



World Vision

**ZIMBABWE EMERGENCY WATER AND SANITATION
PROGRAM (ZEWSP)**

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BASELINE SURVEY REPORT

December 2005-May 2006

**MANGWE, GWANDA AND BEITBRIDGE DISTRICT
(MATABELELAND SOUTH PROVINCE)**

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BASELINE SURVEY REPORT

I. SUMMARY

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EXECUTIVE SUMMARY

The OFDA Water and Sanitation baseline survey was carried out in Mangwe, Gwanda, and Beitbridge districts of Matabeleland South. The objective of the survey was to gather baseline data needed to assess the impact of the program in improving access to clean & safe water and sanitation facilities. A total of 956 households were interviewed. Of the total respondents, 60% were female. The majority of households interviewed are engaged in cropping activities as a source of livelihood.

The results show that 43.3% use an unprotected water source in Mangwe district, whilst 30% and 4% used unprotected water sources in Beitbridge and Gwanda respectively. The majority use protected water sources, but most households travel more than the SPHERE recommended standard of 500m to the water point, with 51.5% carrying water on the head. More than $\frac{3}{4}$ (78.3%) of the women are engaged in fulfilling their traditional role of fetching water. All these factors lead to reduced water usage at the household level to an average of 13.3 litres per day per person, far below the recommended SPHERE standard of 15 litres per day per person.

It is well established that adequate sanitary facilities prevent the spread of communicable diseases. In the three districts assessed, 44% of the respondents do not have sanitary facilities in their homestead. Most households without sanitary facilities use the bush. The respondents also registered low scores for appropriate hygiene practices, with an average score of 2.3 on critical times of washing hands and 2.1 for hand washing techniques used (optimal score is at least 3 out of a possible 5). The prevalence of diarrhoea in the three districts, on an average, 27.9% of children under-five years of age in the last seven days prior to the survey, further reinforces the need for improved hygiene practices.

Fifty-three percent of the respondents in Mangwe district and 42% in Beitbridge reported that there were no village pump mechanics in their communities. Irrespective of a functional or non-functional water point, most of the district (91% Gwanda, 65.8% Mangwe, and 63% in Beitbridge) had a water point user committee. Few, however, knew the functions of the committee. The study also showed that the committee does not conduct training on these aspects, and that the communities

(78.5%) are willing to take part in activities that ensure the sustainability of the water point. Of those willing to ensure sustainability of the water point, 80% are willing to contribute in kind. This involves carrying out activities, such as sweeping around the water point, repairing the water point, and monitoring the water point to ensure that it is being used suitably. About 20% are willing to contribute money to sustain the water point.

The results on HIV/AIDS show that, although 100% of the respondents are aware of the disease, the majority either had no information or had the wrong perception on ways of transmission and prevention of the disease.

Generally, the communities do not have adequate access to protected water and lack sanitary facilities. It is recommended that the program provide rehabilitation of facilities and provide materials for the building of sanitary facilities.

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INTRODUCTION

In response to the severe drought in Zimbabwe, World Vision Zimbabwe (WVZ) extended the Zimbabwe Emergency Water and Sanitation Program (ZEWSP) to the Beitbridge, Mangwe, and Gwanda districts of Matabeleland South. The ZEWSP funded by the Office for US Foreign Disaster Assistance (OFDA) aims to provide clean and safe water through water point rehabilitation, hygienic sanitary conditions, ventilated and improved (VIP) toilets construction, and community capacity building to maintain their facilities.

Background and Objectives

Beitbridge, Mangwe and Gwanda districts are located in Matabeleland South. This region is characterised by high temperatures and low rainfall. The mean annual temperature of the region is 29°C, while the mean annual rainfall is below 400mm. Generally, the area is dry. The rainfall pattern is erratic and unreliable, therefore both potent surface and underground water for domestic use is scarce.

Although the area is known to have problems in water supply, the condition has been worsened by the consecutive droughts that Zimbabwe experienced since 1992. Over the past five years torrential rainfall has been received in the form of tropical storms. In addition, cyclone Eline in 2000 and cyclone Japhet in 2003 destroyed the few water and sanitary infrastructure in the region. As a result, most households use unprotected water sources, such as open wells, rivers and community ponds during the short wet season. During the dry season, when there is no surface water, most communities travel long distances to the few water points, which are still in working order. Sanitation and hygiene in these communities are also compromised by the lack of toilets, thus contaminating unprotected water sources. The ZEWSP responded to this situation by working in 16 wards in Mangwe, Gwanda and Beitbridge districts to improve access to potable water, sanitation, and hygiene for 65,000 individuals in the three districts.

A baseline survey was carried out in the three districts between December 2005 and May 2006. Each district survey was carried out independently, as operations applied

a sequential strategy, completing interventions in one district before moving to another, in order to save costs and staff resources. As a result, each baseline survey was conducted prior to operation in each district, with the exception of Gwanda, where implementation and baseline surveying was concurrent. In Gwanda, the survey was done in December 2006, in Beitbridge April 2006, and Mangwe district in May 2006. The objective of the survey was to gather data that will reflect the water and sanitation situation and align the project to the water and sanitation priorities of the community. The baseline information also provided a basis for monitoring the progress of the program and evaluating the effectiveness of the program in improving access to clean and safe water in the area.

METHODOLOGY

The ZEWS is operational in seven wards in Gwanda district, three wards in Beitbridge, and six wards in Mangwe district. All wards were randomly sampled for the baseline survey in Gwanda and Beitbridge, while three wards were randomly sampled in Mangwe. Sample sizes per district were generated using the following formula.

$$ss = \frac{Z^2 * (p)^2 * (1-p)^2}{C^2}$$

Where:

SS= sample size

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice

c = confidence interval, expressed as decimal

The sample size per ward was calculated to be proportional to the population within the ward. Random sampling was used to select three villages in each ward. A structured questionnaire was used for data collection (appendix 1). Statistics on population sizes in the wards were provided by consultative household inventories provided by World Vision staff in the district. The total sample size for Mangwe was 231, Gwanda 467, and 258 in Beitbridge.

RESULTS AND DISCUSSION

A. Household demographics

In all the three districts, majority of the respondents (60%) were females. Since women are mostly engaged in water collection, it is most likely for females to attend meetings organized on water points, or it is also possible that most economically active males having migrated to urban areas in search of jobs leaving behind females. According to De Graft-Johnson (1994)¹, in rural areas there are 91.0 males aged 15-64 years for every 100 females as a result of rural-urban migration. As is common in Zimbabwe, most households are male headed (65%) in all districts. 62.7% of the household heads were married and the average household size was 6.62 in Gwanda, 8 in Beitbridge, and 6.3 people in Mangwe district.

Both in Mangwe and Beitbridge, the households were engaged in various livelihood activities, ranging from agriculturists to formal employment. Households were also engaged in other activities that include casual jobs and pensioners. Beitbridge is a border town, hence higher percentage of households are involved in trading activities. Data on livelihood strategies employed in Gwanda is unavailable.

Although Matabeleland is a known livestock rearing area, focus groups discussions indicate that drought and cyclones have destroyed most livestock, significantly affecting productivity in this area. Diseases affecting livestock were also reported as one of the major cause for the low animal population. Moreover, households have been unable to rebuild their lost livestock population due to the unaffordable costs. In the three districts, households mostly rear goats, cattle, and donkeys - with an average of seven goats, three cattle and two donkeys for most. Agriculture also forms a significant means of livelihood increasing households' dependence and need for water. Therefore, a more reliable and sustainable water source to sustain the community's livelihoods is required.

¹ De Graft, K.T. 1974. Population Growth and Urban Migration in Africa. *International Labour Rev.* 109(5-6): 471-85

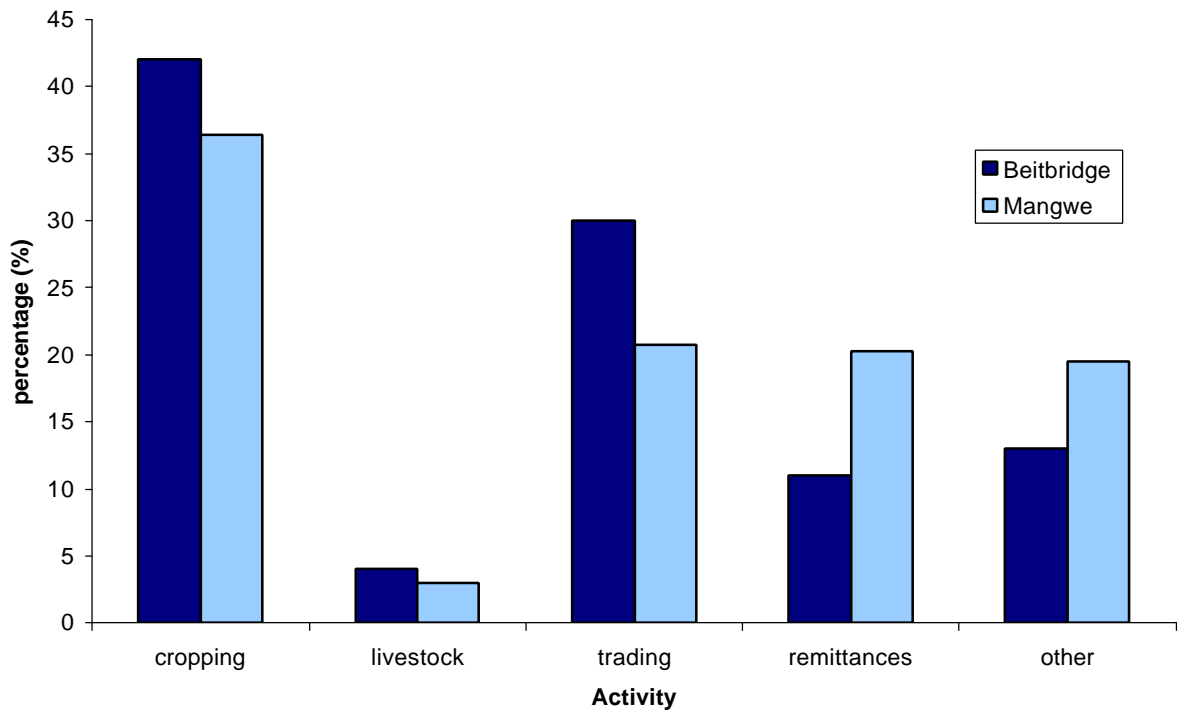


Figure 1: Livelihood strategies employed in the districts

B. Access to water

Type of water source

The term protected water source refers to water points that are covered and are fitted with a lifting device that minimises contamination of the water. In Mangwe district, communities relied on water tanks installed by the colonial government. Most of these were destroyed, however, during the liberation struggle and those, which survived this era, have since broken down. As a result, 56.7% of the communities use unprotected water sources in this area. The focus group discussion revealed that the main source of water for those using unprotected sources is river sand abstraction. This water source is usually used throughout the year as only 15.2% have a secondary water source.

In Beitbridge, 30% use an unprotected water source. Since Beitbridge experiences dry weather and constant water shortages, the government of Zimbabwe through the District Development Fund (DDF) provided boreholes. However, most of these boreholes are now non-functional. Most protected water sources are far from the homesteads, with some households travelling over 1km to the water source. This has

resulted in 25% of the households depending on secondary sources of water. Gwanda district also presented the same case where most households used boreholes, which were located over 1km from the water source. In Gwanda, unprotected water source is also used by 4% of the respondents. There is no surface water in Gwanda district for most of the year. Unprotected sources, such as shallow wells, ponds, and rivers dry up during the dry season, forcing communities to travel long distances to available water points, mostly boreholes. The figure below shows primary water sources in use in the three districts.

Secondary water sources

Secondary water sources refer to water points that are used in alternate circumstances, when there is no supply from the main water source or due to other circumstances. Secondary water sources are important types of household water supply and these have a bearing on the access to water.

In Mangwe district, of the total respondents, 3.5% use a borehole as a secondary source of water, 5.2% use the dam, and 9.9% use the river. River water is a major source for residents of Mangwe. Most boreholes are useful only during the rainy season as some dry up during the long dry season. The river and dam are secondary sources to those with protected sources, which also dry up during the dry season. This is most common in Beitbridge, where the majority use borehole as a major water source.

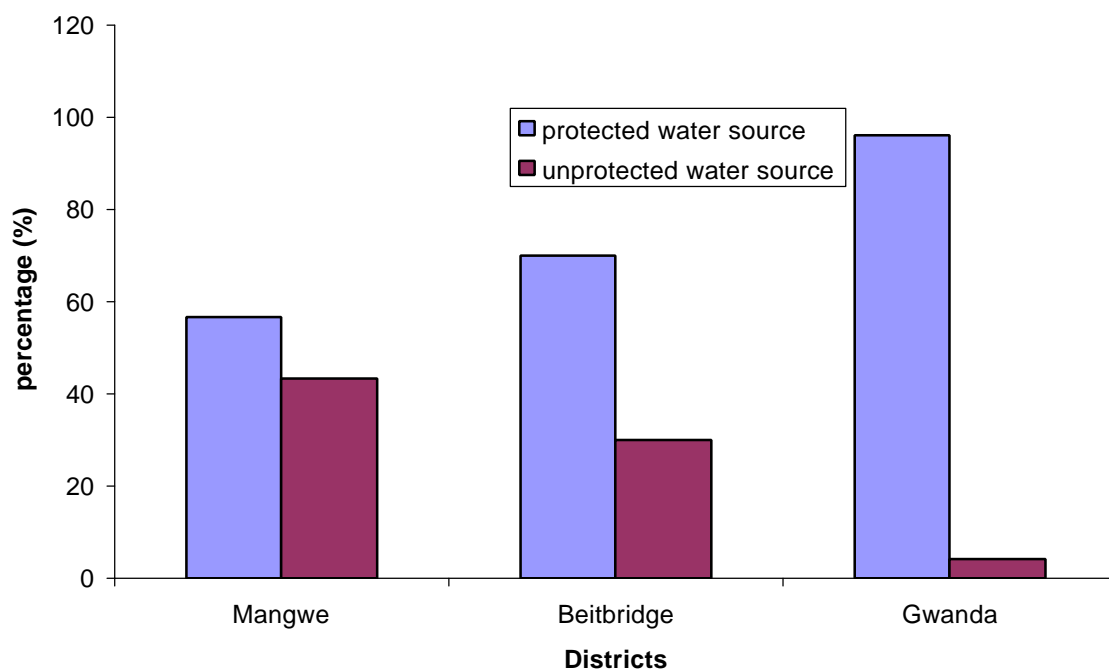


Figure 2: Water sources used in Mangwe, Beitbridge and Gwanda districts

However, distance to the boreholes and the difficulties of mobility during the rainy seasons often results in communities using unprotected sources that are nearer to their houses- such as open wells (11%), river (5%) and the dam (2%).

Ownership of water sources

The survey results indicate that approximately 48% of the water sources are communal. This is critical for households without adequate resources to develop their own water points, and thus calls for the need to understand and enhance common property management in water resource infrastructure. In Beitbridge, communities own 50% of the water points, approximately 4% of the water points belong to local authorities (local schools and local health centres), 21% are family owned water points, and 18% use water points that belong to their neighbours. While in Mangwe, approximately 50% of the respondents fetch water from the river. Communities own 41.6% of the water points, 5.2% are privately owned, 4.8%, 1.7% and 0.8% use water points that are either school, neighbour or health centre/cooperative owned. Since communities own most water points, rehabilitations on communal water points will ensure that more people have access to a protected water supply. No data was available for Gwanda district.

Water point Maintenance

Adequate maintenance is required to sustain water point infrastructure. The willingness to maintain a water point is directly correlated to water point ownership. Data from the three districts indicate that, although the community owns approximately 48% of the water points, it only maintained 33.7%. Only 3.2% mentioned the existence of a water point user committee to monitor usage and maintenance. It is also understood that most of the communities were unaware of the functions of a water point user committee and the committees were not trained on their roles. The survey also indicated that village heads, local authorities, and owners of the water points (51.1%) maintained water points; 12% of the respondents did not know the person responsible for maintaining the water point.

The study emphasizes the need to strengthen community-based management and build community capacity to maintain water facilities. Strengthening community capacity to maintain water points will ensure sustained gains to the community through reducing break down times and reducing reliance on outside structures in repairing minor break downs.

Methods of Ferrying Water

Water ferrying in most rural communities in Zimbabwe is a female task. In Mangwe 86.6% of the females are responsible for ferrying water. In Beitbridge and Gwanda women, 78% and 70.4% respectively, are tasked also with water ferrying. Male children are also responsible for ferrying water and in helping out in household chores whilst they are young, as they grow older, the water collection is viewed as a female task. Undoubtedly, in order to reduce the work burden on women and children, men need to be educated.

Various methods are used to ferry water to the homestead. Depending on the method used, the burden on the carrier also varies significantly. To reduce the burden on women and young children, easier methods of ferrying water, such as a wheelbarrow, are recommended. As presented in figure 3 below, in all three districts, various methods are employed, with more than half carrying water on their heads.

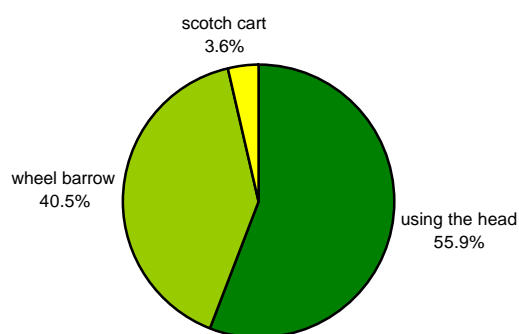


Figure 3: Water ferrying methods in the three districts

The introduction of appropriate technology in water transportation is very crucial in all three districts. Most of the water containers are 25 liters, they are heavy, and have a bearing on the weight that women and children; especially the girl child has to carry on their head. Water trolleys significantly decrease water-carrying burden and allows for more water to be ferried at a time.

Time spent in water collection

Distance to the water point and the time taken at the water point are two major factors that determine access to potable water. The SPHERE Standards recommend that it should take less than 15 minutes for a household to get to a water point and, thus, must be less than 500m. Water points should be sufficiently close to households to enable minimum water requirement. However, on average in the three districts, 55.2% travel more than 500m to the water point.

Table 1: Distance travelled to water point in the three districts

Distance traveled to water point	Beitbridge	Mangwe	Gwanda
Less than 500 Meters	33%	39.4%	62%
Between 500 meters and 1 km	31%	28.1%	38% ²
Between 1km and 2km	21%	16.5%	--
Between 2km to 3km	9%	10.0%	--
Between 3km and 4km	2%	3.9%	--
More than 4 km	4%	2.2%	--

² For Gwanda district this figure represents the percentage that travels more than 500m to the water point.

Time taken at the water point

The amount of time taken to fetch water indicates the functionality of the water point. More time spent at the water point, often indicated by long queues, is either due to a malfunctioning water point, inadequate number of water points, or low water levels.

In Beitbridge and Gwanda, 40% spent more than the SPHERE recommended 15 minutes at a water point, while it is 43.3% in Mangwe. The negative impact of excessive queuing time for water collection are reduced per capita water consumption; increased consumption from unprotected surface sources, and reduced time available for other essential chores.

Water consumption

The average water consumption per household in Mangwe district is 84 liters, in Beitbridge 105 liters, and 97.5 liters in Gwanda. With an average household size of 6.9 people, 8 people, and 6.62 people in Mangwe, Beitbridge and Gwanda respectively, this correspondingly translates into 12.2 liters, 13.1 liters, and 14.7 liters per person. In many emergency settings, as in these districts, water-borne disease transmission is due to insufficient water for personal and domestic hygiene and by the consumption of contaminated water. Moreover, in these districts, households access to water falls short of the SPHERE recommended minimum standards of 15 liters of water per day per person for drinking, cooking, and personal hygiene. It is, therefore, recommended that the priority should be to ensure equitable access to an adequate quantity of water, albeit of inadequate quality.

Water Storage

Various factors, such as the container used to fetch water and the storage and handling of water at household level, determine water quality at the household level. This is supported by various studies that indicate that the cleanliness of water at the household level is independent on the use of a protected water source. The results obtained from Mangwe indicate that 44.2% use open containers to fetch water, while 36% use open buckets in Gwanda. No data is available for Beitbridge.

To prevent contamination of water at household level, the water containers must be covered. This is a popular practice in Mangwe as 81% stored water in covered containers, while 18.2% did not.

Data is unavailable on types of containers used to store water at the household level in Beitbridge and Gwanda. In Mangwe district, 62.9% stored their water on ground level, while 73% stored water on ground level in Gwanda. Storing water on ground level increases the chances of water contamination from animals and children. It is recommended that water be stored on an elevated platform, covered.

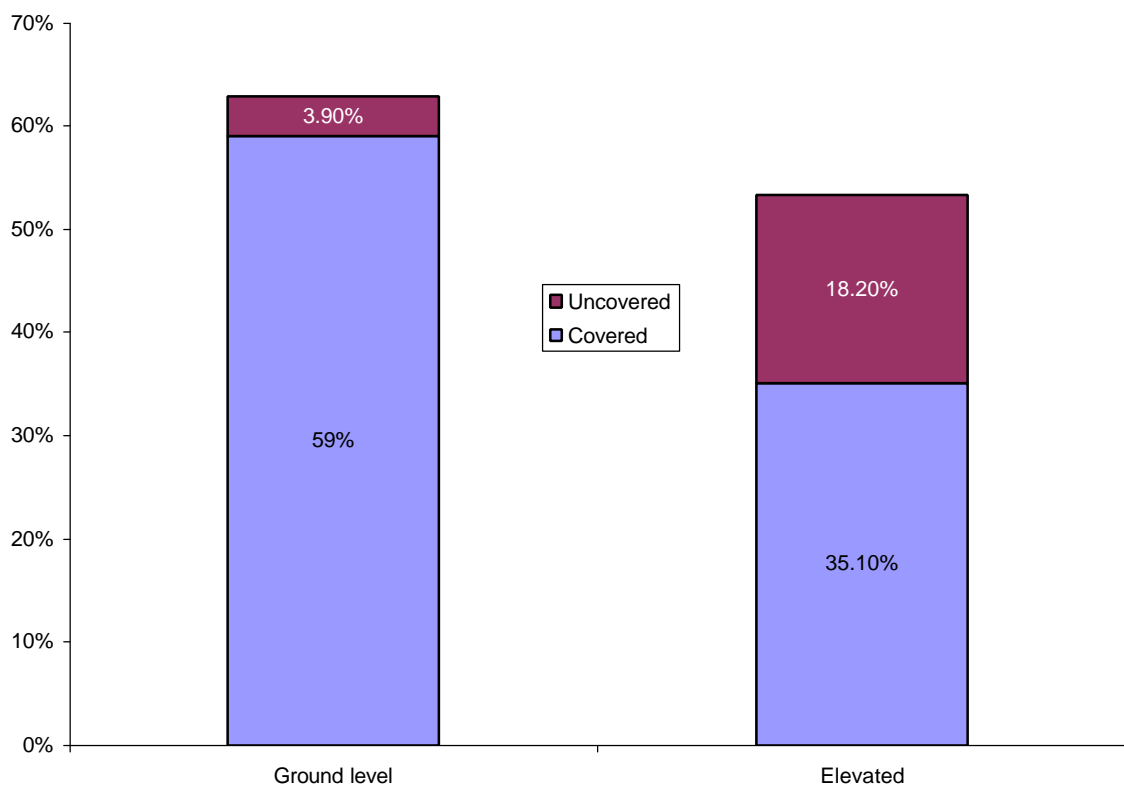


Figure 4: Methods of storing water in Mangwe district

Water Treatment

Although access to clean and safe water is limited in the project districts, most households do not practice water treatment. In general, only 13.5 % of the respondents treated their water for drinking, while 86.5 % did not in all three districts. Water boiling is the most common method of water treatment.

Water sources for domestic animals

Cattle constitute an integral part of the peoples' lives. Access to separate water source for animals is important to ensure improved water safety, however, if it is a shared source, troughs are required. In Mangwe, 52% of the households share the water source with domestic animals, while 48% do not. Of those who share the same water point with domestic animals, 16.7% have drinking troughs for the animal, 5.8 % provide dishes for the animals and 77.5% have animals' drinking water directly from the water point. The latter practice is dangerous and likely to spread zoonotic diseases. Water troughs need to be built to ensure optimal use of water. No data is available for Gwanda and Beitbridge.

C. Sanitation

Disposal of Human Waste

Safe disposal of human excreta is the first step in preventing faeco-oral and other routes of disease transmission. The construction of toilets is one of a number of emergency responses essential for building people's dignity and safety, while catalyzing good health and well-being. On average 44 % of the respondents do not have sanitary facilities in all the three districts (52 % in Beitbridge, 36% in Gwanda and 45% in Mangwe). Of those with no facilities, 92.3% use the bush and 7.6% use neighbours facilities. During the rainy season, communities are at greater risk of falling sick from use of unprotected water sources contaminated by open defecation.

Especially important is the safe disposal of a child's faeces. When asked, only 41.2% of the respondents said that they threw baby stools into latrines, 5.4 % households had children under five years of age using the latrines, 43.5% threw the stools outside the yard, while 9.9% left baby's stool on the ground. Households need to be educated on the importance of safe disposal of stool.

Hand washing Techniques

This is again one of the most effective ways to break the faecal-oral route of disease transmission. Hand washing behaviour is strongly influenced by the presence or absence of a convenient source of water and soap. Studies have shown that in-house water supplies are associated with reduced rates of diarrhoea (Boot and Cairncross 1993). Appropriate hand washing behaviour includes two dimensions: washing at

critical times and washing technique. According to FANTA testable critical times and techniques, populations should score at least 3 out of a possible 5 for these. The survey revealed that out of a possible score of 5 for critical times, the population had an average score of 2.3 and for critical times and 2.1 for the hand washing technique. Clearly, more and improved approaches to hygiene education are required to reduce common associated childhood diseases (e.g., diarrhoea).

D. Capacity

Village Pump Mechanics (VPM)

The sustainability of water and sanitation programs depends on the capacity within communities to sustain and maintain the facilities. In Mangwe district, 53% of the respondents, and in Beitbridge, 42%, reported that there were no village pump mechanics in their communities. In Mangwe, 21.2% of the respondents knew of one village pump mechanic, 9.5% knew two or more mechanics, while 16% did not know any. It is likely that the number of mechanics in the area is few and, hence, they are not very well known.

In Beitbridge, 58% of the respondents knew of, at least, one VPM in their village; 42% did not. Focus Group Discussions (FGD) revealed that, although the majority knew a VPM, they were not hired despite numerous water points break down, as these VPMs trained by DDF were expensive and unaffordable. They also said the VPMs were few, thus, one VPM could not cover more than two wards. Data on VPMs was not obtained from Gwanda. In all districts, more VPMs need to be trained and equipped; simultaneously instituting cost-effective mechanisms to serve communities effectively.

Water point User Committee

A water point user committee is responsible for ensuring the sustainability of the water point through proper use and maintenance. They spearhead all activities that concern the water point, such as repairing, fund raising to buy spares and cleaning around the water point to maintain hygienic conditions. As most water users are women, it is recommended that, at least, 50% of the committee members be female. Most of the respondents had a water point user committee at their nearest water point, whether functional or non-functional, 91% in Gwanda, 65.8% Mangwe and 63% in

Beitbridge. However, on average, only 54.2% knew of the functions of the committee in the three districts. Focus group discussions revealed that most of the WPUC were formed as a mandate of DDF and other charitable organisations that had installed protected water points, such as boreholes. However, most of these committees were not trained on their role. This, therefore, requires that committee members be trained to fully understand their role.

Willingness to sustain water points

Successful implementation of WATSAN projects requires community commitment. Communities should participate in project identification, implementation, and evaluation to ensure project sustainability. In the three districts, communities are willing to participate in activities that ensure the sustainability of the water point. The baseline survey indicated that 78.5% were willing to take part in these activities. Of those willing to ensure sustainability of the water point, 80% are willing to contribute in kind. This involves carrying out activities, such as sweeping around the water point, repairing the water point, and monitoring the water point to ensure that it is being used suitably. About 20% are willing to contribute money to sustain the water point. The low percentage is from low household income in rural areas and high inflation.

Soap Making

Hygiene promotion in local communities involves advocating for the use of soap in hand washing and other domestic purposes, such as laundry, washing, and bathing. However, it is realised that most resource poor communities cannot afford to buy soap. Thus, efforts to build local capacity will include training in soap making ensuring immediate access to affordable locally produced soap. The baseline results show that 99.2% of the households in Mangwe have not been trained or received any aid in soap making. But the study also shows that 95.7% are willing to be trained in soap making. Although data is unavailable for Beitbridge and Gwanda, similar results are expected.

E. Diarrhoea

One of the manifestations of poor water quality and unhygienic conditions is the prevalence of diarrhoeal diseases. Since children are most susceptible to diseases, measuring diarrhoeal incidents in under-five children could indicate the areas that are most prone to out breaks. In Mangwe district, 21% of under-five children had diarrhoea 7 days prior to the survey, while in Beitbridge and Gwanda district it was 30% and 4.7% respectively. An effort to improve access to safe and protected water and to strengthen health and hygiene education in Mangwe and Beitbridge is required.

F. HIV/AIDS

HIV/AIDS epidemic has caused innumerable loss of lives and orphaned many children in most rural communities. For HIV/AIDS affected communities, WATSAN interventions can alleviate some of the immediate hardships of the disease. The ZEWSP is educating and training communities on various HIV/AIDS prevention and care methods. The ZEWSP baseline survey also captured information on community knowledge on HIV/AIDS. The results show that, although 100% of the respondents were aware of the disease, the majority either had no information or had the wrong perception on HIV/AIDS transmission and prevention.

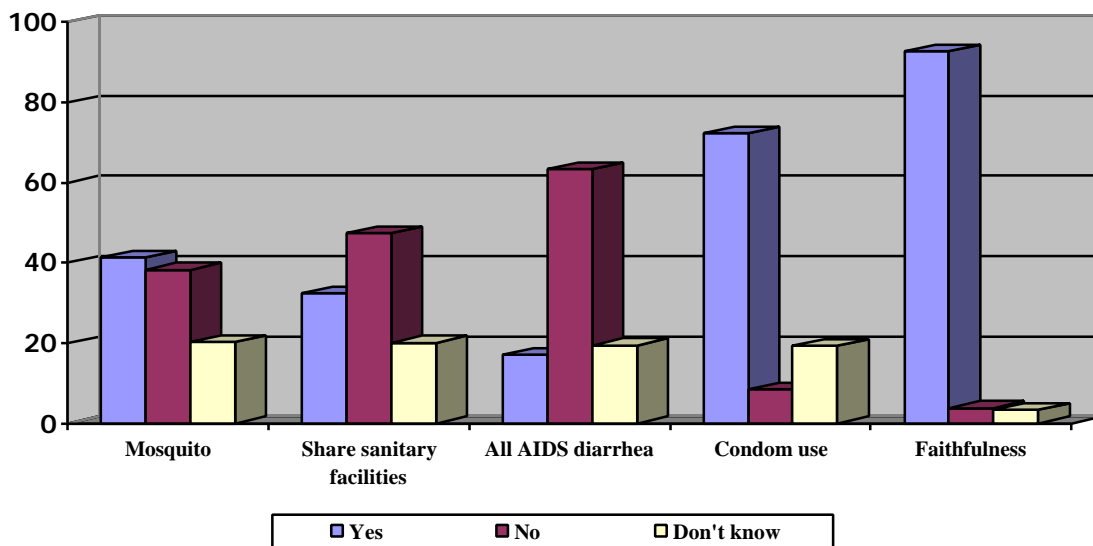


Figure 5: Knowledge about ways of transmission of HIV/AIDS

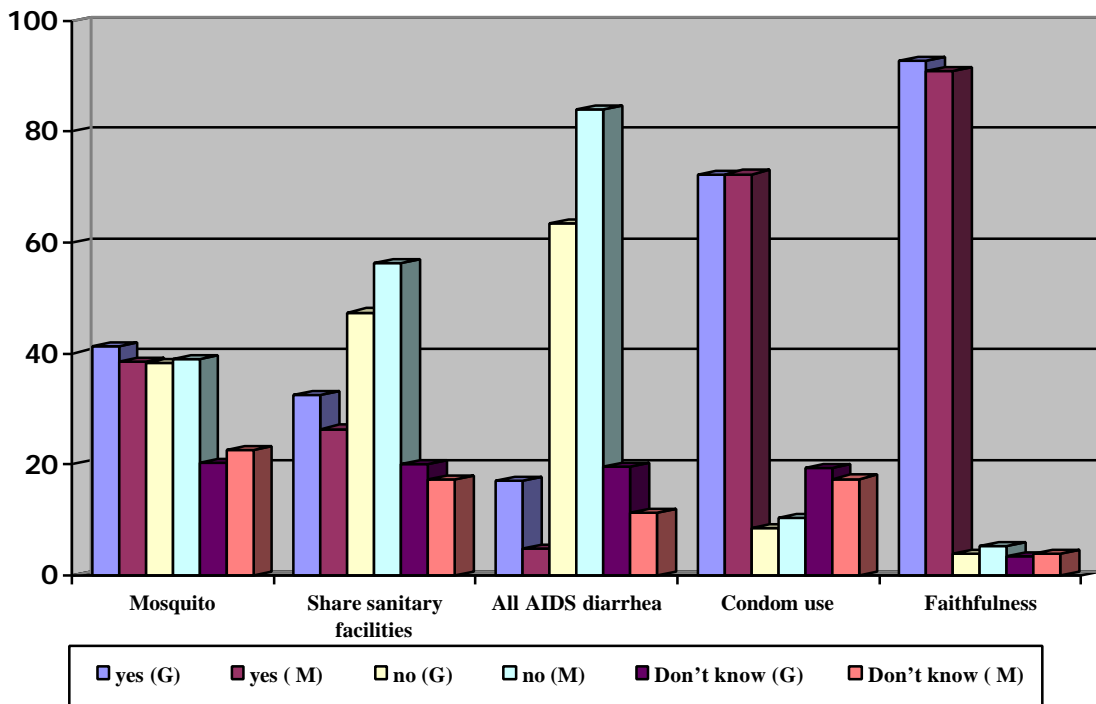


Figure 6: Comparison of Perceptions on HIV/AIDS Transmission in Gwanda and Mangwe district (%)

CONCLUSION

Most of the residents of Mangwe and Beitbridge use unprotected water sources that are also shared by animals. Moreover, unprotected sources are contaminated by public defecation. In Gwanda, although most households fetch water from a protected water source, most travel more than 500m- the recommended distance to the nearest water point- and 43.3% spend more than the recommended 15 minutes collecting water. This impacts on the health of the water carrier, especially because water is mostly carried on the head. These conditions lead to minimal water use in their homes.

The baseline survey indicates the average water usage per day per person is 13.3 liters indicating the need to improve access to water. Water quality, determined by a number of factors, is an important element in the prevention of diarrhoeal diseases. Proper water storage, one of the key factors, was not a universal practice. Most of the respondents stored water on the ground level increasing chances of contamination. Hand washing techniques and practices among respondents also scored low indicating the need to improve hygiene and sanitation behaviour. Appropriate training and

awareness is recommended. Awareness education on HIV/AIDS should also be conducted simultaneously with the PHHE sessions, which the majority of the respondents preferred.

Communities have the capacity to assist in the program implementation and they are willing to be trained as village pump mechanics and water point user committee members, and to participate in community organization. The majority are willing to participate in maintenance of the water points. All these are positive indicators of sustainability.

RECOMMENDATIONS

1. Improve water supply, access and quality by the following approaches where possible:
 - a. Drill, repair and/or rehabilitate boreholes in using information provided by the borehole inventory and baseline survey reports.
 - b. Upgrade and protect all open water sources
2. Educate the villagers on the methods of treating water to make it safe for drinking.
3. Promote proper sanitation through the following approaches where possible:
 - a. Provide materials for the construction of sanitary facilities which most households cannot afford
 - b. Conduct Participatory Health and Hygiene Education workshops in all communities, to achieve the following:
 - ✓ Educate and articulate on the importance of sanitary facilities.
 - ✓ Educate and promote the critical times for washing hands.
 - ✓ Educate and promote the proper techniques for washing hands.
4. Community awareness on hygiene through the following:
 - a. Prepare and distribute hygiene awareness teaching material (e.g., manuals, training aids, and strategies of intervention).
 - b. Recruit and train peer health educators for the sustainability of the program.
 - c. Develop a training program that targets children (school going age) and run workshops to impart water and sanitation knowledge and practice.
 - d. Develop and distribute material with messages that promote hygiene (such as pamphlets, t-shirts, posters, local drama etc).
 - e. Educate caregivers and food handlers on the importance of hand washing
 - f. Educate on proper storage of water in the household
5. Community awareness on HIV/AIDS.
6. Train VPM's and WPUC to ensure maintenance of water points.