farm tools when taking cuttings from healthy plants.

In addition, the GLCI project worked with each community served to grow plots of healthy disease-tolerant plants to serve as a seed source for area farmers. CRS partner staff, local leaders, and farmer group leaders determined which farmers would serve as ‘multipliers’ (55 percent were women) and determined which households would receive 25 cuttings each once the plants matured.

Project staff and farmers celebrate their success in a field of healthy cassava plants. PHOTO BY DEBBIE DEVOE/CRS

To make sure farmers received cuttings from desired plants, CRS and partners worked with NARO to let farmer groups test up to eight new cassava varieties. The groups then determined the ones they felt were best suited for further propagation based on disease tolerance, yield, size and even taste.

During the second year of the project, the one available CBSD-resistant cassava variety succumbed to disease, leaving project partners and participants with no clean cuttings to disseminate. Fortunately, NARO released additional improved varieties later that year, which farmers began growing, testing and eventually multiplying. By the fourth year, five CBSD-resistant varieties were being multiplied by partners, and farmers groups were also making good progress multiplying one resistant variety.

Ugandan farmers were very supportive of the project. By planting improved cassava varieties, they are able to rely on cassava once again as a key food staple and a source of income.

Achievements

Thanks to contributions made by the GLCI project, the prevalence of CMD has been greatly reduced in Uganda and the Great Lakes region, largely due to the aggressive promotion of CMD-resistant varieties. Research on CBSD has led to genome sequencing of the disease, improved diagnostic accuracy, and a greater understanding of its epidemiology. In addition, project partners developed a successful model for clean seed systems for vegetative propagated crops.

Although the GLCI project ended in July 2012, farmers continue to report any signs of disease to government extension workers. They regularly check their fields for infection and remove plants with obvious signs of disease. A few partners also continue to multiply disease-tolerant varieties, which they sell to farmers in order to sustain the multiplication plots. In addition, some farmer multipliers are now growing disease-tolerant cassava solely to sell cuttings, with some planting as many as 10 acres of disease-free cassava.

> "With the knowledge and skills I have acquired from the trainings on cassava production and diseases, I can identify sick cassava plants from healthy ones and take necessary action."
>
> — SPECIOZA MATOVU, CASSAVA MULTIPLIER AND VOLUNTEER FIELD AGENT, KAZWAMA VILLAGE, NAKASONGOLA DISTRICT

As a result of the GLCI initiative, healthy cassava fields are once again serving as a primary food source and cash crop, increasing the food security and resilience of more than 1 million Africans. The GLCI project also helped to increase the resilience of beneficiaries by supporting the formation of SILC groups.

Recommendations

Multiple lessons emerged from the GLCI project, resulting in the following recommendations for other agencies seeking to mitigate disease spread:

- Government involvement is critical in the fight against crop diseases in order for institutes to grow improved varieties and for agricultural extension workers to support ongoing knowledge transfer to farmers.
- Agreements must be put in place with multipliers regarding dissemination plans to make sure they distribute cuttings once plants mature.
- Training volunteer field agents in disease identification enables communities to receive ongoing support even after the project ended.
- Small multiplication plots of two to four acres are more successful because having a larger number of smaller plots instead of fewer but larger plots reduces the risk of disease and loss of seed.
- Group multiplication plots provide an advantage over multiplication done by single individuals because any losses are spread across multiple farmers instead of just one.
- In disease-endemic areas, it seems that multiplication at the primary level by an institute works best, as disease increases as multiplication is done at the secondary partner level and tertiary farmer level.

CONCLUSION

Development progress relies on the resilience of poor communities. If communities cannot cope with shocks, long-term development simply cannot be achieved. When resilience increases, community members are able to build their assets and increase their food security. They can then better weather hazards, recover more quickly and build back even stronger.

Across the Horn of Africa, CRS continues to help communities reduce disaster risk, build resilience and improve overall quality of life. By sharing field experiences with others, future projects can build upon the successes and learn from the shortcomings to ensure an even greater resilience against future disasters in the Horn of Africa region.

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