

# Lessons Learned in Water, Sanitation and Environmental Health

## ZAMBIA

### ZAMBIA:

Livingstone Food Security Project-Action Research on Natural Resource Management-Methods for Achieving Rapid Change

## BACKGROUND

Since the 1991/92 planting season, Zambia has experienced the worst droughts since achieving independence. In the southern half of the country, which normally receives 600mm annual rainfall, crop and livestock production were severely constrained, and livelihoods of subsistence farmers were hard hit. Year after year, food relief exercises were conducted at great cost. There was clearly a need to take a broader and longer-term view of the situation.

In November of 1994, CARE began a food security and drought mitigation project in the Kalomo and Livingstone Districts of Southern Province. The goal of the Livingstone Food Security Project (LFSP) is to reduce vulnerability to drought in order to achieve household food security by addressing the underlying causes of vulnerability and food insecurity. The project has reached 72,000 of the districts' rural population of 205,000. The action research activities described in this paper are a subset of LFSP's overall activities.

Following the successive droughts, the population in this area was characterized by an almost complete depletion of physical assets. CARE's efforts have been intended to enhance the capacity of these communities to replenish their asset base in a sustainable way, through the development of viable community-based organizations. Interventions such as promotion of appropriate sustainable farming systems, improved water harvesting, and natural resource management practices can then be implemented through the community-based organizations.

## PARTICIPATORY RURAL APPRAISALS

In a series of participatory rural appraisals conducted by CARE in 1996, farmers continued to refer to the phenomenon of declining rains and its effect on the environment and their livelihood systems. In particular, farmers noted that the drying up of dambos (key resource areas which are generally low-lying and have relatively richer alluvial soils and higher moisture content as compared to surrounding areas) and plains led to an out-migration of the population due to the elimination of some income-earning activities such as fishing and an increase in the number of social conflicts because of a reduced resource base. They also noted difficulties in finding water for humans and livestock and declining crop productivity due to drought. The drought conditions caused by declining rainfall were recorded by farmers on historical resource maps and later confirmed using topographical maps and aerial photographs. The drying of dambos and plains was accelerated by human-related causes, such as the degradation of forest resources in catchment areas.

Based on the results of the participatory rural appraisals, an Action Research Project was conceived on the premise that, because of the changing environment, there were no immediate solutions to the above-stated problems. Rather, there was a pressing need to develop new livelihood systems through a process of adaptive change. To address this, CARE formulated an Action Research Project in two pilot areas, Delevu (population: 300) and Katapazi (population: 1,500). These areas were deliberately chosen because of their contrasting situations and in order to facilitate understanding of how environmental, economic, institutional, and socio-cultural factors were important in natural resource management programs.

## TOPICAL APPRAISALS

As a first step in the Action Research Project, topical appraisals were conducted on a watershed basis in Delevu and Katapazi in July and August of 1997 by community members and staff from the Forest Department and CARE. The objective of the appraisals was for CARE and the communities to identify problems related to natural resource management and opportunities for addressing them.

The team conducting the topical appraisals was divided into groups, each concentrating on a particular ecological/geographical zone within the watershed, such as a dambo, forest, or upland area. The resources within each zone were mapped and trends recorded. Particular emphasis was placed on the collection of quantitative

data. Thereafter, major problems such as deforestation in the uplands areas, drying of dambos, and collection of silt in downstream springs and their causes were highlighted, and possible interventions in soil and water conservation were discussed. The socio-cultural, economic, institutional, and environmental factors were taken into account and appraised for feasibility. Later, summaries of the information were translated into Tonga (the local language) and put into diagrams. These diagrams formed the basis for negotiations among community members and between the community and CARE. Negotiations focused on which courses of action would best address the problems identified. Action plans were then agreed upon, designating the who, what, where, and when of activities.

After the topical appraisals were conducted, the teams presented summaries of the findings and began negotiations about the possible interventions that were identified. These findings emphasized the linkages between resources. Therefore, negotiations were conducted on a program, as opposed to activity, basis. For example, in Delevu where a dam to provide water for livestock was proposed, the importance of forest management in the catchment area to control silt and enhance ground water recharge was emphasized in order to prolong the life span of the dam. Particular attention was given to the need for an institutional arrangement for each intervention. As a result, common interest groups were formed. These groups were self-selecting and formed by local facilitators.

Later, a detailed research outline was developed specifying the methodology to use to reduce human-induced land degradation and ultimately raise water tables in dambos and plains. It is anticipated that the raised water table will enhance livelihood systems based on crop and livestock productivity and increase the availability of water throughout the year in water harvesting structures such as boreholes and wells.

### **ACTION RESEARCH ACTIVITIES**

In Katapazi, the community identified upland gully erosion due to deforestation, overgrazing and inappropriate cultivation methods, siltation of springs, and inadequate runoff management in dambos as critical problems. To mitigate these problems, CARE trained local facilitators in watershed management and how to monitor rainfall using a rain gauge, soil erosion using erosion pins, vegetation basal cover and species diversity. The local facilitators held awareness meetings with farmers on the consequences of deforestation and management implications of monitoring information. Other measures being implemented include rotational grazing, ridging, contour ploughing, gabion construction, spring capping, and field-testing of treadle pumps. Gabions and spring capping have had the greatest impact. Plans to replicate the latter are underway.

In Delevu, problems identified included poor forest protection, poor soil moisture and fertility management in crop fields, and lack of water for livestock. The community drafted by-laws to ensure forest protection. Contour ploughing to enhance soil and water conservation was also carried out. CARE trained local facilitators, Chief Sekute (the traditional leader) and one of his Headmen in watershed management; they are now in the process of raising awareness on these issues among the entire Chiefdom (in addition to Delevu). Local facilitators have been monitoring rainfall and soil erosion using a rain gauge and erosion pins respectively. A dam is under construction to alleviate water problems for livestock. Other natural resource management interventions will be carried out concurrently with the construction.

### **LESSONS LEARNED**

Initial establishment of natural resource management activities is time consuming. However, if benefits can be made tangible, appropriate technologies stand a better chance of being rapidly disseminated. For this reason, it helps to target areas where benefits will be seen quickly such as infertile fields and silted dams. The use of simple and effective monitoring tools, such as erosion pins, also helps the community to perceive the potential benefits of natural resource management activities which usually take a long time to be realized.

The process for initial formation of common interest groups is critical. The groups must be perceived to be of benefit to the stakeholders and worth the time and effort to run them. Roles and responsibilities must be clearly developed. Linkages of these groups with other community institutions must also be clarified, especially the traditional ones. If this is not done, there will be misunderstandings leading to delays, confusion, and conflict. Farmers respond to action. For this reason training should be as practical as possible, concentrating on demonstrations (as opposed to lectures) and implemented on-site. Training through study visits to farmers in similar situations can also be very effective. The morale of participating farmers is boosted after they are taken to other projects or places where they see for themselves the benefits of NRM interventions which they themselves can carry out.

Young people are often more innovative and less risk-averse. Their participation can contribute to the implementation of new ideas and activities and should therefore be encouraged. The possibility of setting an upper age limit for group membership during the first year should be considered.

Use of local materials, such as brushwood gabions, should be encouraged wherever possible. Their availability will enable rapid replication and dissemination of technologies once they are adopted. Farmers are both rational and innovative. They adopt and, perhaps more importantly, adapt technologies which have tangible benefits. Adaptation of new technologies by farmers is very important. It helps account for environmental variances and enhances the credibility of new technologies, contributing to their more rapid acceptance and implementation by neighbors.

## KEY CHALLENGES

Improving the relationships between community-based organization leaders and traditional leaders. A training module has been developed to clarify the roles, responsibilities, and relationships between traditional and community-based organization leaders. While it has been used with success in some areas, the problem is widespread in the project area and will therefore take time to overcome. In addition, attempts at conflict resolution are to a large part dependant on the personality and good will of the traditional leaders, and are therefore liable to have varying results.

Providing incentives to leaders of community-based organizations. The leaders devote a large amount of time to organizing group activities, which is at present not rewarded. If this situation continues, the participation of leaders may decrease, reducing the long-term viability of these institutions. This raises the question of how these community-based organizations can start to generate their own funds, or whether these groups should be short-lived.

Scaling-up. The project has managed to achieve fairly rapid acceptance of natural resource management technologies which provide few immediate benefits. The challenge for the future is to increase the number of participants both within and outside the project.

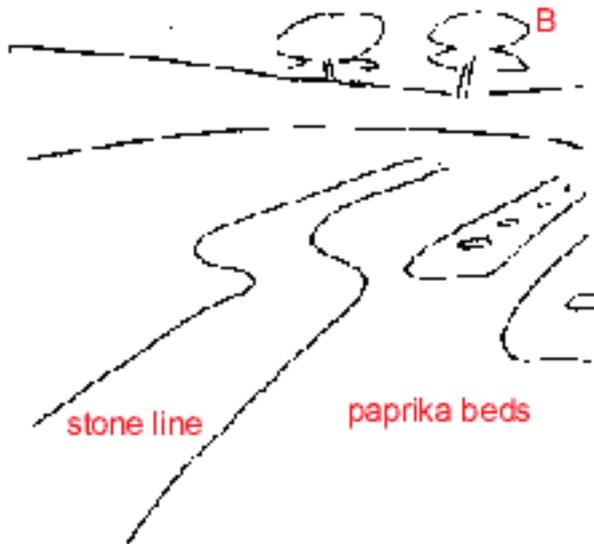
### The Gabion at Libondas' Kalulwe B Spring





A- These pictures show a close up of the brushwood gabion. To the right of the gabion the silt has been trapped, and prevented from entering the spring -- which is to the left of the picture.

The paprika field from which some of the silt originated is visible in the background. It is also possible to see the two lines of wooden poles with the brushwood in between.



B - These picture show a stone line, that was built along the contour,in the paprika field. The stone line was built after the gabion, when it became clear to the community exactly how much soil was being washed outof the paprika field.

## **FOR FURTHER INFORMATION CONTACT**

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