Response to

The Clear Fund Round 1
Cause 1 & 2

Mozambique
Massinga Water Catchment Scale-up

Application Submitted by
International Relief and Development, Inc.

Technical Application
August 3, 2007

Executive Summary

International Relief and Development, Inc (IRD) is requesting $24,991 to support an existing project in Massinga, Mozambique. IRD proposes a strategy that integrates solutions and sustainability for communities who are currently beneficiaries of the water and sanitation catchment project.

Organizational Capacity

IRD is a USAID-registered private voluntary organization. IRD has extensive experience in designing, implementing and evaluating multi-disciplinary development and relief activities, focusing on six core areas: health, food security, infrastructure, civil society, economic development, and relief. IRD's overall mission is "*to reduce the suffering of the world's most vulnerable groups and provide the tools and resources needed to increase their self-sufficiency*". IRD is working in collaboration with a wide range of organizations in the design and implementation of humanitarian relief and development aid programs. These include U.S. and foreign government agencies, bilateral and international donor organizations, international finance organizations, faith-based organizations, international and local NGOs and U.S. corporations.

IRD provides $256 million to programs in Europe and Eurasia, Asia, Africa, Latin America, the Middle East and the United States. In Africa, specifically, IRD is present in Cameroon, Chad, Ghana, Kenya, Mozambique, Niger, and Sudan, where programs aim to enable communities to be self sufficient and avoid death. IRD currently has over 2,000 full-time staff worldwide and a large number of local and international subcontractors implementing a variety of activities on the ground. IRD has been using local subcontractors in the areas of service delivery, commodity distribution, training, construction and technical assistance. IRD is proud of its local and international expert staff and its relationships with its partners, and views this collaboration as critical in achieving program objectives.

With funds from USAID, Canadian International Development Agency, Mozambique's National AIDS Council, United Nation's World Food Program and private donors, IRD has implemented programs in Mozambique since 2004. IRD Mozambique has a central office in Maputo and five field offices: two in Inhambane province, two in Zambezia province, and one Sofala Province. The central office maintains a skeletal staff to support field operations with the majority of IRD staff based in field offices. IRD Mozambique has a total of 83 employees of which 80 are nationals.

Background

Since independence, Mozambique has been marked by long periods of drought, years of armed conflict and the stagnation of the national economy. Although the end of armed conflict and economic restructuring contributed to fast growth, the rural areas of Southern Mozambique have remained extremely vulnerable to droughts.

Table 1. People in need of food aid due to droughts in Mozambique

Year	People in need of food aid
2002	590,000 people
2003	659,000 people
2004	108,000 people
2005	801,000 people

Source: VAC (Technical Secretariat for Food Security and Nutrition - SETSAN)

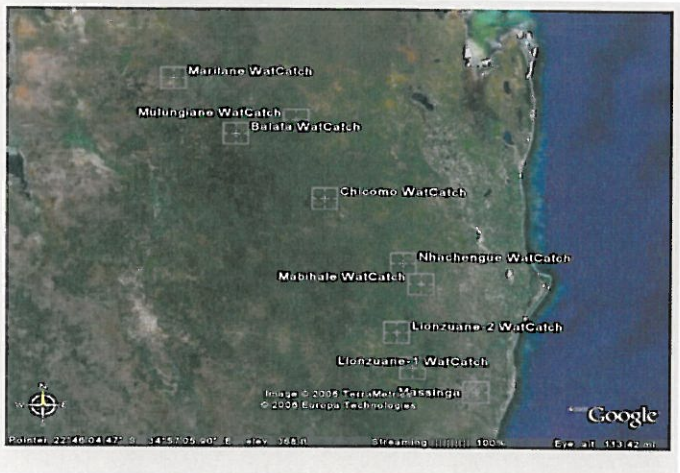
In recent years, the timing of severe droughts in Southern Mozambique has become more frequent, turning food aid into an annual phenomenon (July-March) an added stress to water resources (Table 1).

Map 1: Massinga, Mozambique

Limited water resources force women to walk long distances in order to collect water and as a result limit time for agricultural activities. In addition, limited water resources limit livestock and yield poor rain fed agriculture. Instead of one time distributions of food, IRD began a program in 2005 that aimed to break the cycle of dependency on food aid. Through increased water availability for human and animal consumption, the program focuses in the interior of Massinga district in Inhambane province (Map 1) which is one of the worst affected areas of the country. Program activities apply water harvesting techniques in the construction of large reservoir water catchments and surface runoff /roof-top water.

The roof top water harvesting systems results are impressive, with the President of the Republic of Mozambique announcing the water catchments as the recommended infrastructure for drought mitigation activities nation wide. IRD established 8 large water catchments in Massinga. Water catchments were excavated by members of the local communities, under a *Food for Assets* activity in partnership with the World Food Program. This activity has maximized ownership and enabled communities to continue to provide labor for the maintenance of the catchments.

Each one of the catchments is a 100x130x6.5ft open air reservoir, fed by small earth dams that divert the flow of runoff water during rainfall into the reservoir. Catchments were completed between December 2006 and July 2007. Collected water is successfully being used for human and animal consumption. For human consumption, sand filters were established next to the catchments and treadle[1] pumps were used for feeding water



Map 2: IRD Water Catchment sites

[1] A human-powered pump designed to lift water from a depth of 7 meters or less. It is a lever device pressed by the foot to drive a pump. The treadle pump needs no fossil fuel and costs less to operate than a motorized pump. It can lift five to 7 cubic meters of water per hour from wells. In some areas, the treadle pump can greatly increase the income that farmers generate from their land, both by extending the traditional growing season and by expanding the types of crops that can be cultivated.

into the filters.

Results are encouraging; collected water sufficiently served approximately 3,000 people per catchment until the last week of July. Given that the drought lasts from April until September every year, the catchments provide 4 months of water self-sufficiency. However, through the life of the project, the following challenges were identified:

- The population preferred to collect water directly from the catchments rather than pumping it into the sand filter, and
- A large percentage of water reduction was attributed to evaporation.

Through the proposed program IRD plans to overcome these challenges and establish the appropriate infrastructure to reduce water evaporation.

Goal

The goal of the proposed program is to expand the current program efforts of providing clean water to 24,000 people year-long in the interior of Massinga district.

Methodologies

In response to evaporation, the creation of **vegetation shade** will significantly decrease the amount of collected water lost during the period April-September. For the creation of shade, wires will be placed above the water collection area creating a web. Local varieties of ivies will be grown on top of the wired matrix covering the catchment area.

The creation of shade will serve dually as a **malaria management measure,** reducing the hazard of malaria in the water catchment areas. Malaria vectors, such as An. gambiae and An. funestus, prefer sunny conditions for larval development[2]. In order to improve the utilization of the collected water, IRD will position hygiene activists in each one of the catchments sites. An IRD hygiene trainer will train hygiene activists on Participatory Hygiene and Sanitation Transformation (PHAST)[3] methodology and will continue to create awareness among the target population. For 3 months Hygiene Activists will be responsible for educating community members that collect water from the catchments and promoting use of the water filters.

The initial installation of pedestrial pumps had limited acceptance from the local communities, as they are considered labor intensive. IRD will replace existing pedestrial pumps by a combination of **pull and push rope pumps**. Rope pumps are easier to use and have greater acceptability in the communities. IRD is currently installing rope pumps in Zambezia province where an IRD water engineer participated in a successful national efficiency evaluation. Rope pumps are suitable for remote locations such as those where the catchments are located. If the pump malfunctions/breaks, rope is fairly easy to obtain and affordable for communities to purchase. Simple and reliable maintenance will ensure communities avoid reverting to collecting water directly from the catchments, thus ensuring a sustainable structure for their livelihoods.

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[2] Rafatjah HA. 1988. Malaria vector control: environmental management. Pp. 1135–1172. In Malaria: Principles and practices of malariology. Wernsdorfer WH & McGregor I, eds. Churchill Livingstone, Edinburgh, UK

[3] Is an innovative approach to promoting hygiene, sanitation and community management of water and sanitation facilities. It is an adaptation of the SARAR 1 methodology of participatory learning, which builds people's innate ability to address and resolve their own problems.

The simple design, feasibility, affordability and community capacity make this a replicable model. The program can be replicated in communities not only throughout Mozambique, but in countries across Africa. As a contextually adaptable and flexible approach, this program will retain its cost effectiveness and scalability.

Implementation Plan

During the first 3 months of the program, an IRD engineer will supervise the production of the rope pumps and will install them in the water catchments. Concurrently, an IRD agriculture engineer will arrange the wire frame on top of the catchments, selecting and planting local varieties of ivies at the perimeter of the catchments. By the end of 3 months, the rope pumps will be installed and the ivy will begin to fill in the wire frame.

During month 3, an IRD hygiene trainer will select, together with local leaders, 8 activists from the communities living at the proximity of the catchments. At the beginning of month 4, the IRD hygiene trainer will provide a training of trainers for the 8 hygiene activists. For the first 6 months of the program, the IRD hygiene activists will disseminate hygiene messages in their respective communities. All costs for activities are detailed in the attached budget.

Monitoring and Evaluation

IRD is well equipped for monitoring and evaluating the proposed program. IRD has been implementing Water and Sanitation programs in Mozambique since 2004 using the PHAST methodology in over 50 communities in the Provinces of Gaza, Inhambane and Zambezia. PHAST aims to empower communities to gain ownership by managing their water and to control sanitation-related diseases. As well it promotes *health awareness and understanding* which lead to environmental and behavioral improvements. PHAST uses methods that stimulate the participation of women, men and children in the development process. It relies on training and development of graphic tool kits that are modified and contextually adapted to communities in a particular area.

Each hygiene activist will be required to fill in weekly reports in order to track program progress. Weekly reports will not only control the work performed by the activist but track behavior changes with regards to filter use and water levels in the catchments. Reports will be collected by the water engineer on a weekly basis and be used to make any necessary adjustments to the program.


TANZANIA
ZAMBIA
MALAWI
ZIMBABWE
SOUTH AFRICA
SWAZI-LAND
SOUTH AFRICA
Mozambique Channel
Singa
Mocimboa do Rovuma
Palma
Mocimboa da Praia
Quissanga
Quirimbas Archipelago
Montepuez
PEMBA
Cóbuè
Maniamba
Reserva do Niassa
LICHINGA
Chassacazita
Dedza
Mandimba
CUAMBA
Nacala
NAMPULA
Zumbo
Songo
BLANTYRE
Magoe
Zobuè
TETE
Milange
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Pomene
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Massingir
Lindela
INHAMBANE
Chokwe
Quissico
Macia
XAI-XAI
Praia do Bilene
Ressano Garcia
MAPUTO

International Relief and Development, Inc.

Rope Pump Summary Budget for Massinga District

Line Items	Total Request
Personnel	**$1,275**
Fringe Benefits	**$255**
Program Costs	**$19,536**
Total Direct Costs	**$21,066**
Administrative Costs	**$3,925**
Total Budget	**$24,991**

International Relief and Development, Inc.

Rope Pump Detailed Budget for Massinga District

Line Items	Qty	Unit Cost	Unit	No. of Units	Base of Calculation	Total Request
Personnel						
National Staff						
Accountant	1	$850	Month	6	25%	$1,275
Subtotal National Staff						*$1,275*
Total Personnel						**$1,275**
Fringe Benefits						
Fringe Benefits						
National Staff		20.00%			Base Salary	$255
Subtotal Fringe Benefits						*$255*
Total Fringe Benefits						**$255**
Program Costs						
Materials						
Wire		$300	Wire	8	100%	$2,400
Rope Pumps		$1,000	Rope Pump	8	100%	$8,000
Subtotal Materials						*$10,400*
Transportation						
Truck Rental		$1,600	Trip	1	100%	$1,600
Subtotal Transportation						*$1,600*
Hygiene Training						
Hygiene Trainer	1	$850	Month	3	32%	$816
Hygiene Activists	8	$280	Month	3	100%	$6,720
Subtotal Hygiene Training						*$7,536*
Total Program Costs						**$19,536**
Total Direct Costs						**$21,066**
Administrative Costs					18.63%	**$3,925**
Total Budget						**$24,991**