

17 TACKLING THE ROOTS OF POVERTY: CHANGING AN NGO'S WATSAN PROGRAMME TO MEET PRODUCTIVE WATER NEEDS, ZIMBABWE

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Summary

This paper explains the changing nature of Zimbabwe's approach to rural water supply over recent decades, and in particular the programme of a leading Zimbabwean water sector NGO, Mvuramanzi Trust. After summarising the changing approaches of the Trust, the paper reflects on the need for new approaches to respond to the continuing need to improve water supplies and sanitation, and the changing nature of poverty in contemporary Zimbabwe. Case studies of attempts to respond to these new needs, especially the needs of a population severely affected by the impacts of high levels of HIV/AIDS, are considered. Crucially these include the needs of rural households to improve food security and engage in productive enterprise. Implications are drawn for non-governmental and governmental rural water supply and sanitation programmes in the country.

17.1 Background

In the 1960s and 1970s it was generally believed that, by providing safe water in rural areas, we could have a major impact on the reduction of disease in developing countries. If, for example, water supplies to communities were excellent, we should expect a reduction in water-related diseases of about 80% for typhoid and schistosomiasis and 50% for dysentery and diarrhoea in newborn babies (WHO 1985). In retrospect we know that the provision of safe water by itself is not enough to achieve a major impact on the reduction of water-related diseases. For improvements in the health of communities and the reduction of diseases there needs to be not only an improvement in water quality, but also in the quantity of water. Other factors such as safe excreta disposal methods, hygiene behaviour and good nutrition all play an important part in maintaining resistance to infections.

17.1.1 *A brief history of Zimbabwe's approach to rural water supply and sanitation*

Independence for Zimbabwe in 1980 and the launching of the International Drinking Water Supply and Sanitation Decade (IDWSSD) coincided by chance and there followed rapid implementation of improved rural water supplies for drinking and domestic purposes. These programmes were mainly predicated on "health" benefits, but it was realised that a narrow focus on the provision of safe water would not bring about a 50% reduction in diarrhoea. The aim of the rural water supply programme for Zimbabwe was to increase the quantity of safe water and reduce the distance to these water supplies. To achieve this aim, it was policy that water supplies would be communal and would largely come from ground water sources. Boreholes and deep wells fitted with hand-pumps were the technology of choice.

By 1985 the Rural Water Supply and Sanitation master-plan estimated that achieving its ambitious targets, of 100% coverage in access to safe drinking water within 500m of homesteads, together with Blair Ventilated Improved Pit (VIP) toilets for all would cost ZW\$700 million (US\$1.00 = ZW\$5.00 in 1985). This would involve the construction of some 35,000 primary water supply systems and 1.4 million Blair latrines in order to achieve universal coverage. The Blair VIP as the name suggests is a pit latrine with a vent pipe. Wind passing over the top of the vent pipe creates a suction that removes foul odours from the pit. Any flies entering the toilet pit or breeding in the pit are attracted to exit by the light coming down the vent. It is at the top of the vent that a fly screen is fixed that prevent the flies from leaving, causing them to become trapped and die and fall back into the pit. The VIP latrine not only acts as a flytrap but also is a barrier to the transmission of disease.

In 1987 the National Action Committee (NAC, 1998a) was established in the Ministry of Health and Child Welfare. The secretariat to the NAC, the National Co-ordinating Unit, was also established as were District and Provincial Water Supply and Sanitation Sub-committees. A Co-ordination Handbook was prepared to provide guidelines to water and sanitation sector personnel on how to implement water and sanitation projects. (NAC, 1998) Despite this, the overall control of the water and sanitation programme remained in the hands of the sector ministries. The Ministry of Health was responsible for sanitation and shallow wells including family wells. The Ministry of Water Development and the District Development Fund (DDF) were responsible for boreholes and deep wells (communal wells). Other ministries were

responsible for land use planning, mobilisation, finance and co-ordination of the projects at national, provincial and district level.

Box 1. Definitions

Shallow wells: A shallow well is a well that is hand dug. These may be low or high yielding depending on the local ground water conditions

Deep wells: A deep well is one in which the well is deepened by blasting with explosives to get a good source of water.

Family wells: Family wells can be shallow or deep depending on whether families employ a blasting expert. They are privately owned.

Boreholes: These are narrow drilled wells and are considered to be the most reliable sources. They are drilled to at least 40 m in depth and are usually communal sources of water supplies.

At around the same time the amalgamation of District Councils and the Rural Councils into the Rural District Councils (RDCs) were intended to change the way projects were to be implemented. New legislation (The Rural District Councils Act 1988) placed the responsibility for water supplies within the RDC's remit. The centralised system, whereby funds for activities were passed through line ministries to implement projects, changed to a decentralised system where the funds were sent to councils and then allocated to implementing ministries to undertake activities on behalf of the council. The Co-ordination Handbook was revised as the Integrated Rural Water Supply and Sanitation Management Handbook of 1998.

The Rural Water Supply and Sanitation Programme (RWSSP) initially focused on providing water supplies from communal boreholes, and deep wells. Activities related to rain water harvesting, family wells and water from springs tended to be restricted to non-government organisations (NGOs). Piped water schemes were (and remain) the least preferred option for rural areas by all agencies due to the high maintenance costs of running such schemes.

17.2 Technology development: a brief history of Mvuramanzi Trust's change in approach

Mvuramanzi Trust was established in 1993 as a non-profit, non-government organisation to fill an identified gap in the national rural water supply and sanitation project. The government programme at that time was focused on the provision of water using communal boreholes fitted with "bush pumps". During the period since 1994 Mvuramanzi Trust, like some other agencies, shifted from primarily working on communal water points (usually bore wells fitted with hand pumps), to a focus on family water sources. Recently, work has concentrated on easing the burden of pumping from family wells, through the development of low-cost pumps.

17.2.1 The bush pump

For boreholes and deep wells, the NAC prescribed the use of a locally made hand pump called the "bush pump". The pump is designed for rural conditions and requires relatively low maintenance. On the pump head it is important to ensure that all bolts are kept tight and carry out inspection for wear. After about three years it may be necessary to change floating washers in the pump head and after about a decade it may be necessary to change the hardwood bearing block. The "down the hole" parts require most of the maintenance and include replacing worn seals, attention to faulty pistons, worn pump rods, worn rising main, faulty foot valves and faulty and worn cylinders. Depending on the number of users of the hand pump, it should take about two years before one needs to change the seals. (Morgan 1996). Drilling and complete installation of a borehole and bush pump is about ZW\$1 million at current prices (US\$1 = ZW\$650, 2002 UN Rate). Of this amount, the beneficiary communities usually provide almost nothing. Communities usually require help to maintain the boreholes because of the specialised equipment required are not available at community level.

It was realised, however, that many families preferred to use unprotected wells near their homes rather than such improved communal water points. As a result the Trust developed a programme that would work with families to protect their wells from surface contamination. The programme became known as

the Family Upgraded Well Programme. Since the project's inception in 1993 the Mvuramanzi Trust has assisted more than 33,000 families across Zimbabwe to protect their wells.

17.2.2 *The upgraded family well*

Shallow wells are traditional water sources throughout Zimbabwe. Often they are not lined, resulting in collapse, and are not protected, so water quality can be poor. Upgraded family wells are based upon improvement of these wells, rather than replacement with different communal sources and technologies. When did you get into upgrading family wells and why? The upgraded family well is a lined well about a metre in diameter, with an apron, a tin lid, and supports for a windlass, chain (rope) and bucket. Mvuramanzi Trust in its programme typically provides the family with technical training on upgrading family wells, material support in the form of 3 bags of cement for well lining, the windlass and the tin lid. The material support is about ZW\$10,000 (US\$15) and is about 30% of the cost of upgrading the well

The family's contribution is normally the digging of the well, paying the builder, providing the bricks, sand and re-enforcing wire. This contribution is estimated to be about 70%.

In most cases, the family-upgraded wells were used to provide water for domestic purposes and water to a garden to grow vegetables for the home. Given a choice of communal or household water supplies, most families in our experience would opt for the upgraded family well because it is more convenient in providing water closer to the home for a variety of purposes. Since family wells provide easy access to water supplies, the family tend to use more water especially for hygienic purposes such as bathing and washing. As well as gardening, in some cases the water was used for other productive purposes such as beer brewing and small livestock around the home. However, where water was required in larger volumes, for activities such as brick making or market- orientated gardening, these activities are usually done away from the homestead near a river or dam where the families collect the water in buckets and cans. In our meetings with families we realised that, while we had assisted them through the upgraded well programme to improve their domestic water supplies and small-scale irrigation, a large amount of beneficiaries' time was spent lifting and carrying water to the gardens. The need was to find a pump that had a high extraction rate as well as a pump that was affordable to these new irrigated farmers and that could be maintained by them.

17.2.3 *The rope pump*

About two years ago the Trust identified the rope pump as a possible option for reducing labour burdens on farmers. The first trials conducted by Mvuramanzi Trust were in Marondera District. The families were delighted with the pump and could immediately see the advantages such as less time to carry water, the ability to pump and use more water and the ability to pump water into a tank and then use a hose pipe to irrigate their gardens.

The rope pump is a water-lifting device capable of lifting relatively large volumes of water from a pond or well. It is very simple. During operation a rope is pulled through a pipe by means of a pulley wheel. Fixed to the rope at regular intervals are washers that are slightly smaller in diameter than the pipe. When the bottom of the pipe is inserted in water and the rope and washers are pulled upwards through the pipe, the water is drawn up the pipe and discharged at the top of the pipe. The rope and washers pass around the pulley-wheel and return to the bottom of the pipe completing the circuit.

Box 2. Costs for a well with rope pump in 2002 (ZW\$)

Well digging and lining down to 12 m	39,000.00
Windlass	3,600.00
15 m of 50 mm class 10 pvc	5,750.00
30 m of 8 mm nylon rope	2,436.00
20 bags cement for storage tank	11,000.00
4 gate valves, 40 m poly-pipe, 4 b/nipples	16,500.00
Total	78,286.00

(US \$ 1 = ZW \$ 650. 2002 UN rate)

17.3 Our impact, and the changing nature of poverty

17.3.1 Gains in access to water supply and sanitation

Since independence, there have been impressive and lasting improvements in water supply and sanitation in Zimbabwe. Access to safe water nation-wide is now estimated at 75%. Nevertheless, there are flaws in these data and much remains to be done. The calculation of this percentage is arrived by the "shallow well unit concept". This concept estimates that 50 people will use a shallow well and 250 people a borehole. By counting the number of wells and boreholes in a district and then multiplying by the respective users (either 50 or 250) and then applying this figure to the actual population of the district, a figure for district coverage is derived. This method does not take into account the distance of families to safe water supplies, nor does it include boreholes that have broken down. At present the maintenance system that was being managed by the District Development Fund is not functioning and it is estimated that as many as 50% of boreholes may not be working.

17.3.2 But poverty remains, and is changing

Alongside the continued reality of poor water supplies and lack of sanitation for many, poverty is a serious condition for the Zimbabwe population. And its nature is changing. Poverty affects more than 80% of the people living in the rural areas. Economic decline, drought and HIV/AIDS have dramatically changed the landscape in Zimbabwe over the past few years – with huge implications for the water and sanitation sector.

The biggest impact of this humanitarian crisis has been on women and children, with the greatest impact on children of the poor. The last three years saw Zimbabwe enter a period of serious and ongoing macro-economic instability characterised by limited availability of foreign exchange, runaway inflation and negative economic growth. The real GDP growth rate shrank from a poor 0.2% in 1999 to –5.1% in 2000 and to a disastrous –8.9% in 2001. Inflation in mid-2002 was estimated at 116%. Zimbabwe's agriculture sector, already in a state of turmoil, has been hit a drought. The number of people in need of food assistance increased from about 500,000 in October 2001 (WFP) to about 6.1 million by July 2002 (UNCT-CAP, 2002). This represents about 50% of the population of Zimbabwe.

HIV/AIDS with a prevalence rate of 33% amongst the adult population (UNAIDS 2000) has compounded the problem. The link between malnourishment, HIV/AIDS and opportunistic infections has been well documented. Often it is the husband that is the first to die of HIV/AIDS leaving the wife and the children as maternal orphans. In many cases the wife is too sick to care for the children and they have to depend on the support of grand parents and relatives for support. As food becomes scarce, there is a danger of people, especially children, exchanging high-risk sex for food thus increasing transmission.

17.4 Evolving programmes: different ways of responding to new needs

In response to recognition of household needs to diversify their livelihoods and to make money from the productive use of family wells, the programme of Mvuramanzi Trust has continued to change. The overall aim of this water supply programme is now to increase family income, improve food security and improve health. This represents a radical (though as we explained evolutionary) shift from Mvuramanzi's starting point as a conventional WATSAN NGO. In the following case-studies, recent projects are highlighted that have aimed to respond to these needs, and to address important external stresses such as the increased prevalence of HIV/AIDS. The case studies mainly relate to families, including poor and orphaned families. A few of the case studies include work undertaken with schools and religious groups. For reasons of confidentiality we have changed names of the people in the case studies.

The families identified for the studies were selected from projects in Marondera and Uzumba Maramba Pfungwe Districts. The support provided to families was not always the same as can be seen from the case studies.

17.4.1 Nyagande water supply project

In 1999 the Chingwamba extended family (four households) approached Mvuramanzi Trust for assistance to improve their water supply from a spring. The Trust provided assistance in the form of 200 m of 50 mm poly-pipe, and help in the protection of the spring and construction of a brick water storage tank. The family provided labour, bricks and other materials such as sand and stone. In the first year, Mr Chingwamba said that they were able to make ZW \$50,000 (US\$77) from the sale of green maize, ZW\$40,000 (US\$62) from tomatoes and ZW\$ 30,000 (US\$46) from beans . The maize was grown on 2

acres (0.8 ha), beans and tomatoes on half an acre (0.2 ha) each. The family also harvested half a tonne of dry maize, which was milled into meal and kept to feed the family. From the income, the family were able to buy a bull and a cow, buy fertilisers and to pay school fees for two children who were at secondary school.

The following year the family planted maize on 3 acres (1.2 ha) and they harvested 1 tonne of dry maize that they sold and used for domestic consumption. Green cobs were also sold and brought in ZW\$ 70,000.00 (US\$108). Sweet potatoes were planted on half an acre (0.2 ha); the family harvested and sold sweet potatoes worth ZW\$ 25,000 (US\$38). This is above what the extended family shared together for domestic consumption. Beans were planted on half an acre and produced a harvest that was sold for ZW\$30,000.00 (US\$46). This is above what the four households consumed. That year the family were able to buy a solar panel and install a solar electrical system. They also bought a radio, lounge suite, two beds, eight blankets and school fees for two children in the last year of school form four (school fees ZW\$ 40,000, US\$62). They were also able to buy the fertiliser and inputs for the next season, 2001.

In 2001 the family planted maize on 3 acres. They managed to harvest as green mealies ZW\$ 60,000 (US\$92). They also harvested dry maize half a tonne for domestic consumption. They again planted sweet potatoes and harvested sweet potatoes worth ZW\$60,000. They planted cabbages on one acre. The extended family were able to renovate the main house at a cost of ZW\$35,000 (US\$53) and build a two bedroom house for the second son who married that year. They paid the lobola worth ZW\$50,000 (US\$77). They also bought a heifer for ZW\$24,000 (US\$37) and managed to buy the agricultural inputs for the year 2002.

In 2002, the family planted maize on 3 acres again and at the time of the visit 6,000 maize plants were in the field. They are expected to harvest more maize cobs and sell for ZW\$50 each giving them a potential income of ZW\$300,000 (US\$460). They also have planted sweet potatoes that they are now selling. They have already sold 300 tins of sweet potatoes at ZW\$700 (US\$1) a tin. They are expecting a further 100 tins from the crop. The income so far from the sale of potatoes in 2002 is ZW\$210,000 (US\$323) with a potential income of ZW\$280,000 (US\$430) for 2002.

Without the benefit of their overhead irrigation system, the family would not have been able to grow crops all year round and would not be able to benefit by growing early maize. The value of the spring has increased with use for the families and they are taking the following steps now to conserve water:

- They are building contours to stop gullies and soil erosion at the site of the spring.
- The crops are chosen on their water requirements and on the water supply available e.g. if they see that the inflow into the storage tank is low they reduce on crops that have a high water requirement in the dry season. They also take advantage of crops like sweet potatoes that are planted at the end of the rainy season (February) and are reaped in September and October and therefore are not high demanding of water in August to November.
- Rather than allowing their animals to wander, the families have provided paddocks for the cattle, goats and sheep where they provide them with drinking water.

The families have clear responsibilities for the different gender groups. The boys and men are responsible for the ploughing of fields using the ox drawn plough. After ploughing they are responsible for ridging in preparation to planting. The men are also responsible for making the seed nurseries. Both men and boys are responsible for the irrigation of the crop and provide the labour for moving the pipes, pipe repair, operation and maintenance. The women and girls are responsible for the planting of crops, the weeding, fertilising and the harvesting of the crop. They are also responsible for the marketing of the crop.

This project that involved just one extended family has allowed that family to improve their income, and to improve their livelihoods. The case study provides one approach to reducing poverty by targeting families where opportunities exist. This relies on a "trickle down" impact on poverty. Instead of focusing on the very poor, the project looked at the opportunities for improving income and worked on the principle that an increase in income in the area will benefit the very poor, who will be able to source employment from better off farmers.

17.4.2 The rope pump project in Marondera District

In 2000 we wanted to see whether the rope pump could be used as an effective technology to provide water for small-scale irrigation purposes. Initially we chose four families in Marondera District. In selecting families who would benefit from the pilot projects we considered the following factors:

- Our priority was to assist families caring for orphans.
- We wanted to assist poor families whose livelihood depended on subsistence farming.
- Families should have open wells, which they were using to water gardens.

The pilot project sought to address two important issues. First we wanted to test the suitability and effectiveness of the rope pump as a technology option for small-scale irrigation purposes. Second, we wanted to improve the water abstraction capacities of the families through the use of the rope pump. Our assumption was that, with increased water availability, the families could improve their crop yields, food security or incomes. The following case study is representative of the situation among the participants in the pilot project

The Masuko family comprised twelve family members. Of the 7 children going to school, 4 attended primary and the remaining 3 attended secondary school. Three of the children were orphans, being grand children of the Masuko family. Grandfather Masuko, a subsistence farmer, was 63 years old. In 2001 we donated a rope pump to the family. The family provided a 200 l drum and a hose-pipe for irrigation. Before the donation the Masuko family used to plant and irrigate one acre (0.4 ha) with vegetables for both domestic use and sale. They plant green leafy vegetable, tomatoes, onions and maize in the garden. Before the installation of the rope pump, eight family members took turns to water the one-acre plot with cans. According to the one of the older son's, it usually took the whole morning for the family to water the one-acre plot. After installation of the rope pump, the family has expanded the irrigated area to 5 acres (2ha). Now only two people irrigate the 5-acre plot using the rope pump. The family said it now takes two people only three hours to irrigate 2 acres of vegetables, signifying a great time and labour saving to the family. At the time of our visit, the family was preparing to plant maize on 3 acres of the plot. Two acres were still under vegetables. They harvest 60 bundles of green leaf vegetables every two weeks and transport the load by bus to Mbare. The selling price ranges between ZW\$13 (US\$0.02) and ZW\$130 (US\$0.2) per bundle. The price is determined by availability and quality of produce on the market. They are expecting to sell 40 bundles of onion, each bundle containing 10 onions. In addition to the green leaf vegetables they also sell 5 20 l buckets of tomatoes every other week in Mbare Musika. The advent of the rope pump has reduced labour for the women who used to water the gardens and then market the produce. Two male members of the family water the garden, while the women concentrate on marketing the vegetables. Because it now takes two people to water the garden, the rest of the family members are free to attend to other responsibilities. Most importantly, the women and children are spared the heavy duty of watering the garden by can.

The approach taken with the Marondera group of farmers is based on increasing the amount of water available for crop production. It would appear that this method of assisting families with rope pumps is beneficial. In other cases we have seen the rope pump being used to grow vegetables for export and increase the income. We believe that the rope pump provides the opportunity to improve livelihoods, however the problem remains of who is the target group. It is difficult to imagine the very poor being able to afford this technology without considerable support. In the third set of case studies we look at interventions aimed at orphaned children.

17.4.3 The drip-feed irrigation project in UMP District

In this project Mvuramanzi Trust has worked with Uzumba Orphan Trust. This Christian Faith organisation started in 1995 programmes in home-based care, youth care, and orphan-care. One of the aims of the organisation is to source funds to pay school fees for orphaned children. The organisation is based within the community and has developed a number of income generating projects such as a tuck shop, clothing outlets, sewing, and selling vegetables. The organisation also receives donations from sister churches in the USA. Mvuramanzi Trust donated 10 drip-feed irrigation systems to families and institutions in UMP district. The following case studies show how the families and groups are managing these drip irrigation systems. The standard kit is an Indian system with a 110-l storage tank. In addition to receiving the kit, training was provided together with a seed pack for 100 m².

One of the selected sites was Chitimbe School. The school has an enrolment of 700 children of whom 400 are orphans (250 girls and 150 boys). These orphaned children are normally under the care of relatives. The school reported that the pass rate was very low and that often children come to school unwashed and in dirty clothes. Sleeping in class is also common, due to malnutrition and long distances travelled to school. Due to the prevailing drought and food shortages, hunger is evident among the school children. The school was identified to benefit from one of the drip irrigation systems so that the school could grow vegetables for sale to provide income for books and other teaching AIDS. The school has a garden where teachers can grow their own vegetables. The teachers have made available a

portion of the garden for the drip irrigation project. The Mvuramanzi Trust provided a rope pump that was fitted to an open pond in the garden. The water is pumped into a 200 l metal drum, from which it is used to fill the 110 l storage tank for the irrigation system. From the storage tank the water is then distributed to the vegetable seedlings and seeds. Mvuramanzi Trust provided the school with seedlings for cabbage, tomatoes, onions and seeds for carrots, and butternut.

Each day the 110-l plastic water tank is removed from the garden, as the teachers believe it will be stolen. We were told that the tank is ideal for dispensing traditional brewed beer, as it comes with a tap. Before the donation of the drip-fed irrigation scheme the school garden was used mainly for growing vegetables for the teachers. Not much was derived for the school because of the labour requirements for watering the garden. The school has now set targets for the garden, based on expected harvests and clear plans for cropping patterns, a system that did not exist before the drip-fed irrigation system. While the scheme is in its infancy, a trend has clearly been set that will obviously benefit the school in generating income for the procurement of educational materials. UMP district has a high incidence of bilharzia among school children and this may partly explain why a lot of children sleep in class. The drip-fed irrigation scheme reduces contact with water and may help reduce incidences of infection among children.

Mr and Mrs Mbada died leaving behind Janice, born 1979 and who is married, and Kudzanani, born 1982 who has finished secondary school and is now staying at home and Tawanda born in 1986 who is writing her final exams this year. Trust the youngest son was born in 1990 and is at primary school. The family are in the custody of the father's elder brother and the father's sister who is assisting in the raising of the children. When the mother died after the fathers' death, her parents came and claimed the 3 cattle and 3 goats as part of the unpaid lobola (bride wealth). They left behind a plough and four chickens. Last year the family reaped 200 kg maize, half a bale of cotton, and two sacks of mhunga (millet). In the vegetable garden the family planted rape, onions and tomatoes. Most of the crop was used for home consumption and the rest sold. The family were assisted with a 110 l storage tank, a 100 m² drip irrigation system and were given some seedling and seeds. Unfortunately the goats got into their garden and ate these, however the garden has been replanted with tomatoes, onions, rape and butternut.

The Nyathi family has also benefited from the project. The parents of the children are dead and the grand parents, although in their seventies (estimated), are trying to look after the children. There are two males and three girls between the ages of 11 – 20. There are also three boys below the age of 10 years. From our perceptions we would rate the ability of the household to provide its own food as poor (2 points out of 5) and their quality of life as poor (2 points out of 5). The family said that they only ate meat and chicken about once every two months. The family ate fresh fruit including wild fruit about once a week. The family ate sadza every day and this was eaten with vegetables including rape, tomatoes, onions and beans. Last year the family had 400 kg of maize in storage at this time last year and they now have 50 kg. The one cow got sick and died soon after the parents passed away and the two goats died last month in July 2002. Crops planted under the 100 m² drip fed irrigation system were as follows. 1 line of cabbages, 5 lines of rape, 2 lines of tomatoes, 1 line of onions and 1 line of butternut. The family garden is close to a communal borehole and the family collects their water from the borehole and carries it to the plastic storage tank. When we visited and met with the grandparents, we found that they had removed the tank and taken it to the house, as it was seen as a valuable item that, if left in the garden, would be stolen. The crops appear to be doing well and the grandparents said that they knew how to grow them.

17.4.4 Mashambanhaka drip irrigation project

Bishop Jacob Makoto initiated this irrigation project under the Kutungamira Apostolic Church Club in Dyora Village in Mashambanhaka area. The church has more than 2,000 members throughout the country with the greatest number in Uzumba Communal Area. Bishop Makoto has estimated that there are about 300 orphans in the area. Some of the orphans have lost both parents, while others still have mothers living. Unfortunately, the mothers are often too ill to care for the children. The drip irrigation project was given to the church after the Bishop had approached Uzumba Orphan Trust for help. The aim of the church is to grow vegetables that they will sell and provide money for the welfare and education of orphans. The church was assisted with a rope pump, 110 l storage tank and a 100 m² Indian drip-feed irrigation unit. The church was also provided with vegetable seed for growing tomatoes, onions, and butternut. They have planted 100 m² of cucumbers under drip-feed irrigation and 300 m² of ordinary irrigation bananas, onions, tomatoes, butternut and rape (kale). The club have considered cucumbers as another crop because it grows fast and there is a good financial return. The period for harvesting is only two months.

In this project they are aiming to support 15 – 20 orphans who are living in the surrounding area in five villages. The garden is a very good garden with rich soils and very high water table, only about one

metre from the surface. The water for the irrigation system is pumped directly by rope pump from a small pond. The members of the irrigation system are very pleased with the rope pump and the irrigation systems and would like to have more of these installed. When we visited the project we found that the cucumber seeds had all germinated. Judging by the other crops in the garden, it would seem as though this group have a very good chance of making a success of the irrigation project. The idea of planting cucumbers was the idea of the group and suggests to us that they have a good idea about vegetable growing and marketing of vegetables. It is interesting to note that this is fairly young group with the oldest member being under the age of 30 years (estimate).

17.5 Analysis and lessons learnt

17.5.1 Participation and targeting

At Mvuramanzi Trust we continue to adapt and develop our methodologies for working with people and communities. When we work in a district for water, hygiene promotion and sanitation our main interaction is with the Rural District Council (RDC) and the Ministry of Health and Child Welfare (MoHCW). The RDC has Ward Councillors who represent the community at ward and village level and the MoHCW has Environmental Health Technicians (EHTs) at ward level. The EHTs work at village level through the village community and health workers. We rely on these people to mobilise the community to participate in projects and this is often done through meetings. The majority of the projects have a high level of householder participation. An example of this is the upgraded well project where families dig the well, line the well, pay the builder. Using this method we have been able to achieve 33,000 upgraded family wells.

In a situation where orphans are the focus for water and sanitation projects, it is not possible to use these established methods of participation. For example, if you hold a meeting for identification purposes it is unlikely that the meeting will attract orphans or those looking after the orphans and even if it does it would be the wrong venue to discuss their problems. In UMP district we were able to identify orphans through the Uzumba Orphan Trust who carried records of families that they had worked with. By using their records and an information sheet, we are able to build a profile of these families. In Chiweshe District, where we are implementing the same project where there is nothing like Uzumba Orphan Trust to work through. Out of ten families identified, to benefit we found that four families did not fully meet the criteria. We urgently need to develop a more appropriate methodology for identifying the poor (and orphaned) families rather than continuing with the normal approach of calling people to a meeting that is likely to attract the better off families - even though they could be classified as poor.

We believe that by using an approach that involves the Councillor, the EHT, the VCW and the VHW together with an information sheet and check list we will have a more transparent process for selection. It also helps to prioritise families, as well as get a better idea of the assistance that families need.

17.5.2 Project approach

We believe that a fresh approach needs to be taken for the implementation of water and sanitation projects in rural areas. While most families in the communal areas are poor, many are willing and able to contribute towards their water and sanitation projects – especially when this is based on technologies they like and which meet requirements they prioritise. Communities do not need 'no cost' basic and standard solutions that do not meet their needs. What is lacking is support to develop the systems they do prefer, such as the opportunity to buy cement, rope pumps and irrigation kits at affordable prices for families who prefer their own well and mixed-purpose source. It is important that we provide opportunities for these people to participate in meaningful ways in designing their water and sanitation projects - as was the case in Nyagande. When such projects are successful they often create a ripple effect in the community, leading to a rapid uptake and creating new demand.

On the other hand, there are families who are so poor that, without assistance, they are left out of projects altogether. These include people with disabilities and orphaned children. These vulnerable groups need special attention and it is important that projects identify these people through NGOs, councillors, and extension staff. It is also important that the services received by such people are assessed through monitoring and evaluation.

The key lessons we have learnt are to ensure that families' water supply is designed around the families' requirements and usage of water and not based on a blanket approach of one borehole for 250 people and one deep well for 150 and a shallow well for 50 people.

17.5.3 Boreholes, upgraded family wells and rope pumps

Many boreholes fitted with B type bush pumps have been installed throughout Zimbabwe. These boreholes have provided families with safe drinking water and represent a large investment in terms of drilling the boreholes and fitting them with pumps. Communities have, through community based management training, been given the responsibility to maintain these pumps, but this remains problematic. The upgraded family wells on the other hand largely depend on investment by the householders in improving their water supply. In areas where it is easy to dig shallow wells, almost all households do invest in a family well. And cheap and easily-maintained pump technologies tend to be better maintained. Boreholes sited in the community are often not being fully utilised, except for those at schools. It is most cost effective if boreholes are promoted in situations where it is not possible to promote upgraded family wells. Boreholes should still be promoted for schools, where they also often provide an emergency supply to the community.

We are advocating a much more personal approach, where the householder becomes central to water supply projects. If the new approach is to be successful, it will require training within water sector organisations to develop capacity. It will take more time to identify and work out a plan of how to deliver water supplies to families. However, the end result should be a water supply that is in line with what families would like see in place.

Our experience in supporting families to install and use rope pumps in Marondera show that these pumps can help provide good clean drinking water to households, if installed on protected wells. But, importantly, the extra water that can be pumped easily is used for productive activities, especially gardening. These pumps are intended for family use and are designed to allow the family to carry out all the maintenance on the pumps. The pumps can also be used on an incline to draw water from ponds, dams and rivers. The feedback from the Marondera water projects indicates that families are happy with the pumps, especially the high extraction capabilities. It is important to consider the yield of the well when installing these pumps and on low-yielding wells the family should settle for a bucket and windlass. The other option that some families have taken is to deepen the existing well or dig a new well.

17.5.4 Irrigation methods for small gardens

The purpose of drip irrigation systems is to provide water directly to plants and thus save water. The other perceived benefit is that once you have set-up the system i.e. filled the water storage tank and ensured that the system is supplying water to all the plants the operator is free to carry out other activities. The operation of the system does of course require some additional skills for which we provide training. Although we have only been using the system for a fairly short time and will only be able to make an assessment at the end of the year, there are already encouraging findings emerging.

Most importantly, among these are the people who have experience of drip-feed irrigation systems and have a greater understanding of the value in terms of labour saving and in water conservation. They also have a good understanding in the operation and maintenance. From our work in UMP and Chiweshe District we have seen some families operating the system with ease, while others have problems and are resorting to using watering cans in addition to the irrigation systems. It may be that some families will find it easier to water vegetables with watering cans and hosepipe as in the Marondera case studies.

17.5.5 Crop selection

In the Marondera case studies, families are growing rape (kale) because they see it as a low risk crop. They do not have to buy seed as they plant from cuttings and they use organic fertilisers and compost. The investment in the crop is low and they hope that the market prices will allow them to survive. Families only begin to grow higher value crops when they feel their income is secure. If assistance is to be provided it is important to consult with families on possible crops to grow and the type of income they can expect, as well as a risk assessment. The church group in UMP district was able to identify cucumbers as a crop that could be grown in a short time and provide cash to support some of their orphans.

17.6 Conclusions

During the 1970s, the development and provision of water and sanitation facilities in the communal areas of Zimbabwe were squarely aimed at improving health. Emphasis was put on reducing disease incidence associated with the absence of adequate safe water and sanitation facilities. The programme was very specific in nature and planning was district-based. Problems were defined at district level and coverage measured at this level, with both assumed to be uniform across districts for all people

Later there was a paradigm shift from a blanket approach in provision of facilities to ward-based planning. By the mid 1980s the programme, while still district-centred, started to address issues of sustainability. Communities had to take increasing responsibilities in the operation and maintenance, including financial contributions towards procurement of spares and labour charges. But it still remained silent on the economic benefits water supplies could bring to people. Emphasis continued to be on provision of water strictly for domestic use and improvement in health. The health problem was still addressed on a very general level although the programme had started to address specific health issues. There were vain attempts to address nutrition as a health problem through the promotion of nutrition gardens at communal water points. The value of water remained predominantly health-centred.

By the year 2000, there was a marked decline in the economy and a high incidence of HIV/AIDS-related illnesses. HIV/AIDS-related deaths added a new dimension to the water and sanitation sector. Different family structures emerged. The traditional family structure changed, we now have elderly people looking after orphans because the parents have died of AIDS. These new families require a totally different approach in provision of water and sanitation, if their requirements are to be met. Mvuramanzi Trust realised the need to develop a household-based planning approach to water and sanitation. The Trust realised that the HIV/AIDS-affected families needed an economic intervention that would improve food security to the family. The recent drought has worsened the food security situation for these families, already struggling to survive. Mvuramanzi Trust developed and promoted the rope pump as a low cost technology for small plot irrigation systems. The programme targeted poor families who have the added responsibility of looking after orphans.

The objective of the programme was to improve food security for the family, either through direct food availability or increased income for the family. Initial results from the programme have shown the need to address the households as specific planning units and to move away from the blanket approach in which community needs are taken as uniform. Some HIV/AIDS-affected families are so poor that they need special assistance. However the programme has also demonstrated that, with adequate support, food security at household level can be improved with contributions from affected families. The provision of safe drinking water and sanitation facilities will not in itself improve the health and living conditions of the poor. Rather, people need multiple purpose water supplies that enable them to grow food and earn money.

In all the cases cited above, the programme has made a positive impact in improving food security, time and labour saving. Households have increased crop production or crop diversity, and this has improved the nutritional status of families.

17.7 References

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