

# Solar Irrigation for 5000 rural Zimbabweans

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## 1. PROJECT SUMMARY

<b>Project Title:</b>	Solar Irrigation for 5000 rural Zimbabweans
<b>Implementing Organization:</b>	Rural Women and Children Legal Resource Trust (RWCLT)
<b>Project Contact Person:</b>	Marks Chitaka (Mr.)
<b>Funding Partner:</b>	Global Giving
<b>Location of Project:</b>	<b>Province:</b> Matabeleland North, <b>Districts:</b> Bubi <b>Ward:</b> 8 (eight)
<b>Duration:</b>	12 months
<b>Sector of Intervention:</b>	Livelihoods and Food Security.
<b>Targeted Population:</b>	<b>Direct /Indirect Beneficiaries:</b> 700HHs/ 5000 People
<b>Total Project budget Cost:</b>	US\$133 126.00

## 2. Introduction

Agriculture is the dominant sector in the economy of Zimbabwe, accounting for an average of about 18% of the Gross Domestic Product (GDP). However, this relatively moderate share of GDP is deceitful in that it does not fully show the real importance of the agricultural sector. The sector is the main source of income for up to 70% of the people of Zimbabwe who are mainly women and children. It is also the main source of domestic food supply and therefore plays a critical role in household and national food security. This project proposes to improve the food security of the community of Bubi District. This district is drought prone being in region IV, rain-fed agriculture is poor yet the people continue to cultivate and lose crops. This project will try to mitigate the drought challenges of this community. It is envisaged that it will also create employment for the locals especially women who are looking after the children.

## 3. Project Goal

To sustainable, alleviate poverty and food insecurity in the dry rural areas of Bubi District, Matabeleland North, Zimbabwe.

## 4. Purpose

To improve and sustain the livelihoods of in circa 50000 rural households in Bubi District through the installation of Photovoltaic Solar Pumps for Irrigation purposes.

## 5. Project Objectives

The overall objective of this project aims to enhance the community resilience to shocks through the strengthening of livelihoods and food security by increasing agricultural production,

productivity and incomes, of smallholder farmers in Bubi District. The project will also enhance the capacity of the farmers to operate and manage the irrigation schemes productively on a sustainable basis. The specific objectives are:

1. To enhance community resilience to drought through irrigation agriculture.
2. To improve household nutrition, food security and self-sufficiency through increased productivity of irrigation agriculture in this drought prone area.
3. To create employment opportunities for rural people by promoting agricultural production and agro-industrial growth.
4. To improve the income base of the small holder farmers at the irrigation scheme through diverse cropping strategies.
5. To strengthen irrigation members' technical capacity through various trainings.
6. To increase access to safe water supply for community consumption and basic sanitation.

## **6. Problem Analysis**

Bubi District in Matabeleland North is among the vulnerable districts in Zimbabwe due to perennial draughts. It falls within the Natural Regions 4: semi-arid, low potential area. The soils are red clays and Kalahari sands, which are generally fragile and infertile. The District receives an annual average rainfall of 400mm – 600mm, and the rainfall pattern is erratic. Available water is further reduced by the high temperatures, which exacerbate evaporation. According to a survey by FAO in 2013, natural regions IV and V are generally too dry for successful crop production without irrigation, but communal farmers have no other choice but to grow crops in these areas even without access to irrigation. Maize is the common crop although its failure rate is very high but communities continue planting it, with the uptake of drought resistant millet and sorghum is being very low.

This project is being proposed for this District. The community in this area according to Bubi Rural District Council is food insecure; they have no livelihood options available. Although there is food in the shops many cannot afford to buy since they have no stable income. Most men in this District work at gold mines, but the mines have been non profitable for a number of years now. Their livelihood is mainly dependant on rain-fed agriculture whose success is on a balance of probabilities. Women are the ones carrying the brunt of the problems since they are the ones who fend for food for the families. There are also many orphans, widows and the elderly in the ward and they have neither livelihoods nor financial incomes to buy food. They sometimes depend on food handouts from ORAP, one of the NGOs working in the district.

Currently the community is surviving on rain-fed agriculture. Although they sometimes loose crops to drought, there are certain years like 2013 where they have managed to harvest a few crops for consumption. Most of the men have been forced to go to South Africa, in search of job opportunities and some have been absorbed into gold panning which is risky and illegal. According to the resident District Administrator some women have also been forced to do gold panning and prostitution due to lack of livelihood options. Some children in this community have dropped out of school due to lack of money for fees.

The communities in this district are however sitting on a very sustainable opportunity. The District had many commercial farmers who used to occupy most of the land before the land reform programme. The former farmers had drilled a lot of boreholes around the district with some as deep as 150m. Most of these boreholes have a very high yield to an extent that they were used by the former farmers to supply water for their farms and livestock without any challenges. Some were using the water to irrigate their crops during the dry seasons. The district also enjoys lots of sunlight even in winter, with climate change there has been more sunlight than in other previous years. It against this background, that RWCLT engaged the District with a view to utilize the water, sun light and the land to create a livelihood for the communities. This project will bring food to the community, it will create employment and it will create unity and life to the community of Bubi District.

## **7. Project Rationale**

Zimbabwe is predominantly an agrarian country that relies heavily on agriculture for food security, economic growth and development. Growth in agriculture is necessary for macro-economic stability, broad based economic development, poverty reduction and food security. Inadequate and unreliable rainfall in the dry areas of Zimbabwe restricts the potential for development of rain fed agriculture on which the livelihoods of most smallholder farmers in communal and resettlement areas depend. According to FAO, 2013, irrigation agriculture can result in vast improvements in agricultural production and assure the economic vitality of any community.

The country has in the past suffered from the vagaries of droughts, against a background of vast bodies of water (dams and river systems and underground water) that remain un-utilized by the local community and the nation at large. Irrigation is one of the most important cornerstones for agricultural development, it may be the key to agriculture-led economic recovery, given the country's vulnerability to droughts and the high risk of rain fed agriculture. According to the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET) document, which spells out Zimbabwe's strategy for economic recovery up to 2018, irrigation is singled out as the most important and necessary cornerstone for agricultural development, hence the key to agriculture-led economic recovery, given the country's vulnerability to droughts and the high risk of rain fed agriculture.

RWCLT is working in Bubi District and it did a community needs assessment early in 2014 and saw that there are many boreholes in the district which can be utilised as irrigation schemes. Most of them had a very high water yield needing only the apparatus to extract the water. Currently most communities are using the Type b Bush pump to get water for domestic use. Those that have attempted to use the water for agricultural purposes are using diesel powered mono pumps. Their projects have become unsustainable due to the cost of diesel. Zimbabwe has solar energy in abundance, there are many sunny days during the year round. The communities however saw it beneficial to try out solar powered water pumps to extract the water for irrigation purposes. This has very minimal costs if any. It is only expensive to set up. The solar panels and equipment have a life span of more than 25 years according experts consulted. This is the reason that RWCLT has proposed to start up with 5 communities with such irrigation schemes.

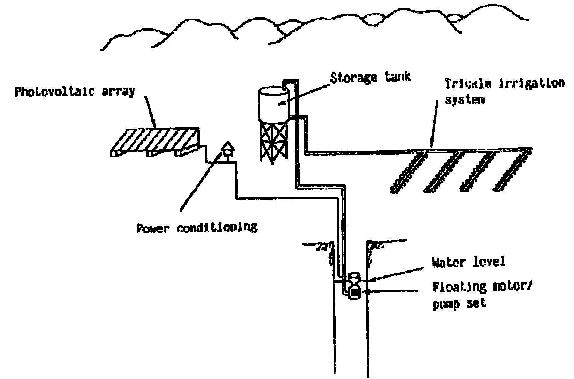
This project will constitute a major stride in the country's efforts to achieve optimum utilization of the available resources (land, water and infrastructure) to address the problems of food insecurity, poverty, hunger and malnutrition and unemployment. The project will address the problem of low agricultural land and labour productivity. In addition to raising yields and improving the quality of produce, irrigation will lengthen the production season thus enabling intensification and diversification of agricultural production. It will also create employment for the locals and also improve their livelihood options thereby reducing prostitution and illegal activities like gold panning by women, children and even men.

## **8. Brief Project Description**

For this project the community identified 5 boreholes with a good water yield that it seeks assistance to have photovoltaic (solar powered) water pumps and 2 x 10 000l tanks (reservoirs) installed for each. 10 acres of land will be cleared for irrigation of crops for the benefit of the communities. The Channels and Siphons will be used to irrigate the land.



Examples of the proposed project



## 9. Proposed Project Activities

1. Supply and install 5 photovoltaic (solar powered) water pumps
2. Supply and install 2 x 10 000l tanks (reservoirs) for each irrigation scheme.
3. Clearing of land for irrigation purposes
4. Trainings in irrigation agricultural activities ie:
  - ❖ The Project Constitution
  - ❖ Water Conservation Techniques
  - ❖ Land Preparation
  - ❖ Crop Rotation
  - ❖ Farming as a family Business (FAAB)

## 10. Expected Outcomes

1. Improved food security and nutrition in the Bubi District
2. Reduced poverty in the community
3. Strengthened resilience to drought in the community.
4. Improved employment opportunities at the irrigation scheme.
5. Increased agricultural production and productivity

## 11. Detailed Budget

See Below

**Rural Women and Children Legal Resources Trust (RWCLT)**

**Funding Partner:** Global Giving

**Project Title:** Solar Irrigation for 5000 rural Zimbabweans

**Project Period:** 12 Months

**Currency Used :** United States Dollars

**Detailed Budget**

Code	Description	Unit of Measurement	Unit	Units Cost (US\$)	TOTAL (US\$)
<b>A.</b>	<b>PROGRAMME COSTS</b>				
<b>B.</b>	<b>Equipment Purchases and Infrastructure</b>				
B.1	Photovoltaic Solar Pumps x 5	per Irrigation Scheme	5	13,980.00	69,900.00
B.2	Pressure Tank	per Irrigation Scheme	5	520.00	2,600.00
B.3	Reserve Tank (10 000Litres)	per Irrigation Scheme	5	1,200.00	6,000.00
B.4	Tank Stands	per Irrigation Scheme	5	2,000.00	10,000.00
B.5	Construction of Channels	per Irrigation Scheme	5	3,200.00	16,000.00
	<b>Sub-Total</b>				<b>104,500.00</b>
<b>C.</b>	<b>Inputs</b>				
C.1	Hiring of a Tractor for ploughing	10 Hectares	5	645.00	3,225.00
C.2	Provision of Seeds (Sugar beans, Maize, sorghum and Vegetables)	per Irrigation Scheme	5	570.00	2,850.00
C.3	Fertiliser Distribution	per Irrigation Scheme	5	790.00	3,950.00
	<b>Sub-Total</b>				<b>10,025.00</b>
<b>D.</b>	<b>Trainings</b>				
D.1	Training on the Project Constitution and Irrigation Scheme management	per Training	5	542.00	2,710.00
D.2	Training - Water Conservation Techniques	per Training	2	492.00	984.00
D.3	Training - Land preparation	per Training	2	492.00	984.00
D.4	Training - Crop Rotation	per Training	2	492.00	984.00
D.5	Training on Farming as a Family Business (FAAB)	per Training	2	492.00	984.00
	<b>Sub-Total</b>				<b>6,646.00</b>
<b>E.</b>	<b>Technical Assistance</b>				
E.1	Labour for Installing the Solar System	per Irrigation Scheme	5	1,245.00	6,225.00
E.2	Labour to Install Reservoir Tanks and Irrigation Kits	per Irrigation Scheme	5	450.00	2,250.00
E.3	Regular Support Visits	per month	6	80.00	480.00
E.4	Vehicle Running Costs	for 6 months	1	3,000.00	3,000.00
	<b>Sub-Total</b>				<b>11,955.00</b>
	<b>GRAND TOTAL</b>				<b>133,126.00</b>