

## GAIA- Movement Trust Living Earth Green World Action

### END OF PROJECT REPORT

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<b>PARTNER</b>	GAIA-Movement Trust Living Earth Green World Action
<b>GRANT</b>	GBP 50 000
<b>PROJECT TITLE</b>	Climate Smart Farmers' Clubs for Bindura/Shamva and Frontline Institute Climate Centre
<b>REPORT</b>	Half year <input type="checkbox"/> End of project <input checked="" type="checkbox"/>
<b>REPORTING PERIOD</b>	June 2013- May 2014
<b>DATE OF SUBMISSION</b>	July 2014

## EXECUTIVE SUMMARY

Farmers' Clubs Bindura/Shamva has been supported by GAIA Movement in the promotion of climate smart farming in Bindura and Shamva Communities and the establishment of a Climate Centre at Frontline Institute. The period of support was from June 2013 to May 2014 where 5 model Farmers' Clubs were revived to demonstrate climate smart farming for food security. Main achievements for the period are: 5 horticulture gardens were upgraded and they are growing 7 or more garden crop varieties at any given time, equipping five gardens with 5 vegetable driers and establishing and installing 5 rope and washer pumps, establishment and maintenance of 10 conservation farming demonstration plots, intensive moringa production and cultivation, and various training workshops for project sustainability. At Frontline Institute, major achievements are as follows: 150 students in Our Open Future Together were trained using Climate Change Modules, 5 climate center models in form of a tree nursery, climate smart garden with bamboo irrigation, 200 liter solar water heater, solar energy for lighting and powering electrical gadgets, water recycling plant.

## PROJECT OBJECTIVES AND ACHIEVEMENTS

### **Training and skills enhancement of implementing staff and Students**

DAPP organized training for 5 Project Leaders and 1 Unit Leader from Farmers' Clubs Bindura/Shamva and 10 teachers from Frontline Institute participated in a 5 day training workshop where they familiarized with the demands of the proposed Climate Smart Farmers' Clubs for Bindura/Shamva project and Frontline Institute Climate Centre. Follow up trainings and reviews were conducted during the 12 monthly coordination meetings at national level at Frontline and all DAPP staff participated and toured the climate center and some of the demonstration plots. Experiences on climate change adaptation were shared with other Humana People to People partners during sector conferences and through discussions via internet. 150 students in 'Our Open Future Together' Program from across the world who were enrolled in 2 intakes at Frontline Institute at the time of implementation gained experiences that they share with their projects in and out of Zimbabwe. In addition, a similar number in the 'Our Humana People to People World' benefited a lot as they used Climate Change Modules that were designed for 'Our Open Future Together' Class.

### **Establishment of a climate Centre**

Frontline Institute established a model Climate centre with 5 categories that seeks to address different issues concerning climate change which were used to educate surrounding communities including those working with Farmers Clubs. The models are as follows:

#### **A. Energy Production and Energy Saving**

Frontline Institute reduced water heating costs by designing and mounting a 200 liter solar water heater which provides additional warm bathing water for students at the institute saving approximately 50 tons of firewood per annum. In addition, 5x 135kW solar panels were installed specifically for lighting and low wattage use at the Institute thus reducing the use of fossil fuels to mainly the diesel generator in the absence of hydro-electricity that emit a lot of carbon in the atmosphere. (10 hours without electricity).

#### B. Protection, Saving and Securing of Fresh Water Sources

A weir dam is under construction and will be finished by 15<sup>th</sup> of October 2014 as a way to improve water recharge rates for 3 boreholes located at and around Frontline and to harvest water for irrigation and for livestock purposes. Vertiver will be planted around the weir in order to reduce siltation.

A sand abstraction water recycling plant with a capacity to recycle 4000m<sup>3</sup> of water per year was constructed through students' and teachers' efforts. Water from the recycling plant is being used to irrigate a quarter of the 10 000m<sup>2</sup> garden at Frontline.

#### C. Garden Farming and Food Production

Frontline Institute expanded its garden from 4000m<sup>2</sup> to 10 000m<sup>2</sup> and 25% of it utilizes bamboo drip irrigation mechanism. The mechanism is cheap to install and easy to maintain which makes it viable for communal farmers to adopt within their communities. Out of more than 100 farmers who have toured the garden, 11 farmers have started bamboo plantations in perspective of setting a bamboo irrigation scheme. The garden produced adequate produce that supplied Frontline Institute's kitchen requirements. In support of the garden activities, Frontline Institute is raising 2000 bamboo seedlings in preparation for expansion of the irrigation system to cover the whole garden by January 2015. However we have some challenges on leakages which we are working on. The complete development will be done by end of September.

Approximately 2 tons of garden crops were preserved using 5 solar vegetable driers that were set up in the model gardens working with Farmers Clubs. Farmers' Clubs Project Leaders together with students from Frontline Institute assisted 74 farmers to set vegetable solar driers at their homes.

#### D. Re-growing of Natural Vegetation and other ways of storing carbon

Frontline Institute and Farmers' Clubs Shamva raised and planted 257 754 fruit, live fence, water recharging and wood trees of indigenous and exotic origins with support from the students, farmers from Shamva and Bindura Districts, Environmental Management Authority and Forestry Commission. The trees were planted at community and household levels. 616 770 tree seedlings are being raised in the tree nurseries at Frontline Institute and in the community in preparation for the oncoming tree planting season of 2014/15.

#### E. Climate Smart Information Resource Centre

Frontline Institute engaged 150 students in 'Our Open Future Together' in lessons using the 100 climate change modules that were designed using DMM format. Practicals initiated from the module were conducted in Southern Africa where they established a total of 15 nurseries with 150 000 trees. In addition Frontline Institute printed pamphlets and booklets on different climate smart methods. Information in the IEC material covers all the 4 themes such as making a solar vegetable drier, installing and maintaining a rope and washer pump etc. A section of its Library has literature on climate smart information which is being used by the students in 'Our Open Future Together' and 'Our Humana People to People World'. Frontline Institute designed a manual which explains techniques of re-building the natural ecosystem through water re-cycling, tree planting and construction of weirs. 148 copies of the manual were printed for use by the 2 intakes. The manuals were useful in transferring skills that were used during the practical

implementation of climate related activities during the trick cycling and during the Home Base Action.

### **Upgrading and maintenance of production in group gardens**

Farmers' Clubs Bindura/Shamva strengthened the production of 5 model clubs whose membership totaled 225 farmers. The club gardens introduced diversified garden farming for economic empowerment. Farmers produced 7 crops or more at any time and with a solar drier in each garden, farmers took turns to dry garden produce for selling and for future consumption. 74 farmers working with Farmers' Clubs and not specifically from the model clubs have made their own household solar vegetable driers with guidance from Frontline Students and Farmers' Clubs project leaders.

Production emphasized the use of organic means for healthy production and this was emphasized in the 100 handbooks that were used by the farmers. Farmers organized themselves and marketed raw and processed produce in common utilizing the market committees that they have set and trained through support from Farmers' Clubs and teachers from Frontline Institute.

Farmers from each garden took turns to harvest moringa leaves for different uses on the 9m<sup>2</sup> of intensive moringa production in each garden. Farmers expanded production to cassava and sweet potato production with the introduction of new varieties that have high yield potential.

Farmers contributed labour and material for lining 5 garden wells whilst Farmers' Clubs provided material and expertise for the installation of the rope and washer pumps. Following a look and learn exchange visit to Frontline, one garden has the hope to use bamboo irrigation mechanism in the club garden since it is easy to pump water using the rope and washer pump and it has established a bamboo nursery. 20 water recharging trees have been planted in each of the 5 model gardens. Farmers' Clubs trained 25 pump minders as to ensure that the rope and washer pumps are fully functional all the time thus promoting consistent production from the model gardens.

### **Field crop production**

Bindura and Shamva districts are highly dependent on dry land farming for food production and amount of rainfall has become unpredictable due to seasonal shifts thus the reason to promote conservation farming. Farmers' Clubs Project leaders introduced the conservation farming concept through establishing and maintaining 10x0.2ha model fields (5 for maize and 5 for rapoko) which followed the 3 principles of effective mulching, minimum soil disturbance and crop rotation. The demonstration plots were used as part of the farmers' learning program where project leaders carried out practical demonstrations for recommended agronomy. A total of 871 farmers were trained in Conservation Agriculture. 201 farmers from the model clubs replicated lessons learnt in individual plots measuring on average 0.15ha with a few using herbicides. Farmers have indicated that despite the labour intensive process, yields are significantly higher than the conventional farming techniques as they yielded 10 tonnes/ha of maize through conservation farming compared to 2.5 tonne/ha in other fields.

### **Environment Protection**

In addition to tree planting and tree nursery establishment, students from Frontline and project leaders from Farmers Club promoted and mobilized 212 farmers leading to the construction of 212 fire wood saving stoves.

### **Increasing access to sources of farming information**

100 garden farming handbooks (5 different titles) were purchased and these were used during lessons on garden production with 27 clubs (including the 5 clubs with the model gardens). AGRITEX officers from the Government under Ministry of Agriculture have access to borrow the handbooks for use with farmers who are not part of the Farmers' Clubs thus expanding the effects of the project beyond the direct targets. Students at Frontline Institute designed, produced and distributed to the community 400 pamphlets about Climate Center activities –tree planting, solar water heaters, solar energy, herbal gardening, garden farming, how to raise and grow bamboos.

### **Selling the idea to the community**

Frontline Institute held 4 thematic Open Sundays and one of the Open Sundays had an exhibition of the Climate Centre and was attended by The Honourable Member of Parliament for Bindura South Rural Constituency, Mr Remigio Matangira and 473 farmers from the community. The theme for the Open Sunday was "Re-Greening the Environment". Frontline Institute took guests to view the low cost technology in the fight of Global Warming and Climate Change (solar water heaters; solar energy system in the school; 1 million tree nursery shade; garden farming; the weir dam construction; bamboo nursery and compost making). Frontline Institute was then given the task to spearhead a big tree nursery that will suffice the needs of Bindura District approximately with 1 million trees planted every year.

## STATUS OF PROJECT AIM AND OBJECTIVES

### **Narrative Summary of Achievements**

*Aim 1: to improve on the adaptation to climate conditions for the Farmers' Clubs Project*

*Aim 2: to establish Climate Center at Frontline Institute*

Farmers' Clubs Bindura/Shamva worked with Frontline Institute to train farmers on different climate friendly methods that promote soil protection and water conservation. In response, 1097 farmers working with the project utilized at least three of the methods used especially the use of organic means for vegetable production, crop rotation and crop diversification. Most farmers have established tree nurseries mostly with eucalyptus as they need to raise wood for use during tobacco curing. To that end Frontline Institute was encouraged to establish a tree nursery that can supply Bindura Rural Community with tree seedlings for planting each year as to reduce the rate of cutting down of trees by tobacco growers and for firewood use.

The establishment and maintenance of seed multiplication plots for sweet potatoes and cassava is a positive indicator towards a possible food secure situation despite the shifts in the length and rainfall distribution in the agriculture season. This was also supported by the establishment of rapoko fields as a way to encourage the production of small grain crops. The crops introduced are drought resistant and thus yield some harvests despite the change in seasonal characteristics thus giving possibilities for food secure households in 3 years time.

Rope and washer pumps that have been established are sustainable as the pump minders have been trained and are ensuring that the pumps are always in working order; hence they are supplying irrigation water and meet the water requirement needs for the established gardens. Frontline Institute has done well to achieve intended objectives although it will conclude weir dam construction by 15 of October 2014.

## ACHIEVEMENTS SUMMARY IN NUMBERS

DESCRIPTION	TARGET	ACHIEVED	DIFFERENCE
Development of Climate Change Centre	1	1	0
Number of students in Our Open Future Together trained using Climate Change modules	150	150	
Climate Change modules printed	100	100	0
Climate change manuals printed	100	100	0
Production of a short film	1	1	0
Farmers' Clubs			
Farmers registered in clubs	1250	1250	0
Farmers Trained in Conservation Farming	100	871	+771
Farmers trained in nutrition and crop diversification	100	225	+125
Horticulture gardens established	5	5	0
Rope and washer pumps established	5	5	0
Food Security Propagation plots	5	5	0
Garden Farming handbooks printed	100	100	0
Pump mechanics trained	25	25	0
Vegetable driers	5	79	+74
Farmers who have adopted at least 3 new methods of climate friendly production	1000	1097	+97
<b>Comments</b>			
<p>More farmers participated in conservation farming training sessions which resulted in 871 farmers using conservation farming techniques on an average 0.15ha for their field crop production. The number of vegetable driers exceeded the target as more 74 farmers working with Farmers' Clubs Bindura/Shamva made individual driers. More farmers were trained on crop diversification as a way to enhance resilience to droughts through a variety of crop production. Established model gardens and demonstration fields were used to train 225 members of the 5 model clubs on all agronomy practices.</p>			

## PROJECT IN PICTURES



Raising 1 million trees at low cost



A farmer in Bindura/Shamva watering the garden



Rope and washer pump in use in Bindura



Setting the bamboo irrigation plant



Farmers making a stover rack to preserve mulch for the next farming season.



Frontline Institute promoting Solar energy for the school.



Gully Reclamation by Farmers' Clubs



Lessons on seed sowing with club members



Explaining the components of a solar drier



Showing how a solar drier works



Club members establishing a tree nursery



Eucalyptus tree nursery at club level