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# FINAL REPORT

August 2009 - December 31<sup>st</sup>, 2011

**DROUGHT MITIGATION THROUGH IRRIGATION & CONSERVATION**

**AGRICULTURE EXTENSION**

**Agreement No. DFD-G-00-09-00270-00**



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Date Submitted: March, 2012

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## INTRODUCTION

The Drought Mitigation through Irrigation and Conservation Agriculture Extension Project (DICE) is a \$1,860,645, twenty nine month project funded by USAID through OFDA. The project worked with 3000 households, directly benefiting over 16,500 individuals in Lilongwe, Salima, Dowa and Ntchisi districts of the central region of Malawi from August 2009 to December 2011.

The following report summarizes the main project activities, achievements and results covering the life of the project from August 2009 to December 31<sup>st</sup>, 2011. The indicator tracking table summarizes the quarterly progress as well as the cumulative progress from August 2009-December 2011.

### Phase I: Mobilization, Site Identification and Training activities



- In the Life of Activity (LOA), the project worked with all targeted 3000 beneficiaries (1080 male, 1920 female).

- The project identified and trained 66 irrigation technicians (60 male, 6 females), 60 lead farmers (36 male, 24 female), and 21 Village Agents for VSL, (15 male, 6 female) to support technical backstopping in village savings and loans, irrigation, soil and water conservation and conservation agriculture.

- The project trained 38 Government extension staff (10 female, 28 male) in all four districts who continue to support the farmers in the targeted areas.

- The project worked closely with District Agriculture Development Offices to develop all 30 irrigation sites and Water User Committees.

*Above left: A well irrigated maize field in Dowa. Left: Government staff participating in an irrigation training organized by the project in Lilongwe*

## Phase II: Site construction and Agriculture Technical Capacity Development

### Result 2.1: Technical designs of irrigation sites completed



- In September 2009, the project conducted **technical assessments** in target areas to assess viability of irrigation, and identify potential environmental impacts resulting from project activities. Mitigation measures were developed.

- Following environmental impact and technical assessments conducted with irrigation technicians and government irrigation staff, **30 sites developed and completed technical designs** (5 in Lilongwe, 6 in Salima, 7 in Dowa and 12 in Ntchisi). This included weir mapping, gravity canal mapping, farmer plot demarcations and potential water scheduling strategies and soil and water conservation activities at each site.

*Above left and left: Government staff and project staff conducting technical assessments. Left: Some of structures that required feasibility assessments for irrigation*



### Result 2.2: Irrigation Sites Constructed



- All construction works on major structures such as diversion weir, main, secondary and tertiary canals has been completed in all the 30 irrigation sites.

- The target communities mobilized materials such as **quarry, boulder stone and sand** as in-kind contribution. The project supported communities with cement and construction tools.

- Over 170 ha were developed for irrigation (121.5 ha in year 1) with over 158ha under irrigation. Over 6,201 meters of canals were lined with cement to minimize water seepage.

*Above: One of the completed diversion weirs in Dowa Districts*

## Result 2.3: Field days and farmer exchanges



- In the life of project, **17 field days** were conducted in all irrigation sites in the four targeted districts to train farmers in irrigation agronomy, soil and water conservation and conservation agriculture principles. **2679 farmers** (1210 men and 1469 women) participated

- **12 farmer to farmer field exchange visits** were conducted to successful irrigation sites to orient newly established WUCs and irrigation beneficiaries in scheme management, water regime management, and irrigation site lay out and conservation agriculture. 432 farmers (280 women, 152 men) participated in the field visits.



*Above Left: Field day on Conservation agriculture in Salima*

*Left: Farmer exchange visit to Nkhotakota for agro forestry*

## Result 2.4: Soil and Water Conservation Interventions promoted



- To develop capacity of communities in catchment conservation, the project trained beneficiaries in tree nursery establishment. The project supported the communities with 180,000 polythene tubes, 80kgs of *sienna siamea* seed, 80 kgs of *sienna spectabilis*, 10kgs of *acacias polyantha* and 10 kgs of *fadebia abida*. Communities established and managed 30 tree nurseries,

*Left: Farmers explaining to USAID officers how they prepare community agro-forestry nurseries in Ntchisi District*



- In the life of the project, **256,774** tree seedlings were planted by farmers for such trees as *cacius abida*, *poly canta* and *sienna spectabilis*. These seedlings were raised by communities in their tree nurseries.

- In all the 30 irrigation sites, communities have **constructed contour marker ridges equivalent to 18 km**, while in areas where there were deep gullies, **79 check dams** have been constructed to reclaim gullies.

*Left: Some of the trees planted during the project period in irrigation catchment areas in Dowa*

### Result 3.1: Communities Irrigate Crops



- Over the life of the project, communities irrigated over **158 ha** and **planted crops** such as maize, irish potatoes, sweet potatoes, various nutritious vegetables, cassava, beans under irrigation for food and income.

- 4 irrigation sites participated in the bean trials and research with Chitedze Research Station through their AGRA funded project on seed multiplication.

- Communities produced over 5,023kg of the newly released high performing bean varieties. Farmers were given the privilege to name the varieties of the beans.

- The research institution continues the collaboration with the farmers, and have this season already planted over 10ha to multiply the new varieties.

*Above Left: A farmer weeding her irrigated field intercropped with beans and maize in Lilongwe*



*Left: AGRA and Chitedze Research officials inspecting the bean seed that farmers produced under irrigation in Dowa.*

### Result 3.2: Ongoing Agriculture Extension using Demonstrations and Community Based Extension Agents



- **38 field based government extension staff** (28 male, 10 female), **10 CARE extension staff**, **60 lead farmers** (36 male, 24 female), **21 Village Agents for VSL**, (15 male, 6 female) and **66 community irrigation technicians** (60 male, 6 female) continuously provide technical and extension support to the beneficiaries in all the targeted areas.

- The project promoted **on farm demonstrations** with each irrigation site mounting several demonstration plots for maximum soil cover technologies, and intercropping. A total of **165 demos** for Maximum soil cover for water and soil protection; **133 demos** for grain-legume intercropping and 123 heaps of compost and green fertilizer.

- Following the demonstrations, **1864 (698 men and 1166 women)** farmers are making organic fertilizer for rain fed cropping and preparing mulching materials.

- **Training leaflets and IEC materials** were continuously provided to the communities through the lead farmers, village agents and irrigation technicians. Training materials were also handed to Government staff for continued reference as they support the communities.

- The project successfully handed over the project sites to Government, through their District Agricultural Development Offices.

*Top left: A lead farmer explaining conservation agriculture to fellow farmers*

*Above Left: Demonstration day with USAID officials*

*Left: Extension staff working with irrigation technicians on an irrigated seed multiplication field*

### Result 3.3: Integration with other interventions

- The project promoted **integrated irrigation activities** which included, fish farming in fish ponds, fruit and agro forestry tree planting in and around irrigation sites; promoting diversified crop production at each irrigation site including nutritious crops and vegetables suitable for the chronically ill. All 30 irrigation sites promoted growing of assorted vegetables for both household consumption and income. In the life of project, communities constructed **15 fish ponds** and stocked them with fish fingerlings of tilapia species, recommended by the national aquaculture center in Malawi.



*Left: farmers learning fish pond management in Lilongwe*

### Result 3.4: Promotion of Village Savings and Loans methodology in irrigation sites



- VSL methodology enhances *solidarity* among groups especially women and builds social economic and political influences around their shared agendas; it *organizes women* and creates opportunities for women as recipients of knowledge, goods and services. VSL approach *makes it easy to promote economic development in environments where men tend to dominate*. The project introduced VSL approach to irrigation sites to promote self financial capacity for various activities at household and irrigation scheme level.



- The project facilitated formation of **70 VS&L groups** with a membership of 916 farmers (701 female and 215 male) and facilitated the identification and training of **21 Village Agents** for VSL (15 male, 6 female) , who will continue to provide backstopping support to the communities on VSL.

- Following the **VSL share-out of over \$26,000**, the farmers have procured agricultural inputs such as seeds, fertilizer and farming equipment.

*Above Left: VSL saving session*

*Left: farmers display the inputs procured using VSL savings*

### Result 3.5: Promoting linkages with service providers

For successful crop production, access to appropriate inputs such as improved seeds, fertilizer, and construction and cultivation equipment/implements is essential. Over the life of the project, CARE has helped farmers link to input suppliers, such as agro-dealers, seed suppliers, and pest and disease control sales shops, where farmers can buy supplies using VSLA savings.

### Result 3.6: Post harvest loss reduction technologies promoted

- Realizing that farmers lose a significant amount of grain harvests due to **post-harvest management** problems at household level, the project embarked on dissemination of information on appropriate technologies for grain harvest and post-harvest loss reduction through good use of agricultural practices and innovative technologies including use of appropriate cost effective granaries constructed using locally available materials.
- **503 improved mud-smeared granaries** have been constructed by farmers and stocked with various grain crop harvests mostly maize, soya beans, groundnuts and beans in all the 30 sites. The technology has helped farmers safely keep the maize for food and prevented uncontrolled selling especially that tobacco crop which they depend on for cash did not fare well on the market.



**DICE Project Progress Indicator Table (Aug 2009 to Dec 2011)**

1A.	B	C	D	E	F	G	H	I	J	K	L	M	N			
Indicator description	LOA Target (3Yrs)	FY1 Target	FY2 Target	FY3 Target	Cumulative Achievement to date											
					Aug-Sept 2009	Oct-Dec 2009	Jan-Mar 2010	Apr-June 2010	Jul-Sept 2010	Oct Dec 2010	Jan Mar 2011	April – June 2011	Jul – Sep 2011	Oct Dec 2011	Total	%(O/B)*100
Number of communities Sensitized	7	7	-	-	7	0	0	-	-	-	-	-	-	-	7	100%
Number of sites identified and assessed	30	30	10	-	20	7	3	-	-	-	-	-	-	-	30	100 %
Number of feasibility assessment forms filled	30	30	10	-	20	7	3	-	-	-	-	-	-	-	30	100 %
Number of EIAs done	30	30	10	-	20	7	3	-	-	-	-	-	-	-	30	100 %
Number MOUs on Land Use	30	30	10	-	17	8	3	2	-	-	-	-	-	-	30	100 %
Number of beneficiary HH	3000	2000	1000	-	1270	630	154	354	592	-	-	-	-	-	3000	100 %
Number of Irrigation technicians	60	40	20	-	25	18	17	6	-	-	-	-	-	-	66	110 %
Number of WUCs Formed	30	20	10	-	17	8	3	2	-	-	-	-	-	-	30	100 %
Number of WUCs trained	30	20	10	-	0	10	10	5	5	-	-	-	-	-	30	100%
Number of WUCs with Constitution	30	20	10	-	0	10	18	2	0	-	-	-	-	-	30	100 %
Number of irrigation sites with complete technical designs	30	20	10	-	0	0	19	6	3	2	-	-	-	-	30	100 %
Number of irrigation sites with construction completed	30	20	10	-	0	0	10	8	3	3	-	-	-	-	30	100 %
Number of sites developed	30	20	10	-	0	0	10	8	3	3	-	-	-	-	30	100 %
Potential area of irrigation for completed sites	150ha	100ha	50ha	-	0	0	85.5	36	0	10	0	19.1	19.4	-	170	127 %
Area already under irrigation	150ha	100ha	50ha	-	0	0	0	91 ha	11	8.35	-	41.2	8	-	158ha	105 %
VS&L groups developed	60	40	20	-	0	0	0	52	-	-	8	8	2	-	70	116 %
Number of fish ponds constructed	10	5	5	-	10	-	-	-	5	3	6	1	-	-	15	150%
Number of fish ponds stocked	10	5	5	-	-	-	-	-	-	3	9	1	1	-	15	150%
Number of village agents identified & trained	20	-	-	20	-	-	-	-	-	-	-	-	21	-	21	105%
Number of market associations formed	15	-	-	15	-	-	-	-	-	-	-	-	15	13	28	187%
Number of granaries constructed by farmers	500	-	-	500	-	-	-	-	-	-	-	-	203	300	503	100.6%

## CHALLENGES & SOLUTIONS

- The country experienced extensive fuel shortage which crippled some project operations, as staff traveled to support the communities and closeout activities was restricted.
- The rise in food and commodity prices has impacted the adoption of some agricultural practices and technologies. The project is encouraging VSL, enterprise development activities and post harvest management activities so that farmers are able to appropriately store the products they currently have.