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**CASE STUDY ON MULTIPLE USE OF WATER IN ZIMBABWE**  
**Household Economic Security: The Case of Drip Kit Micro Irrigation Project**

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### Preamble

Plan Zimbabwe, an international NGO has been operating in Zimbabwe since 1986. Plan operates in seven districts spread throughout the country and works in the following sectors; Health HIV/AIDS, Water and Sanitation, Education and Food Security. One of Plan's major focus areas is tackling poverty to uplift the standard of life of poor families in the rural areas.

As part of Plan's poverty alleviation program, the drip micro irrigation project was implemented starting in 2003. The aim of the project was to create opportunities for household economy security through sustainable production of vegetables to improve nutrition and also to enhance household income earning capacity through the sale of surplus vegetables. One thousand five hundred drip kits supported with various types of vegetable seed were distributed to vulnerable households, schools and some demonstration sites in Kwekwe, Mutasa, Mutare and Mutoko districts. Plan partnered with IDE, Linkages for Economic Advancement for the Disadvantaged (LEAD) and ECI-Africa. In 2005 the project was scaled up to cover the other three districts where Plan is operating.

The table below shows the distribution of the drip kits:

<u>Year</u>	<u># of kits distributed</u>	<u># of beneficiaries (families)</u>	<u># of schools benefiting</u>	<u>Demonstration plots</u>
2003/4	400	400	-	-
2004/5	1050	1050	26	-
<b>Total</b>	<b>1450</b>	<b>1450</b>	<b>26</b>	<b>11</b>

Source: Plan Quarterly Reports; 2003-2005

The drip kits enabled farmers to grow a variety of vegetables all year round. In addition to saving on labour and water, high yield of good quality vegetables were produced and additional income realised by the beneficiaries (*approx. US\$113*). To provide a reliable source of water (drinking and gardening), Plan supported the construction and/or upgrading of over 300 wells.

The project targeted mainly HIV/AIDS affected and other vulnerable families (widows, orphans and other vulnerable children, the elderly, home based caregivers and recipients of food aid), as the drip kit technology is labour saving in terms of time spent watering the gardens and minimizes water use, as drip irrigation is a method of irrigation that applies water slowly to the roots of plants through depositing water either on the soil surface or directly to the roots through a network of valves, pipes, tubing and emitters. A number of selected schools also benefited from the project.

Beneficiaries were trained on the installation/maintenance of the kits and cropping practices. An internal rapid assessment in 2005 showed that women are the main users of the kits. Farmer innovators and enthusiastic community members have made effective use of the drip kits. The 2005 Rapid Assessment indicates that 50% of the kits are being used fully. Some of the kits are not being used because of blockages due to saline water, kits not being adequate to meet households needs, inappropriate water conveyance system from the source to the water storage tank and water shortages especially during the dry season. Non-availability of spare

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parts was another reason cited. Beneficiaries making full use of the technology indicated that the drip kits had eased the burden of watering gardens and improved the quality of their produce.

### **The case of one successful farmer in Kwekwe district**

Despite some problems experienced in the implementation of the project, a number of farmers have fully embraced the technology to improve their livelihood. One such farmer is Mr Sibanda from Kwekwe district. The case study below outlines how he has managed to effectively utilize the technology and improve the life of his family.

The majority of households in Kwekwe were food insecure due to the adverse effects of recurrent droughts in the last 5 years. To enhance household economic security, Plan promoted the use of drip irrigation as a way of harnessing and efficiently utilizing scarce water resources available to households. As a pilot project, 500 farmers who were trained and adopted the technology have increased food production by an estimated 30% or more.

Mr. Desman Sibanda, a peasant farmer lives in Kwaedza ward in Kwekwe district. Sibanda stays with his two wives, his mother, six children and one of his orphaned grand children. He depended on dry land farming. Before he ventured into drip kit micro irrigation in vegetable production, he used to cultivate large tracts of rain-fed land only to get insufficient food.

In 2003, Sibanda was one of the 500 subsistence farmers who got a micro irrigation drip kit (comprising of 85 litre tank and plastic dripper lines covering 100m<sup>2</sup>) from Plan. He qualified for the drip-kit after satisfying the selection criteria developed by a technical government department, Agricultural Research and Extension Services (AREX), community members and Plan. Mr. Sibanda also received vegetable seed packs comprising of sugar beans, carrots, spinach, tomatoes and other crops such as ginger, garlic etc.

Plan in collaboration with AREX, Ministry of Health and LEAD organized training for the 500 farmers. The training covered site selection for the drip irrigation garden, land preparation, installation of the drip kit, repairs/maintenance, record keeping, farming methods and marketing, organic crop protection and organic farming. Backup training, farmer led events (field days and shows) and field support were provided regularly.



" You should have known how we struggled to water our garden in the last three years. All wells were drying up and could produce water enough for domestic use only. We had only one bed of vegetables and we used wastewater water the garden. This technology conserves water and is time saving," said Mr. Sibanda. One of Sibanda's two wives shared the same sentiments. She went on to say, "When using a bucket most of the water is lost through run-off but with

In the third year of drip irrigation farming the Sibanda family realized surplus from the garden, which they sold locally. The money was used for paying school fees, purchasing food and vegetable seeds. They donated some of the surplus to the elderly in the community who could not fend for themselves.

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In 2005, Sibanda managed to purchase a 400-litre capacity water storage tank from his savings. Seeing the family's determination, Plan complemented their efforts by assisting them with drip kit pipes covering a bigger area of 250m<sup>2</sup>. Sibanda said they planted maize in their drip garden before the rains. From the two kits, (100m<sup>2</sup> and 250m<sup>2</sup>) they managed to harvest 9x50kg bags of maize. With this expansion, Mr. Sibanda found himself in need of assistance to improve the quality of his produce and to break into more lucrative markets. It was then a positive development when Practical Action (PA), an international NGO entered into partnership with Plan.



Drip irrigation garden

PA introduced market chain analysis, linking farmers with input-suppliers and identifying markets for their produce, institutional mapping and networking with other stakeholders with interest in drip irrigation. Mr. Sibanda is now a member of the drip irrigation pioneer group in Kwekwe. This group shares information on the proper use and maintenance of drip kits with other farmers who benefited from the project. The members have also initiated competitions on vegetable production and use of records.

They have classified themselves into groups (according production levels). Each member graduates to the next level after attaining a certain level of production. This has encouraged most of the reluctant farmers to work hard so that they may proceed to the next level.

"Established retailers were ripping us off for the past three years since we were not united to set realistic prices for our produce. We are now trying to work together so that we identify and have a market and contracts with big retailers and supermarkets", this was a comment from the chairperson of the pioneer group.

Plan and its partners also assisted three schools with the drip kits. These are used as demonstration kits, encouraging children to appreciate the technology and equipping them with skills in agriculture. Those with family drip kits have used skills acquired from school to assist their families at home. One of the children, 12-year-old Memory in Kwaedza ward said, "We do not buy vegetables these days, we get them from our garden. I assist my parents in using the kit, especially during weekends". She said her parents previously did not plant or eat spinach, but after learning about it at school they now produce, sell and use it as relish.

In 2005, beneficiaries in Kwaedza ward also managed to put together their proceeds to pay for the sinking and equipping of a deep well at Mkobogwe primary school. Children and teachers at the school are now drawing water from this well reducing the distance they walked to fetch clean water. The group also paid fees for three orphaned children in 2004/2005.

With assistance from Plan, AREX and PA, the pioneer farmers' group, managed to link with drip kits suppliers, who demonstrated and trained some of them on the optimal use of the kits. They are also being trained by PA (through Plan support) on market chain analysis and processing/preservation of surplus food.

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Mr. Sibanda's future plans include purchasing fencing material for his garden. Currently there are using wood fence that has to be replaced seasonally, deepening two wells and installing pipes so that the family members do not face any problems in drawing water for gardening. The Sibanda family also highlighted that they needed some knowledge on suitable water conveyance methods to make it easier to draw water from the wells to the water storage tanks. The family said they were now taking horticulture as a business.

### **Lessons Learnt and Way Forward**

- It is essential to have a reliable water supply given the challenges of the climate which has seen the country experiencing long drought spells. To this effect water harvesting methods are vital to the success of the project.
- Regular contact between the farmers and government extension services is also important for the success of the project.
- It is important to develop and strengthen local community organizations and networks for sharing lessons, promising practices and innovations.
- There is need to strengthen the production-market chain linkages i.e. input/seed suppliers, suppliers of technology and market outlets.
- Plan should reconsider the size of the drip kit provided as the kits may be small to have an impact on poverty alleviation.
- Micro credit facilities should integrated with the drip irrigation project so that beneficiaries have access to loans to expand their activities. Another option is to establish/facilitate the setting up of a revolving fund for the beneficiaries so that they work as groups to expand their activities.
- Further training is required for the beneficiaries so that they do not grow the same crops that can cause a glut resulting in depressed prices. This should be done within the overall market development strategy of the project, linking communities with markets.
- Water conveyance systems that will make it easy for beneficiaries to fill the water storage tanks instead of filling them using buckets should be identified to further ease the burden on women, children and the elderly. The introduction of the elephant pump, with an extension connection to the water storage tanks so that water is pumped directly into the tanks should be scaled up to benefit farmers like Mr Sibanda, who are using the windlass and bucket system to fill storage tanks.
- Production is also limited by the high cost of inputs (vegetable seed). Farmers were trained on how to grow their own seed by establishing nurseries. This practice needs to be scaled up.
- There is also need to in-build action research into the project as part of improving the quality of the project and its processes.
- The concept of Lead Farmer such as Mr. Sibanda to train other farmers is effective.
- Plan's initiative of drip kits farmers competition is commendable. It helps farmers to improve their performance.

### **Conclusion**

The project has the potential of reducing poverty, if some of the inherent weaknesses are addressed. The beneficiaries need to be assisted to come up with business plans so that there is a clear plan on how to support the family to optimize the benefits to increase income and break out of the poverty cycle. The issue of improving the water extraction and conveyance method cannot be over-emphasized. Technologies such as the elephant pump

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or solar pump could be viable options. It is good to encourage members to keep records on their produce and income for analysis and future strategic planning. This information has to be used as part of developing the business plans.

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