# SUPPORT TO RELEIF OPERATIONS AND AGRICULTURAL INTERVENTIONS WITH AFFECTED VULNERABLE POPULATIONS (OSRO/RAF/206/NET)

## END OF PROJECT REPORT, APRIL – DECEMBER 2003


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**Sponsored by Food and Agriculture Organization**

***Implemented by TLC under a Letter of Agreement***
***(FAO PROJECT NO.OSRO/RAF/206/NET)***

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## 1.0 INTRODUCTION

The Food and Agriculture Organization (FAO) received a grant from the Dutch Government to fund a treadle pump irrigation initiative in Malawi during the 2003 dry season under the project entitled "Support to relief operations and agricultural interventions with affected vulnerable populations (OSRO/RAF/206/NET)". The project was a response to an appeal from Malawi Government following the declaration of a National Disaster by the State President as the food crisis had reached its peak in February 2002. FAO approached Total Landcare (TLC) Malawi, a locally-registered NGO for assistance in preparing and implementing a suitable irrigation project. TLC then signed a Letter of Agreement (LOA) with FAO Head Office in Rome in May 2003.

The Dutch grant totaled US$ 291,317 of which 75% (US$ 2I9,000) was designated for the purchase of irrigation equipment involving 1,800 treadle pumps. Total Landcare was supposed to receive US$ 30,000, of which US$ 15,000 was for contract – support to project implementation and the balance for farmer training and training materials. To-date, TLC has only received US$ 7,500. This has had serious implication for project management.

## 2.0 OBJECTIVES

The goal of the project was to increase food security, nutrition and income levels among smallholder farmers in the target areas. The objective was to increase the adoption of improved small-scale irrigation practices for production of high-value food and cash crops in selected districts of the country through the formation and support of village-level irrigation clubs.

To meet this objective, the following activities were identified for implementation:

- Establishment of 80 to 100 irrigation clubs in the targeted districts;
- Identification and selection of 1,800 rural farm-families responding to vulnerability criteria for assistance agreed upon by FAO and TLC;
- Training of staff and farmers;
- Distribution of 1,800 treadle pumps to selected beneficiaries.

## 3.0 IMPLEMENTATION APPROACH

The program was implemented through a partnership approach with organizations which were considered reputable and had ongoing irrigation programs. The terms of the partnership were clearly defined and agreed to under memoranda of understanding (MoU), which included the following:

- Available expertise and resources for training and extension to support the program.
- Use of a revolving fund credit scheme developed by TLC.
- Provision of a standard input pack to grow 0.1 ha of winter crops per farmer as follows:
    - Fertilizers: 5kg CAN, 5kg Compound D, 5kg Urea and 5kg 23:21:0:4
    - Seed: 1 kg maize and 4 types of vegetable seed

- 250 ml Malathion pesticide
- Hoe, screwdriver and rubber strip

- Provision of a set of tools to each club as follows:
  - 1 Shovel, 1 Pick axe, 1 Panga, 30m Tape measure, 15ltr Sprayer, 1 Ball of string and 1 Digging fork.
- Limit distribution of treadle pump packs to Malawi farmers only.
- Organization of farmer clubs each with an account with Malawi Rural Finance Company.
- Submission of quarterly reports covering number of beneficiaries, area cropped, loan repayments and general assessment of the program.

A total of five partners were involved in the program, including Total Landcare. These were: Catholic Relief Services – Catholic Development Commission of Malawi (CADECOM), GoM-EU Public Works Program – Food Security Component, COOPI/COSPE/MALEZA Consortium, CCAP Livingstonia Synod – Development Division and Christian Services Committee under the Churches Development Coordination Committee.

All pumps were given to farmers on loan payable over a period of 1 year. The price of the pump ranged from MK 5,000 to MK7000, with an additional MK 2,000 where a standard input pack was provided. Most pumps were given to individual households organized in clubs, except under Blantyre, Mangochi and Dedza CADECOM where in some cases one pump was given to more than one beneficiary. More than 100 clubs were formed with membership ranging from 5 to 15. In all cases, organizations established revolving funds, although the approach varied from club/community to organization managed.

## 4.0 RECEIPT OF TREADLE PUMP PACKS FROM SUPPLIERS

A total of 1,750 treadle pump packs and spare parts were received between April and May 2003 from Delt-Tech Engineering Company, which was the main supplier. An additional 50 pumps were received on May 30, 2003 from M&G Industries, a local manufacturing company which has managed to develop a prototype pump with steel base and treadles. All pump packs and spares were received in good condition. More details on this were covered in the mid-term report.

## 5.0 GEOGRAPHIC TARGETING AND BENEFICIARY IDENTIFICATION

The LoA gave guidelines how to select districts and beneficiaries for participation in the program. Based on these guidelines, water availability and presence of potential implementing partners in the field, the following districts were selected: Lilongwe, Dowa, Salima, Dedza, Ntcheu and Kasungu, (Central Region); Balaka, Machinga Mangochi, Zomba, Blantyre, Mwanza, Thyolo, Phalombe and Chikwawa (Southern Region), and Mzimba and Nkhata Bay (Northern Region). Final selection of sites and farmers in the targeted districts depended on the following factors:

- Significant potential for treadle pump irrigation in the area
- Formation of an irrigation club comprising farmers with a) keen interest in treadle pump irrigation, and b) available labor, land, water and financial resources

- A minimum down-payment of MK 1,000 per member, deposited into the MRFC account or any designated rural financing institution

**Table 1** gives number of pumps distributed per district. Results show that Lilongwe district benefited the highest number at 42% of all pumps received.

**Table 1: Pumps Distributed by District as of End December 2003**

| | Share of Pumps by Partner Organization | | | | | | Total Pumps | % |
|---|---|---|---|---|---|---|---|---|
| **District** | **TLC** | **PWP** | **COSPE** | **CRS** | **L-Synod** | **CSC** | **Distributed** | **Distribution** |
| Mzimba | 0 | 0 | 0 | 0 | 140 | 14 | **154** | **10%** |
| Nkhata Bay | 0 | 0 | 0 | 0 | 0 | 1 | **1** | **0%** |
| Kasungu | 42 | 0 | 0 | 0 | 37 | 0 | **79** | **5%** |
| Dowa | 175 | 0 | 72 | 0 | 0 | 7 | **254** | **16%** |
| Lilongwe | 160 | 472 | 43 | 0 | 0 | 0 | **675** | **42%** |
| Salima | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0%** |
| Dedza | 0 | 0 | 0 | 48 | 0 | 7 | **55** | **3%** |
| Ntcheu | 0 | 0 | 0 | 0 | 0 | 6 | **6** | **0%** |
| Balaka | 0 | 0 | 0 | 19 | 0 | 0 | **19** | **1%** |
| Machinga | 0 | 0 | 0 | 0 | 0 | 4 | **4** | **0%** |
| Mangochi | 0 | 0 | 0 | 20 | 0 | 0 | **20** | **1%** |
| Zomba | 0 | 0 | 0 | 30 | 0 | 5 | **35** | **2%** |
| Blantyre | 0 | 0 | 0 | 6 | 0 | 0 | **6** | **0%** |
| Mwanza | 0 | 0 | 0 | 55 | 0 | 0 | **55** | **3%** |
| Phalombe | 0 | 0 | 0 | 30 | 0 | 0 | **30** | **2%** |
| Mulanje | 0 | 0 | 0 | 0 | 0 | 5 | **5** | **0%** |
| Thyolo | 0 | 0 | 0 | 87 | 0 | 0 | **87** | **5%** |
| Chikwawa | 0 | 0 | 0 | 120 | 0 | 0 | **120** | **7%** |
| **Total** | **377** | **472** | **115** | **415** | **177** | **49** | **1605** | **100%** |

## 6.0 STAFF AND FARMER TRAINING

Two 3-day training courses in treadle pump irrigation were conducted for COOPI/COSPE/MALEZA Consortium and Christian Services Committee in May and August, respectively. A total of 53 frontline staff and club leaders were trained. The courses focused on:

- theory and field practice on treadle pump assembly, maintenance and use, plot layout and demarcation, crop husbandry practices, water management, extension approach, and agroforestry/composting practices.
- field visit to one of the successful irrigation sites at Buli, Lilongwe West.

After receiving training from TLC, each field staff was involved in training farmers in his/her respective impact area covering the same topics mentioned above. Training was open to all farmers, irrespective of whether they were club members or not.

In addition to these courses, TLC conducted on-site hands-on training of staff and farmers totaling 350 for Livingstonia Synod in response to concerns on poor irrigation management identified during the mid-term project evaluation.

## 7.0 INPUT PACK AND TOOLS FOR BENEFICIARIES

As explained in the mid-term report, for any micro-irrigation program to have the desired impacts, it is strongly recommended that crop/fertilizer inputs are provided as part of the whole package. Since the FAO grant did not have provision for this, the French Embassy was approached for support under its emergency program to provide seeds, fertilizers, pesticides and tools for the winter season. The Embassy responded positively and provided inputs to support 1,000 households.

## 8.0 DISTRIBUTION OF PUMPS TO BENEFICIARIES

**Table 2** shows number of pumps distributed to farmers as of the end December 2003. **Annex** gives a list of beneficiaries by organization and district. Out of a total of 1,800 pumps received from FAO, 1,605 were distributed, representing 89% of the total beneficiaries targeted. COOPI/COSPE/MALEZA Consortium had the lowest number of pumps distributed in relation to the number received, with PWP and TLC having distributed all pumps as of the end December 2003. However, PWP has to account for one beneficiary missing from the list. CSC had distributed 49 pumps by December 2003. One pump got damaged in transit to one of its impact sites in Machinga.

At a meeting held in January 2004 to discuss the conclusion of the project, several noteworthy issues were raised that adversely effected project implementation. These were:

- With regard to CRS, pumps were held too long at CADECOM headquarters although arrangements had been made to distribute these direct to Chikwawa CADECOM as per the MoU. It later turned out that the pumps were shared among all the seven CADECOMs, making coordination by TLC extremely difficult. Some of the CADECOMs received their share of pumps as late as December 2003.
- Although pumps were received in good time for the winter season, more time was needed to properly plan the program with the implementing partners in terms of site/partner selection, community sensitization, beneficiary identification, club formation and training.
- Although all implementing partners committed themselves to the program in terms of contributing their own funds for operation, it was realized that the program was too intensive to match the level of funds available. This had serious implications for the quality of supervision and overall project administration.
- The use of associations/cooperatives although most ideal for a normal development program, has proved problematic to implement this type of program. In most cases, members are spread all over the catchment area making sensitization and organization extremely difficult. More time in this case is therefore needed to reach out to more farmers.

**Table 5: Number of Pumps Distributed to Farmers as of End December, 2003**

| Partner organization | No. Pumps Received | No. Pumps Distributed to Farmers | Balance to be Distributed | % Achieved |
|---|---|---|---|---|
| Total Landcare | 377 | 377 | 0 | 100% |
| Public Works Program | 473 | 472 | 1 | 100% |
| Livingstonia Synod | 200 | 177 | 23 | 89% |
| Catholic Relief Services | 500 | 415 | 85 | 83% |
| COSPE/COOPI/MALEZA | 200 | 115 | 85 | 58% |
| Christian Services Committee | 50 | 49 | 1 | 98% |
| **Total** | **1,800** | **1,605** | **195** | **89%** |

**Agreed Actions to Distribute the Balance of 195 Pumps**

The meeting further agreed that all the 195 pumps not distributed to farmers should be distributed during the forthcoming winter season. The following actions were agreed:

1. The three organizations committed themselves to distribute the balance of pumps by end June 2004. This is possible given the level of awareness created among the targeted communities and the quality of training given to staff. The FAO Resident Representative to Malawi provided additional financial support to TLC to help one of the implementing partners conduct awareness campaigns on uptake of treadle pumps.
2. These organizations will be strictly monitored by TLC with the view to relocating remaining pumps to other implementing partners should they fail to do so by the agreed period. Some of the implementing partners had already requested for more pumps from TLC.
3. TLC will report back to FAO once all the balance of pumps has been distributed.

## 9.0 EXPENDITURE RETURN

TLC received US$ 7,500 in July 2003 as an up-front payment after signing the Letter of Agreement with FAO. These funds were used on training of staff and farmers, general management of the project which included technical backstopping and communication. TLC was also supposed to receive an additional US$ 16,500 after submitting the mid-term report in August/September 2003. These funds have until to-date not been received. A full account of the expenditure incurred will be provided once the second tranche has been received.

## 10.0 PROJECT IMPACT

Regarding impacts of the project, the majority of farmers witnessed a great improvement in food and cash availability from maize harvested green and dry and from leafy vegetables. Teachers alluded to the fact that more children brought green maize to school as a snack taken during break times. Farmers had further noted that mangoes were allowed to ripen which was not normal.

Some of the farmers who had started earlier reported to have made over MK 40,000 from selling green a double crop of maize. The majority bought fertilizers for the rain-fed crop with cash realized from sale of irrigated crops.

Furthermore, the project will have greater impacts on empowerment of communities to expand the program on their own as their skills and knowledge get increased and access to financial resources improve through village revolving funds. The total investment in the revolving funds is approximately MK 11 million. Based on the model developed by TLC, these funds can grow 8-fold resulting into over 10,000 households benefiting over a period of 10 years.

TLC plans to carry out an internal evaluation to establish the impact of irrigation during the previous season in terms of labour availability, cropping pattern, food security, assets and incomes. The evaluation done by FAO on the project was too early to capture the impacts of irrigation in relation to these parameters.

## 11.0 LESSONS LEARNT AND OPPORTUNTIES FOR SCALING-UP

The following are some of the lessons learnt and opportunities to scale-up micro-irrigation in Malawi:

1. The project was being implemented as an emergency to avert the 2002-03 food crisis. This has implications for this type of project as follows:
   - In trying to speed up project implementation, the outcome may be worse than that of most relief programs in Malawi. This type of program needs more time to allow for farmer organization and hands-on training. Although this should not mean compromising the need to work within the defined timeframe.
   - Traditionally, winter season is considered to cover the period April to July. However, the current thinking is that the irrigation season effectively runs from March to December. In some parts of Malawi and given the trend of rainfall during the current season, irrigation may be required throughout the year.
   - Although the focus is on the current food crisis, the project should be viewed as having long-term impacts on averting future crises in Malawi. This is being achieved through proper farmer organization, training and set up of revolving funds.
2. While humanitarian aid is necessary to address the current food crisis, it is important to develop more sustainable ways of handling the situation through a parallel system that addresses the root cause of the matter. Irrigation is the most sustainable option for alleviating the never ending food crisis in Malawi.
3. Attractiveness of irrigation to smallholder farmers does not only depend on potential to stabilize food security and expand market opportunities but more on the type of extension package provided. A credit-based extension package coupled with intensive training and supervision and the establishment of farmer-managed revolving funds has been very successful to date.
4. There are as many approaches as there are organizations promoting irrigation. While diversity in approach can be beneficial in enriching the best approach, there is need to harmonize these

to avoid confusing farmers and help minimize conflicts among partners. This is particularly important with regard to the credit program being implemented.

5. Irrigating with treadle pumps farther way from water source is now possible with longer delivery/suction hoses. This has also resulted into farmers following a catena system of planting crops to take full advantage of the soil moisture gradient from the upland areas down to the dambos as the rainy season recedes. Attention needs to be paid to proper fencing of any extended gardens to avoid livestock problems. Live fencing is an option.

6. The success of irrigation will depend on a market driven approach with the private sector as the driving force in service delivery. This means no subsidies on treadle pumps. The role of Government/NGO should be limited to facilitating this process.

7. Development of irrigation should take into account environmental concerns/sustainability. Focus on appropriate water harvesting systems; better management of pesticides and fertilizers; streambank protection/planting; measures to reduce incidences of water borne diseases.

8. Other systems need to be evaluated to expand the basket of choices, e.g., easy drip systems. Evaluate in terms of investment cost/pricing, ease of operation/maintenance, durability, availability of equipment/spare parts, etc.

9. Pumps manufactured locally by M&G Industries were received with much enthusiasm by the community, particularly among female members of the household because the treadles are close to the ground (no risk of injury from falling). However, they turned out very unpopular due to periodic breakdowns. TLC exchanged some of these with the Indian pump. The ones still under the possession of farmers will be closely monitored and replaced where necessary. Although the intention of using locally manufactured products is good, in future, proper assessment needs to be done before accepting models whose durability is not well known.

   TLC and its partner Land Resource Center have been assessing the performance of different models of treadle pumps and preliminary assessments of this type of pump showed the following:

   - Welding of treadles to the main pump frame needs improvement since some joints broke under farmer use. This problem was compounded by the fact that most farmers used grease to soften the rubber seals on the piston which makes the seals stick in the cylinders as they expand.
   - PVC discs used on the pistons easily broke when banged against the base of the cylinders.
   - Pulley hooks on the handle were not made strong enough to withstand the friction.

The manufacturer has responded to these concerns and has since made some modifications.

10. The program was implemented through a partnership approach. Partnerships are learning and evolving experiences, how they operate cannot be predicted at the outset. But, with patience and dedication, the gaps and deficiencies can be resolved for a productive result. As these are worked out, the opportunities increase to develop and expand the program - this is far more productive than changing gears and direction.

*Community sensitization*

*Farmers receiving pumps with input packs*

*Well levelled beds ready for planting*

*Healthy beans under irrigation*

*Farmer selling green maize*

*Dry maize for food from irrigation*

## 12.0 CONCLUSION

It is apparent that this was one of the most favourite programs to both the implementing partners and the targeted community as it addressed some of the root causes of food crises in Malawi. Its impact can be seen to be both short and medium to long term. With proper planning, timing, targeting and adequate funding, this type of program can have far reaching positive impacts on the livelihoods of the majority of over 2 million smallholder farmers in Malawi than food aid. A lot has been learnt from implementation of this project and with the opportunities identified, it is now possible to scale-up adoption of micro-irrigation practices in Malawi.