QUALITATIVE ASSESSMENT OF USAID/OFDA SMALL SCALE IRRIGATION PROGRAMS

ZAMBIA Treadle Pumps, 2003--2006

Amy Sullivan

Final Report

Submitted to FANRPAN, Pretoria, South Africa as a contribution to the completion of USAID/OFDA (Southern Africa) Contract 674-0-00-07127-00.

February 2008

The views expressed in this report are the author’s and do not necessarily reflect the views of FANRPAN or USAID/OFDA
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Acronyms</td>
<td>iv</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>v</td>
</tr>
<tr>
<td>I. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>II. CLUSA/TLC/IDE Food Security Program</td>
<td>2</td>
</tr>
<tr>
<td>III. Findings: CLUSA/TLC/IDE Food Security Program</td>
<td>3</td>
</tr>
<tr>
<td>IV. C-SAFE IDE/CLUSA</td>
<td>5</td>
</tr>
<tr>
<td>V. Findings C-SAFE IDE/CLUSA</td>
<td>6</td>
</tr>
<tr>
<td>VI. Conclusions and Recommendations</td>
<td>7</td>
</tr>
<tr>
<td>VII. Factors for success and major constraints</td>
<td>10</td>
</tr>
<tr>
<td>Documents Consulted</td>
<td>11</td>
</tr>
<tr>
<td>Annex A: Individuals Consulted in Zambia</td>
<td>12</td>
</tr>
<tr>
<td>Annex B: Evaluation Questions from USAID Scope of Work</td>
<td>13</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1: C-SAFE CLUSA/IDE Micro irrigation technology distribution, 2006  6
**ACRONYMS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADRA</td>
<td>Adventist Development and Relief Agency</td>
</tr>
<tr>
<td>CLUSA</td>
<td>The Cooperative League of the United States of America</td>
</tr>
<tr>
<td>CRS</td>
<td>Catholic Relief Services</td>
</tr>
<tr>
<td>C-SAFE</td>
<td>Consortium for Southern Africa Food Emergency</td>
</tr>
<tr>
<td>FANRPAN</td>
<td>Food Agriculture and Natural Resources Policy Analysis Network</td>
</tr>
<tr>
<td>FSP</td>
<td>Food Security Program</td>
</tr>
<tr>
<td>IDE</td>
<td>International Development Enterprises</td>
</tr>
<tr>
<td>OFDA</td>
<td>Office of Foreign Disaster Assistance</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Governmental Organization</td>
</tr>
<tr>
<td>TLC</td>
<td>Total Land Care</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WSU</td>
<td>Washington State University</td>
</tr>
<tr>
<td>WV</td>
<td>World Vision</td>
</tr>
</tbody>
</table>
Acknowledgements

I wish to thank Mwalimu Simfukwe, Hyde Haantube, and Masie Nawiko for their assistance and insights during the field work visit to Zambia. I am also grateful to all those who patiently responded to my questions; their names are listed near the end of this report. I thank Mr. Emmanuel Ngulube for his useful insights and comments. Nevertheless, I remain responsible for the contents of this report.
This report was prepared as part of a program commissioned from FANRPAN by the U.S. Agency for International Development’s Office of Foreign Disaster Assistance (USAID/OFDA) in Pretoria, South Africa to assess a treadle pump irrigation program it sponsored in Zambia from April 2003 to June 2004. An additional treadle pump program funded from December 2005 through August 2006 is also included. OFDA seeks to examine the effectiveness and sustainability of its program(s) relative to other approaches, identify areas of strength and potential improvement, and obtain recommendations for replicating the approach in southern Africa or beyond.

The report is based on interviews and conversations conducted with various project stakeholders and participants in Zambia during the first two weeks of September 2007 as well as a review of available relevant documents. Individuals involved in, or with knowledge of the projects made themselves available for a series of conversations and email follow up. Questions and lines of inquiry were base upon evaluation questions provided in the USAID scope of work for this project. This report on OFDA funded treadle pumps in Zambia responds to a number of those questions while the remainder are addressed by a companion quantitative assessment (Simfukwe et al., 2008).

A brief introduction is followed by accounts of project implementation and achievements as assessed by: 1) the Cooperative League of the U.S.A. (CLUSA) and Washington State University in their final report to USAID from late 2004; and 2) CARE in its final report to USAID/OFDA in 2006. These assessments are followed by findings generated during field research for this report. These findings are based on interviews and conversations with various stakeholders with experience with treadle pumps in the region. The report ends with conclusions and recommendations.

I. Introduction

CLUSA and Washington State University (WSU) received OFDA funding to implement a small-scale irrigation program in the Southern Province of Zambia over the 2003 dry season. The overall goal of the program was to improve short and long-term food security and nutrition amongst vulnerable households in the target areas. This program became known as the Food Security Program (FSP). The original program was scheduled for May 2003 through March 2004 and a three month no-cost extension was given through June of that year.

CLUSA had previous experience in agricultural development and familiarity with the project area. It partnered with a local NGO, Total Land Care (TLC) and International Development Enterprises (IDE), and used their combined expertise to identify and select prospective participants in the target area, train them in aspects of treadle pump irrigated crop production; distribute treadle pumps and other crop inputs; monitor ongoing activities and provide follow up. Their year-long efforts reached over 300 beneficiary households.

In response to severe nation-wide drought-induced food insecurity in 2000/2001, the government of Zambia led a collaborative effort to create an emergency livelihood recovery and nutrition program. This collaborative effort led to the development of

---

1 See Annex A for a list of individuals consulted in Zambia
2 See Annex B for USAID Scope of work questions and issues of interest for Zambia Treadle Pump study.
the Consortium for Southern Africa Food Emergency (C-SAFE). C-SAFE sought to improve nutrition in targeted households and communities while maintaining or improving their asset base for longer term livelihood security. The main consortium brought together a number of NGOs involved in livelihood development and/or nutrition activities; these were CARE, World Vision (WV), Catholic Relief Services (CRS) and Adventist Development and Relief Agency (ADRA).

In response to drought-induced food shortages in 2005, the government of Zambia declared a national food emergency in October of that year. OFDA used this as a trigger to contribute approximately $1 million to C-SAFE, mainly for water harvesting, nutrition and livestock activities. C-SAFE undertook these activities in collaboration with Land O Lakes, IDE, CLUSA, and other stakeholders. Under CARE’s leadership of the initiative, CLUSA and IDE delivered over 300 treadle pumps within the target area from December 2005 through August 2006. In line with C-SAFE’s membership and expertise, their efforts targeted households and communities with malnourished children, women, chronically ill persons, and orphans and vulnerable children.

Quantitative impact assessment of the CLUSA FSP program in Zambia has been done by a survey data team since this report was prepared (Simfukwe et al., 2008).

II. CLUSA/TLC/IDE Food Security Program

The following project objectives, expected results and outputs are based upon a late 2004 final report submitted to USAID by CLUSA/WSU. The objective of the FSP was to increase adoption of small-scale irrigation practices by food insecure households in select areas of the Southern Province of Zambia. This objective was to be achieved by:

- supporting 300 households grouped in irrigation clubs of 10-15 members each, to produce irrigated maize and vegetables on 45 ha (0.15 ha/household) of land during the 2003 dry-season.
- establishing a revolving fund for each irrigation club for pump maintenance or future investments.

Following a baseline needs assessment and farmer identification, CLUSA used OFDA funds to secure treadle pumps from IDE on behalf of farmers who were expected to ‘repay’ a subsidized cost into a revolving fund for future activities. Selection criteria for farmers included having sufficient water available for group use and commitment to participation in group activities—judged at least in part by willingness to contribute a ‘down payment’ to the group.

CLUSA facilitated farmer group formation and treadle pumps were given to each individual on behalf of the group, usually around a common water source. While the loan for the treadle pumps and accompanying production inputs (fertilizer and seed) were a group responsibility, each individual was responsible for repaying a portion. Defaulters had to return their pump for re-allocation to another household. Produce from treadle pump production was first used to meet home consumption needs with the remainder being marketed. With weak or limited existing market linkages, CLUSA found itself filling that role as well, often buying farmers’ produce and delivering it to distant markets for sale.
CLUŞA’s field activities centred on transferring skills and technology to participants. A total of 325 farmers (39% female heads of household) participated in 25 groups across five districts: Mazabuka; Gwembe; Monze; Namwala; and Choma. Farmer training, reinforced by accompanying printed materials, included:

- treadle pump use and maintenance, irrigation plot layout, improved vegetable nursery practices, irrigated horticultural crop management and composting
- group formation and function
- financial record keeping for management of revolving funds.

Treadle pumps, accessories and crop input packs (seeds and fertilizer) were issued to participants on credit which was paid back into a revolving fund for use by the group. The rationale behind this was to provide resources for irrigation inputs beyond the life of the program. Upon repayment of the loan, groups used their accounts as revolving savings and loan funds. CLUSA reports show 100% repayment by all groups by August 2004. When individuals defaulted on their part of the loan, they were removed from the group and replaced by someone who could pay. The pumps were highly subsidized, i.e., the payments covered only about a quarter of the total cost of the pumps ($220).

CLUŞA/TLC/IDE attributed total repayment to the following factors:

- low loan total due to subsidization
- treadle pump and accessories named as collateral for repossession in case of default
- relatively quick accumulation of capital from sale of irrigated crops
- strong peer pressure from the group
- early repayment generated a bonus payment to the group’s revolving fund.

CLUŞA set a target of 45 hectares under treadle pump irrigation during the 2003 dry season. This goal was not met with just over 20 hectares actually planted. Failure to meet the target was attributed to:

- delays in pump distribution prevented seeding a first crop during the cool dry season
- most farmers had insufficient fenced-in areas, the expansion of which caused some delay
- water scarcity in October/November 2003 restricted cropping.

### III. Findings: CLUSA/TLC/IDE Food Security Program

The following findings and lessons learned are derived from stakeholder interviews in Zambia in September, 2007 and the 2004 CLUSA/WSU/TLC final report to USAID.

**Targeting**

Community and participant selection for this project did not always assess availability of adequate water supplies to support agricultural activities. Therefore some families and communities could not take full advantage of the technologies they received from the program. Other participants lacked crucial resources such as fencing to protect crops—the installation of which delayed production activities.
No mention was made in project documentation of gender or particularly targeting women as recipients and beneficiaries of the technology. While certain technological issues mentioned below suggest that women did use the technology, they were not explicitly mentioned as target populations although they bear significant responsibility for food provision within the household.

**Technology**
The appropriateness and quality of treadle pumps distributed under this project were frequently mentioned by those interviewed for this research. IDE distributed at least three different makes of pumps, including some produced locally, which were not of uniform quality. In some cases, locally made models were hand-forged meaning that spare parts had to be made specifically for each machine, increasing cost and delivery time.

A number of treadle pump recipients said that operating the pumps was too laborious for anyone other than able-bodied adult men and even then pumps did not always deliver adequate water. This has reportedly caused some farmers to leave the pumps packed up in their homes. Certain makes of pumps were considered high enough off the ground as to be culturally inappropriate for women to use. In importing pumps for distribution rather than procuring those available locally, IDE took business from local dealers. However it was noted that imported pumps had advantages including lower cost and more consistent quality.

Respondents from implementing partners suggested that technology (like treadle pumps) on its own is often insufficient to help individuals significantly improve their livelihoods. They felt that the credit-based extension package coupled with intensive training and supervision linked to establishment of farmer-managed revolving funds was very successful in this project.

**Communication and Training**
Staff from one of the implementing partners suggested there had been insufficient understanding of project goals and objectives at more than one level within the project. They highlighted issues such as the role of local authorities in project implementation and the role of starter packs as a once off to generate funds as points of confusion or contention among partners and participants.

Technical training for farmers targeted for treadle pump irrigated production was crucial. The technology alone was deemed insufficient for improving livelihoods and it was necessary to pair it with in-depth, repeated training in best practices. Emphasis was put on practical training in operating and maintaining the technology—given to all users, not just a few within a group.

Respondents suggested that business skills training for groups was crucial to keeping groups solvent and technologies in the hands of the users. This included refresher training in record keeping and reiterating the policy of timely payment or punishment to members.

**Sustainability**
One respondent questioned the sustainability of several aspects of the project from the outset. The technology was not seen as durable and replacement parts or upgrades
were not readily available. Linkages between farmers and input and output markets were not in place at implementation and were therefore created and maintained in the short term by CLUSA. CLUSA provided inputs and markets for outputs which left the farmers without those linkages when the project cycle ended thereby negatively influencing sustainability of the project.

**Measures of success**

According to the CLUSA final report accessed for this report (CLUSA and WSU 2004), the legacy of the program was “a skilled, experienced and well-resourced group of more than 300 irrigation farmers in Southern Province who are richer and better fed than at the start of the program”. This indicates not only that farmers received training but that their assets base was positively impacted as well.

**IV. C-SAFE IDE/CLUSA**

Declaration of a national food emergency in Zambia in October 2005 prompted release of $1 million and from OFDA. USAID/OFDA’s response to the food crisis was devoted to on-going development activities under the C-SAFE umbrella, and money went toward activities that fit within on-going C-SAFE initiatives. Given the C-SAFE consortium’s capacity, resources, partner network, infrastructure and existing programs, they were well placed to devote these resources to existing programs.

In the Final Report to USAID/OFDA submitted after 31 August, 2006 (CARE 2006), CARE (as lead partner in the C-SAFE consortium) identified two objectives toward which OFDA monies were devoted: 1) Vulnerable households in targeted districts have diversified livelihoods and increased asset base; and 2) Nutrition monitoring under C-SAFE expanded to a wider (more districts) and deeper (more communities) extent. The first objective is relevant to this assessment and was divided into: 1) conservation farming techniques; 2) rehabilitation of a livestock dip tank; 3) **water availability and utilization**; and 4) dairy development.

Water availability and utilization activities included a number of related activities: community water availability assessment, beneficiary (household) water availability assessment and utilization; introduction of micro-irrigation technologies (treadle pumps and drip kits); household vegetable gardens; and vegetable processing, preservation and marketing. These activities were undertaken step by step to identify vulnerable populations and target them for livelihood diversification and improving their assets base.

Consortium members undertook multiple scale water assessments to identify areas with potential for irrigated vegetable production activities. Preferred sites had water available for a minimum of 6 to 8 months each year and a number of water sources were developed or rehabilitated to help meet these criteria. Following identification of suitable areas, participants were selected—in consultation with local committees. Once qualified participants were located, identified, and matched with the appropriate technology for their ecological conditions, they were trained in field layout, land preparation, micro irrigation technology (drip kits or treadle pump operation) installation and operation, and crop husbandry.
The goals for the irrigated agriculture component included first supplying household food needs, then generating a surplus for sale locally. Lead farmers, those already close to household food security, were used to train less productive farmers and were expected to sell their surplus outside the community; and all users were expected to be able to use the technology well.

Micro-irrigation technologies were introduced to 530 households within three target districts. The following table shows distribution of each technology within each district.

<table>
<thead>
<tr>
<th>District</th>
<th>Treadle Pumps</th>
<th>10m X 10m Drip Kits</th>
<th>20m X 10m Drip Kits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choma</td>
<td>101</td>
<td>54</td>
<td>36</td>
</tr>
<tr>
<td>Kazungula</td>
<td>125</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Kalomo</td>
<td>100</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>326</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

Source: CARE 2006.

CLUSA and IDE were brought in for technical training and backstopping in irrigated agricultural production based on their technical expertise and local knowledge. CLUSA was responsible for all horticultural related training and IDE trained users in treadle pump set up, operation and maintenance. According to CARE’s report, nearly 60% of those trained were women.

IDE, using OFDA funds, provided treadle pumps to groups on credit, the balance of which farmers paid into a revolving fund for their future use. Three hundred and twenty six (326) treadle pumps and over 200 drip kits were given out in the project area. The technological packages (treadle pumps, drip kits and unspecified seed starter packs) were accompanied by training in vegetable crop production, crop selection, irrigation agronomy, soil fertility/crop nutrient requirements, and pest and disease control.

A series of unforeseen delays with funding, contracting and procurement made getting funds to the right place at the right time a challenge for the responsible USAID Zambia unit. However, given the size and scope of the consortium, ‘bridging funds’ were occasionally lent from one partner to another, to keep activities moving smoothly and in sequence.

V. Findings: C-SAFE IDE/CLUSA

Implementation of the 2005/2006 OFDA-funded treadle pump project was bolted onto ongoing water management and nutrition assessment activities in the area, under the direction of CARE. It had previously assessed local water sources for suitability for irrigated agriculture including the type of source and the quantity and duration of water availability. This assessment fed into beneficiary identification as well as which types of technologies (treadle pumps and drip kits) are most appropriate under which settings.

The following findings and lessons learned are derived from stakeholder interviews in Zambia in September, 2007 and the 2006 CARE report to USAID.
Administration

Needing coordination between the chief technical officer at USAID in Washington DC, the OFDA representative in Pretoria and the Strategic Objective team in Lusaka, synchronizing activities and reporting proved difficult and cumbersome. The USAID mission in Lusaka was well aware of C-SAFE and OFDA activities and invested effort in their success.

With the key partners fully engaged, there remained lags and delays in contracting and procurement procedures which jeopardized the sequencing of certain activities. These constraints were overcome due to the existing C-SAFE network and relationships, but could otherwise have put timely implementation at risk.

Targeting

By building on C-SAFE’s on-going activities, implementing partners were able to target vulnerable households for livelihood support and asset strengthening. Technologies were delivered based upon an agro-ecological assessment at the community level. This allowed CLUSA to distribute drip kits to those households with difficulty accessing irrigation water, while IDE distributed treadle pumps to those with adequate water to benefit from them.

Productive use of treadle pumps distributed to groups is less sustainable than those issued to individuals. To paraphrase one participant, pumps given to everyone belong to no one. Even with group training, constitutions and by-laws, there is little central authority to oversee or enforce scheduling, maintenance, or upgrades. Groups formed for the purpose of treadle pump distribution tended not to persist, while pre-existing groups who were given a treadle pump to enhance their activities fared better.

While 60% of trainees were reportedly women, that does not mean they were the majority of recipients of the technology or that they necessarily benefitted significantly. Apparently no specific attempt was made to target women either as heads of households or as members of households formally headed by men.

Implementation

Given the existing C-SAFE network at the field level, community level activities in this project were well started. Once funding and procurement delays were resolved, local level activities had a strong start due to the community leadership and capacity that had previously been identified.

From the point of view of the implementing partners, C-SAFE provided a model network of partners with administrative, financial, technical and human capacity for implementing multi-faceted relief to recovery programs. Its range of assets and levels of interaction—from state to local—facilitated assessment, identification and implementation of successful projects. These advantages were particularly important given the short term nature of the intervention and need for in depth local awareness.

VI. Conclusions and Recommendations

The following conclusions and associated recommendations summarize the major findings of this research.
1) **USAID/Zambia relationship to the project**

- The USAID Mission’s involvement with C-SAFE prior to the 2005/6 food emergency facilitated the linkages and pathway for OFDA’s contribution to the project. Mission staff members were aware of and involved in on-going consortium activities and were able to help direct OFDA funds to those well-placed for implementation and dispersal. Due to this, OFDA funds were linked to on-going activities designed to move populations toward recovery once their immediate food needs had been met.

- The nature of contracting and dispersement procedures compounded delays in implementation caused by flooding in the project area. Procurement delays were mainly mitigated by C-SAFE partners and USAID extended the initial period of implementation to counter flood effects. In an agricultural project where getting seeds and water in the ground on time is a major determinant of success, this sort of delay contributes to poor results.

**Recommendation**

Wherever possible, relief activities should be bolted on to existing collaborative programs or initiatives to take advantage of frameworks for administration, assessment, implementation and follow up. The C-SAFE example can serve as a model for this type of arrangement and should be fostered. An additional advantage to this type of arrangement is the possibility of altering standard contracting and procurement procedures for long term partners with known capacity to deliver in a timely manner.

2) **Sustainability**

Questions of durability of some treadle pumps distributed by IDE notwithstanding, OFDA-funded small-scale irrigation activities discussed in this study will likely be sustainable. CLUSA and IDE incorporated a number of lessons learned from the first OFDA-funded project (durability of the technology, working within a network, emphasis on training, importance of market linkages) into the second project. When nested within the C-SAFE nutrition and water harvesting framework, these activities are more likely to continue without additional external support.

Improved treadle pumps are currently being designed by IDE and newer generation pumps are becoming increasingly available in Zambia. These pumps are expected to be more durable and easily repaired, more user friendly to women, and less expensive than previous models. New marketing arrangements are also being explored that promote local retailers supplying treadle pumps to farmers who purchase them on a cash and voucher system. Local repair and replacement services are being promoted as well. These efforts are commended and should be supported by donors investing in technology dissemination. Increasing production, over and above consumption levels, without corresponding markets for ready uptake serves to frustrate farmers and damages the credibility of implementers.

---

3 IDE has recently received a $13.4 million grant from the Bill and Melinda Gates Foundation to sponsor research and development on a range of low-cost irrigation technologies and markets in Asia and Africa, including Zambia (www.ideorg.org/news/gates_grant.php).

4 Nevertheless, casual inquiries and observations around Mfuwe, an area with large dambos and therefore considerable groundwater where people are growing vegetables, revealed no one even heard of treadle pumps (Doug Merrey, personal observation, November 2007).
**Recommendation**

Although short term in nature, relief programs should strive to take advantage of lessons learned from previous experiences. OFDA would benefit from a conduit for local or national intelligence in terms of evolving technologies, emerging partnerships and profitable ventures should be fostered and maintained so that it is available in the event of a food security or humanitarian crisis. Continued attention must be given to linking farmers to both input and output markets so they continue to have reasonable access to inputs and opportunities for income generation once a project cycle has ended.

3) **Matching technologies and beneficiaries**

Group extension has been a popular method for disseminating technology for decades. While it may be an efficient way to aggregate assessment, training, implementation, monitoring and follow up activities, it may not be a locally acceptable mode of production. Communities may willingly accept group activities at a donor’s behest only to revert to prior arrangements once the donor has departed. Or similarly, group cohesion may never reach a point envisioned during planning, jeopardizing realization of benefits and/or sustainability of activities.

The potential of resource-dependent technologies—such as treadle pumps and water—is best exploited by those communities and individuals with adequate resources. In the event these resources are scarce, their development may be a viable first step from relief to recovery.

**Recommendation**

Local socio-cultural norms should be assessed to help determine whether or not a particular technology fits within locally acceptable livelihood systems and if so, who participates and how. This includes examining and understanding local issues such of land tenure, water rights, gender roles and relations, and household division of labour. Issues such as nutrition, specialty crops or organic production should only be added once a functioning system exists, and not added to the activities associated with start up and implementation.

4) **Implementation**

Successful development programs depend upon strong linkages among various levels of decision making and responsibility all along the chain. While C-SAFE provided a robust network at higher levels of planning and procurement, consensus on objectives, roles and goals was less pronounced closer to the ground. This is particularly important at the point of interface between communities/participants and implementing partners.

**Recommendation**

Relief project planning should emphasize communication of and consensus about objectives, roles, goals, responsibilities and expectations between and among project staff and participants. Linkages across levels of donor organizations, implementing partners, and communities of technology users need attention from representatives of each group. Throughout the process, frequent communication and interaction between implementing partners and groups of recipients are recommended to keep activities and decision making transparent, fuelling local buy in.
In summary, treadle pump technology has the potential to improve the livelihoods of rural populations under relief conditions. However it is not a panacea and careful assessment must be done to identify which audiences will benefit from the technology, and under which conditions. Attention must also be paid to longer term (longer than one or two growing seasons) impact on water sources and ecosystems with the promotion of treadle pump irrigation.

VII. Factors for success and major constraints

Factors for success
1. Bolt relief efforts onto on-going activities of trusted partners; use existing networks, expertise and reach to help get the right technology to the right people at the right time.
2. Collaboration with on-going activities will help meet local preconditions for success and sustainability such as adequate natural and human resource availability.
3. Up-to-date intelligence on best practices and best available technologies for vulnerable populations and environments. Invest in technologies that are most likely to work with an eye toward longer term—recovery—activities when immediate needs have been met.
4. Targeting: be as specific as possible about which needs of which audiences are being addressed. High levels of diversity exist within communities and adoption by one segment does not guarantee adoption or benefit by all.
5. Target women specifically; do not assume that training and disseminating technologies to men is adequate for reaching women. Further, do not assume it is sufficient to target women-headed households: even in households with male members, targeting women may offer the best opportunity for achieving improved child nutrition and household well-being.
6. Work within local norms in terms of individual versus group access to technologies; land tenure; water rights, gendered division of labour, etc.

Major constraints
1. Absolute potential of technologies (treadle pumps, drip kits, etc.) will likely not be recognized or achieved under relief conditions. They are developed under optimal conditions and are rarely utilized in similar environments under relief conditions.
2. Diversity of resources (natural, human, educational, financial, etc.) exists even within seemingly homogenous communities. Therefore, wide dissemination of a specific technology will not benefit all recipients equally. Those left behind are often those most in need of help and those best able to adopt the technology may not need it as much as others.
3. The poorest of the poor are difficult to reach, and they often have little or no time to invest in new activities regardless of how beneficial they might be. They are also often outside the mainstream community and not included in vulnerability assessments or existing community networks.
4. Technical training, monitoring and follow-up are crucial to farmers’ adoption and adaptation of technologies, yet these steps are difficult to realize within the framework of short term relief efforts.
5. There is a basic contradiction between short term relief activities and building capacity of rural populations to withstand periodic shocks.
Documents Consulted


ANNEX A

Individuals Consulted in Zambia

Mr. Mwalimu Simfukwe, University of Zambia
Mr. Masiye Nawiko, Agricultural Consultative Forum (ACF)
Dr. Hyde Hantuba, ACF
Mr. Carl Henn, USAID Zambia
Mr. Emmanuel Ngulube, USAID Zambia
Mr. Mike Field, CLUSA/PROFIT
Mr. Ruben Banda, CLUSA/PROFIT
Mr. Joshua Munkombwe, CLUSA/PROFIT
Mr. Wayne Nightingale, CARE Zambia
Ms. Helen Khunga, CARE Zambia
Mr. Keith Henderson, IDE Zambia
Mr. Kenneth Chelemu, IDE Zambia
Mr. Dick Nsiame, Small Holder Enterprise and Marketing Program
ANNEX B

Evaluation Questions from the USAID Scope of Work

The evaluation will address the following series of questions.

Specific to the Zambia Treadle Pump Program

• Have there been any problems in the design or implementation of treadle pump activities?
• What are the major constraints to using treadle pumps, and how were they overcome in Zimbabwe?
• What was the frequency and extent of technical assistance and extension provided by the implementing partner after provision of the drip irrigation systems?
• What did farmers see as the major benefits to the system, and what were their most serious disappointments?
• Did farmers who were not part of the initial target group eventually find ways to adopt the technology, or is dissemination of the system dependent on NGO inputs?
• Have any small businesses/enterprises sprung up to provide alternate sources of equipment or maintenance for treadle pump systems?
• Are there any instances where treadle pump activities did not pay dividends as expected?
• How has the operation of the treadle pump systems been affected by the availability, access and cost of other agricultural inputs--from seeds, fertilizer, and water, to loans and labor?
• For households that received drip irrigation systems and training in 2003-2004, are they still using the systems? If not why not?

For Both Programs

• How were beneficiary households selected to receive these systems? What criteria were used to determine whether the small-scale irrigation systems would be appropriate?
• Were the effects on crop productivity, and family economic/food security vulnerability as expected? To what extent?
• Are the “Lead Farmers” and/or early adopters which were trained to promote the technology post-program to other farmers still actively doing so? If not, why? In addition to small-scale irrigation, what are they promoting in their communities, based on the training they received?
• What are the most significant outcomes and impacts of each program? Did food production at the household level increase or decrease? Did cash to buy food and other items increase at the household level due to these interventions?
• What impact did rainfall (as opposed to the drip kit or treadle pump) have on food production levels? On available water sources to support these small-scale irrigation systems?
• Were there any negative impacts on water availability or issues around water use?
• What was the average plot size put under irrigation using the systems provided? What constraints prevented these plot sizes from being increased/expanded?
• Where cost recovery was part of the program, how long did it take participants to repay the cost of the system? Where cost recovery was not a feature, how long did it take participants to generate income equal to the cost of the system?
• Will the effects of OFDA-funded small-scale irrigation activities be sustainable without continued external financial input? What factors contribute to this possible sustainability?
• What additional inputs are important for these programs to work? What might contribute to further success?
• In what ways were OFDA-supported food security activities coordinated with the USAID Mission in Zimbabwe/Zambia?
• How many farmers expanded their areas with money earned from initial input through purchase of more kits?
• How many of the farmers diversified after the initial seed issuance? What were the key factors leading to diversification?
• What groundwork would need to be laid prior to introducing this technology to other areas of the world, especially given limited funding resources?