



Vulnerability and resilience in the face of water shortages: the case of Mkoba 19 in Gweru city, Zimbabwe

Remigios V. Mangizvo ^{1*}, Edward Mupfururi ², Charles Mushaka ³

¹ *Department of Geography and Environmental Studies, Zimbabwe Open University, Midlands Regional Campus, P O Box 1810, Gweru, Zimbabwe*

² *Records Management, Zimbabwe Open University, Midlands Regional Campus, P O Box 1810, Gweru, Zimbabwe*

³ *Risk Management, Zimbabwe Open University, Midlands Regional Campus, P O Box 1810, Gweru, Zimbabwe*

Abstract

Mkoba's Village 19 is exposed to serious water shortages because it is located on high ground. The water cannot be pumped to most places of the suburb. This qualitative study utilised structured interviews, observations, focus group discussions and documentary analysis. The study established that residents woke up early to join queues at boreholes, while others had to buy water from unscrupulous youths. Some households have dug wells at their residence but these dry up quickly during the dry season. Residents resorted to the bush system as there was no running water in the toilets. This exposed them to threats of diseases such as cholera and diarrhoea. The study encourages city council to revamp the water reticulation system. Residents should be active in finding solutions to water problems. They should be involved in water recycling as well as water harvesting. The council should look at alternative ways of increasing domestic water to residents such as repairing the elevated tank.

Keywords: Village 19, Resilience, Vulnerability, Water shortage, Diseases

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1. Introduction

At independence in 1980, only 10 percent of the population in Zimbabwe, which was basically in main urban centres, had access to improved water supplies. This was mainly in white communities. According to Manzungu et al. (2013) the white colonial government did not make the provision of basic social services a priority for the black majority. In 1982, the new government adopted the Declaration of the International Decade for Drinking Water and Sanitation to correct the prevailing situation (African Development Bank Group, 2011). By 2000, the government had attained 100% coverage in urban areas and incidentally Zimbabwe became a world leader among the developing countries in the provision of urban water supply services (AfDB, 2011). The situation has however been reversed and since 2000 Zimbabwe's urban areas have been plagued by severe water shortages. Although the problem manifested itself in the late 1990s, the situation deteriorated after the turn of the new millennium (Jonga and Chirisa, 2009; Makwara and Tavuyanago, 2012). Cities such as Harare the capital and Bulawayo, Gweru, Kadoma and Chitungwiza have become synonymous with persistent water challenges (Mukuhlani and Nyamupingidza, 2014). In some cases suburbs experience water shortages despite the fact that reservoirs supplying the city would be full (Makwara and Tavuyanago, 2012). This study was motivated by the water shortage reports which appeared in the national as well as local newspapers. This study therefore had the desire to establish the effect of water shortages on urban communities with specific reference to residents of Village 19 of Mkoba in Gweru Zimbabwe. The study went further to examine the coping strategies adopted by residents of Village 19 to deal with the problem of water shortages.

2. Related literature on water shortages, vulnerability and resilience

2.1. What is resilience?

Resilience is a term that emerged in the 1970s and has its origins in ecology to describe the capacity of a system to maintain or recover functionality in the event of disruption or disturbance (Pisano, 2012). The concept of resilience can be applied to cities particularly those in the developing world as they are exposed to chronic stresses or sudden shocks that threaten widespread disruption or the collapse of physical or social systems. According to IPCC (2007) resilience is the ability of a system to absorb disturbances while retaining the same basic structure, ways of functioning and self-organisation. ICLEI (2011) defines resilience as the capacity and ability of a community to withstand stress, survive, adapt, bounce back from a crisis or disaster and rapidly move on. Although a number of definitions have been propounded by different scholars, the bottom line is that the concept is about the ability to recover after shocks and stresses. Urban communities are experiencing shocks and stresses caused by massive water shortages. They have developed strategies to cushion themselves so as to enable them to function in such situations.

2.2. The prevalence of water shortages in urban areas of Zimbabwe

The problems of water shortages in Zimbabwe's urban areas are due to a plethora of factors. In summary this is an intersection of climate and demographics. These combine to make the situation inconceivable and

unbearable for a number of people particularly in the high density suburbs. Over the years Zimbabwe has failed to service its debts owed to multilateral institutions. This led to the end of most international assistance programs, which included donor support for water supply (and sanitation) services (AfDB, 2011). Since the beginning of the new millennium there was no new investment in service delivery in Zimbabwe. The incessant rural-urban migration has caused an increase in urban population thereby compounding the problem of water shortages (UNDP, 2006). Manzungu (2012) contends that urbanization, water and sanitation problems have a concomitant relationship. The growth in population in urban areas is associated with an increase in demand for delivery of clean drinking water (Lee and Schwab, 2005). According to Mangizvo and Kapungu (2010) the increase in population in Kadoma has contributed significantly to an increasing demand for fresh water. The city is therefore facing challenges in managing its water in an efficient manner. Mapfumo and Madesha (2014) observe that Masvingo is experiencing a rapidly growing population and this exacerbates water scarcity.

Zimbabwe has also experienced several droughts since the beginning of the new millennium. This has resulted in reduced inflows into the cities' supply dams thereby causing water supply challenges. A study by Mukuhlani and Nyamupingidza (2014) reveals that Bulawayo experienced recurrent droughts for two decades that is in the 1980s and 1990s. This resulted in low inflows into the city's supply dams. In 2012 authorities in Bulawayo had to impose a 72 hour water shedding schedule for the residential areas as water levels in the supply dams had gone down due to drought (Bepete, 2015). According to Kusena and Beckedahl (2014) water levels in dams that supply water to Gweru have also been affected by drought. This was noticeable during the 1982-1983, 1992-1993 and 2002-2003 drought periods when dam levels fell significantly. Water shortages are also attributed to power outages. Zimbabwe has over the years failed to produce enough electricity and this has caused power cuts. These power cuts have impacted on water supply. For example water works in Harare could go for up to 18 hours without electricity on a daily basis (Mangizvo and Kapungu, 2010). This has negatively affected the supply of water to the city. Chigumira and Mujere (2009) observed that power cuts have adversely affected the efficiency of the water pumping stations in Kadoma.

A number of urban areas cannot supply water to their residents because of obsolete water reticulation systems which have outlived their lifespan (Mhlanga and Matenga, 2012). According to Kwidini (2007) pumps have a lifespan of between 15 and 20 years and yet these have not been replaced since they were installed. Old delivery pipes and joints are responsible for water losses through leaks. For instance Mutare which can process enough water for its residents loses 52% of its purified water through leakages because of old pipes (New Zimbabwe, 2015). Large amounts of treated and raw water are lost in Kadoma before they reach the consumer due to bursting of old pipes (Chigumira and Mujere, 2009). The pipes which were laid in the 1970s have not been replaced. The efficiency of the water pumping system was further compromised by the components such as the pump impellers which required replacement (Chigumira and Mujere, 2007).

The water situation has been compounded further by poor funding and Zimbabwe's collapsing economy. Ratepayers who are the main source of municipal income in Zimbabwe are sceptical about paying rates. They believe the money they pay is misused. This negatively affects service delivery as urban and sanitation systems depend on funds from ratepayers (Sithole, 2013). Residents are also unwilling to pay because water

supply is not reliable (Muzondi, 2014). The political decision by government to order local authorities to write off debts owed by residents from February 2009 to the end of June 2013 affected their ability to provide services (Nyikadzino and Nhema, 2015). Municipal councils are no longer able to pay their workers and this has negative trickle down effects on service delivery.

In 2001 the United States Congress enacted the Zimbabwe Democracy and Economic Recovery Act (ZIDERA), a form of sanctions, citing human rights record, political intolerance and the absence of the rule of law as the main reasons (Chingono, 2010). This meant Zimbabwe could not access finance and credit facilities from leading multilateral agencies such as International Monetary Fund, World Bank and the African Development Bank. This has affected water delivery in urban areas as municipalities could not access loans to revamp their water systems since they were under targeted sanctions (Makwara and Tavuyanago, 2012). Furthermore, water and sewage treatment equipment in most urban areas in Zimbabwe was manufactured in Europe and America (Matsa, 2013). Zimbabwe is unable to import spare parts for water and sewage systems as a result of sanctions.

2.3. Vulnerability of urban residents caused by water shortages

A number of urban areas in Zimbabwe have been failing to provide their residents with water for several years. This is despite the fact that in 2002 the United Nations through its committee on Economic, Cultural and Social Rights (ECOSOC) declared access to water as a human right (Prasad, 2007). Member states are therefore obliged to ensure that their citizens have access to water. Water challenges in urban environments have resulted in a number of problems. These include the emergence and spread of communicable diseases such as cholera, dysentery and diarrhoea. In 2008-9 Zimbabwe experienced a devastating cholera outbreak which infected 99,704 people and killed 4,420 people (Maponga et al., 2015; Makwara and Tavuyanago, 2012). Since then, sporadic cases of diarrhoea and typhoid outbreaks have been reported in different towns and cities within Zimbabwe. For example Kadirire (2014) reporting for the Daily News observed that over 90 000 people in the country had been infected with diarrhoea and dysentery since the beginning of 2014. The Zimbabwe Mail (2015) also reports that during the first week of 2015, 8 555 diarrheal cases and 22 deaths were reported country-wide. These situations were attributed to the failure by municipalities to provide portable water because of a number of problems. According to Muzondi (2014) Harare experiences the spread of water borne diseases because the demands for water and sanitation outweigh the planned supply. Mugumbate et al., (2013) posit that the prevalence of shallow wells in Unit O of Chitungwiza in areas reserved for sewage and storm water flows expose residents to diarrheal diseases.

Communities are forced to use unorthodox means to relieve themselves when toilets cannot be used because of water shortages. According to Mugumbate et al. (2013) children use storm water drains during the day while adults join them at night taking advantage of the cover of darkness. Even maize fields are regarded as important in the rain season as they provide cover and are utilised as toilets. Mugumbate et al., (2013) add that latrines belonging to churches in Seke have suddenly become community toilets; hence they fill up quickly. While water shortages have come as a burden to the majority of residents it is actually a blessing in disguise for some unscrupulous youths. Unemployed youths especially in high density suburbs

capitalise on the water shortage and control water supply at boreholes that were drilled by donors such as the United Nations Children's Fund (UNICEF). They force desperate and vulnerable residents especially the poor and aged to buy water from them (Chitemba, 2013).

2.4. Resilience in the face of water shortages

Urban communities have devised a number of strategies to cope with the threats presented by water shortages. Residents in high density suburbs fetch water from either deep or shallow unprotected wells, while those in the low density suburbs have drilled boreholes (Hove and Tirimboi, 2011). Wells are not always safe sources of water as already mentioned in an earlier discussion. Furthermore, it is illegal in Zimbabwe to dig shallow wells on residential properties (Chaminuka and Nyatsanza, 2013). Shallow wells are prone to contamination from surrounding surface sources (Hunt 2006). Non-governmental organisations such as the International Relief and Development Agency together with USAID have provided huge tanks and boreholes in Chitungwiza (Mugumbate et al., 2013). These have given urban communities without water some temporary relief. Some residents in Chitungwiza, with the assistance of NGOs such as International Relief and Development (IRD), have adopted the art of water harvesting to mitigate water challenges (Masara, 2014). They got assistance from USAID to collect rain water from roof tops which is then stored in tanks. Nissen-Petersen (2007) posits that collecting rainwater from rooftops has a long global history and the water is usually free from contaminants. In urban areas the water could be utilised in times of water and power shortages. In cases where supplies are intermittent residents are used to waking up at night to collect water as well as do laundry (Gambe and Dube, 2015).

3. Study setting

This study was conducted in Village 19 in Mkoba high density suburb in the City of Gweru in Zimbabwe. The term "village" refers to sections that make up the high density suburb of Mkoba. Mkoba is the largest high density suburb in Gweru and is divided into 20 villages. Village 19 was established between 1989 and 1990. The suburb is exposed to multi-habitation just like most residential areas in Zimbabwe. In most cases more than one household share a housing unit. This puts pressure on service delivery particularly on water and sanitation.

4. Methodology

This case study adopted the qualitative paradigm so as to get an in-depth understanding of how the residents in Village 19 are affected by water shortages. This method was also useful in finding out how they were coping with the situation. The study therefore used structured interviews with 30 residents who were conveniently sampled. This method was found suitable as all participants were asked the same series of questions. Structured interviews produced data on water challenges that were consistent and could be

compared across all the 30 participants. Residents found at their houses were kindly asked to participate in the study. The idea was to ask the same questions to all the participants, obtain their views on the problem of water shortage in the village and get the different coping strategies adopted by the residents. The residents were also asked to suggest solutions to the water problem. Deliberate effort was made to identify homesteads with wells so that they could participate in the study. Interviews were also conducted with key informants who were purposively sampled to obtain their perceptions on the challenges of water. These were the city engineer, ward councillor and a member of the Gweru Residents Association. The city engineer provided the technical information and official position concerning water issues in the city as well as the suburb. A member of the residents association was selected because he represented the leadership of the residents and was the point person for the residents when dealing with issues that concerned them. The study also made use of three focus group discussions. Each focus group comprised of eight participants. Focus group discussions were utilised to explore the attitudes and behaviours that underpinned water challenges and resilience. The study also used document analysis of newspapers. These provided vital information on water shortages in Gweru in particular and other cities in Zimbabwe. Newspapers created a springboard for further research on the issue but now with a focus on Village 19 in Mkoba in Gweru.

The study also utilised direct observations so as to identify the challenges associated with water shortages in Village 19. Visits were made to boreholes to ascertain the behaviour of residents as they collected water. Efforts were also made to have a closer look at the wells that have been dug in the village. The study team visited areas where residents defecated when there was no water. These included *KwaFisher* and some nearby maize fields to obtain first hand information on the prevailing situation. The team conducted several walk-through surveys in the village so as to have an appreciation of the water problems affecting residents.

5. Results and discussions

5.1. Water situation in Gweru

According to the information given by the city engineer the City of Gweru drew its water from four sources with a combined capacity of 78 583 000m³ in a normal rainy season. These were Amapongokwe (40 000 000m³), Gwenoro (32 100 000m³), Whitewaters (4 896 000m³) and Ngamo (1 543 000m³). Whitewaters was constructed in 1947, Gwenoro in 1960, Amapongokwe in 1984 and Ngamo in 1985. This means there was no new source that was constructed up to the time the study was conducted. The engineer revealed that treated water for domestic consumption was drawn from Amapongokwe, Gwenoro and Whitewaters. Water from Ngamo was raw and heavily polluted and unsuitable for human consumption. The engineer went on to say that it was very expensive to purify water from Ngamo. The water was therefore used for watering municipal gardens and for industrial purposes. Amapongokwe which was the largest water source could not be fully utilised since it had pumping restrictions. It therefore could only supply 40 percent of the city's demand and was a backup to Gwenoro. At the time the study was conducted White Waters Dam's capacity to supply water to the city was limited and was supplying 1 000m³ per day instead of 4 000m³.

The city engineer revealed that Gweru was experiencing serious water challenges which were caused by a number of factors that include low water levels due to prolonged and recurrent droughts, power outages caused by serious electricity crisis in the country, aging and obsolete water system, flight of skilled manpower, and poor funding. The political impasse between the Government of Zimbabwe and the Western countries exacerbated the already collapsing water system in Gweru. The water pumps and pipes are obsolete. They were installed by the colonial government and have not been replaced ever since. For example the pumps at Gwenhoro were installed in 1971. They broke down constantly because they were old. At the time this study was conducted only one pump was functional out of the three at water pump station at Gwenhoro. Information obtained from the city council showed that 30% of treated water was being lost through leakages because of aging pipe system. The city could not replace the water system as it had financial challenges. The financial situation was dire because residents as well as other consumers such as government parastatals were defaulting on payments of water and rate bills. The situation was exacerbated by a populist decision by the then Minister of Local Government on 23 July 2013 only a week before elections to write off accumulated rates, water bills, unit tax, rentals and levies that were outstanding from 2009 to June 2013 (Muperi, 2013). This was a political move that has had serious ramifications on the council which was mainly dependent on that money. It also created a culture of not honouring debts as residents were reluctant to pay for water bills and rates. Some participants said it was pointless for them to pay for water which was not available. The council revealed that in 2014 it was owed US\$25 million which rose to US\$29 million in 2015.

Power outages and load shedding have also affected the supply of water. Whenever there was load shedding pumps at the water pump station ceased operations and there was no water being pumped into the reservoirs located near the Zimbabwe Military Academy which is one of the highest areas in Gweru. The reservoirs were critical for water storage as well as increasing water pressure since they functioned on gravity. The pumping system was designed in a way that when the force was not adequate to pump water into the reservoir tanks water was being pumped directly to the consumers. This made it difficult for places located on higher ground such as Village 19 to access water if the reservoir tanks were empty. The study established that water required more chemicals and treatment in winter than any other time. The council experienced challenges in sourcing adequate chemicals because of limited funds. Water pollution levels in Gwenhoro for instance have gone up because individuals practising urban agriculture in South Downs, South View, Lundi Park, and Iveme suburbs used inorganic fertilizers (Matsa, 2012). This, coupled with a flight of skilled manpower compounded water problems in Gweru.

The council has embarked on a number of programmes to avert the water problem. The council constructed an elevated water tank at the edge of Village 14 which was supposed to supply water to Village 19 using gravitational force. This tank was functional for a short period before it broke down. No one has really bothered to attend to the problem. Representatives of Gweru Residents Association believe the municipalities lack skilled people to attend to the problem. The perimeter fence that used to protect the tank was stolen. Children were observed climbing to the top of the tank. Council has also joined hands with faith-based nongovernmental organizations to drill boreholes in various parts of the city. However, Gweru has little underground water and this was supposed to be treated as a stopgap measure as the city sought for

more everlasting solutions to the problem. The city has introduced water rationing from February 1 2014 and limited households to 500 litres per day and was considering door-to-door water delivery. The city council provided water bowsers at funerals to avert environmental health challenges. The city council also introduced a \$20 once-off pump levy. Households and the residents' associations revealed that this was imposed on residents.

5.2. Challenges associated with water shortages in Village 19

The challenges associated with water shortages in Village 19 were closely linked to the post-independence policies. The City Of Gweru experienced a massive population increase in the early 1980s and the local authority had no option but to open up new land to cater for the growth in population. Village 19 is located on high ground and the area is arguably the highest point in Mkoba suburb. The current water pumping system which uses gravitational force is unable to pump water to most of the houses in Village 19. During the interviews, it emerged that some households in Village 19 especially around St. Peters Catholic Church, have not had tap water for up to ten years. However, residents in the lower parts of Village 19 at times received water at night when the pressure at the Kopje tanks improved. This meant that such residents woke up in the middle of the night to fill their containers. According to residents' representatives the council did not make an effort to engage them on the water challenges. Most residents therefore did not know exactly why their suburb did not have water while other villages had water. They said whatever information they had on water problems was mere speculation.

This situation has caused several challenges. Twenty of the thirty interviewees revealed that they no longer used toilets within their houses; hence they had resorted to the bush system. Both adults and young children used nearby bushes as well as an area popularly known as *KwaFisher*. These places were barely one hundred metres from the residential area. Some of the participants revealed that during the summer season they took advantage to defecate in the maize fields surrounding the suburb. This situation made residents vulnerable to communicable diseases such as cholera, dysentery and diarrhoea. According to Nazni et al., (2005) house flies can fly a distance of more than 5 kilometres. This means households in Village 19 were exposed to the hazards that were likely to be caused by the presence of flies in the area. A walk through in the area by the study team revealed that the surrounding grassy areas as well as *KwaFisher* were used by the residents to relieve themselves. These places were polluted by faecal waste. Large swarms of flies were also noticed in the area making it a health time bomb.

The shortage of water in the area meant that residents had to draw water for domestic needs from boreholes and shallow wells. Information obtained from the city council showed that the city council drilled four boreholes to alleviate water problems. The congregants at St. Peters Catholic Church drilled a 75 metre deep borehole, but during the months of September and October it often ran dry. CARE, a nongovernmental organisation, drilled two community boreholes that were specifically reserved for vegetable gardens. These did not benefit the public. A number of challenges were associated with accessing water from boreholes. Some households were located a long distance from the boreholes. Twenty three out of the thirty respondents walked between 300 metres and 800 metres to the nearest borehole. It was established through

observations made at the boreholes that women were involved mostly in fetching water from the boreholes. Women complained that lack of running water in their homes increased the amount of work they had to do. They had to wake up early in the morning so as to beat the long queues. They had several other household chores such as cooking, laundry and looking after young children and were left with very little time to rest or to engage in money making activities to supplement family income.

The picture was different during weekends when children regardless of gender were responsible for fetching water. Observations made showed that children below the age of ten years collected water from the boreholes. They had containers that suited their ages. It was established that gender roles were changing in the suburb as men also collected water from boreholes. While it was common in rural areas for women to fetch water, it was different in the urban areas particularly in Village 19. Eight out of thirty respondents concurred with this development. They said that even fathers collected water for their families. Participants in this study said that this was necessitated by the challenges presented by water shortages. The water situation was desperate and needed combined efforts to deal with it. Observation made at boreholes showed that men often used wheelbarrows and pushcarts. They tended to carry water in larger volumes compared to women. Some men said they had to fetch water from the boreholes to assist their wives who could not carry large quantities of water in a given time. Some women said they could not withstand the pressure that at times arose at the boreholes as people jostled to get water first. This was another reason why men had to fetch water from the boreholes. Women participants revealed that water loads were heavy and could cause neck and back aches. It was however observed that some women were unaware that heavy loads could cause neck and back injuries.

Water shortages affected school children in a number of ways. Some said they had no option but to wake up early to fetch water for bathing and other household chores at the boreholes before going to school. Others said they went to school tired as a result of carrying water from the boreholes. Some school children revealed that at times they failed to get water at the boreholes because of one reason or another. Depending on the pressure subjected onto the boreholes they could easily run out of water especially in the winter season when the water table dropped. In such cases some of the children could miss lessons or school as they would not have bathed. The water situation put a lot of pressure on the school children as they had to ensure that there was water always in the home. This meant they either collected water before going to school or after they came back from school. A lot of their spare time was spent on collecting water. They had little time left for resting and attending to their school work as they had other chores to do in the home as well.

The participants in this study revealed that most of them spent up to a total of 5 hours per week in fetching water. A lot of time was spent in the queues particularly in the morning which was regarded as the peak period in fetching water. Sixteen of the thirty participants said that queues tended to be very long in the morning. As a result there were individuals who always wanted to jump the queue and this often caused commotion at the boreholes. Eleven out of the thirty respondents revealed that they had witnessed some violence at the boreholes. Verbal exchanges were reported by the participants as common phenomena. Some participants revealed that corrupt youths took advantage of the desperate people in the queue and exchanged their front positions in the queue for money.

The study established that although water from the four boreholes was clean and fit for human consumption, it could be contaminated between the borehole and its destination. It was observed that the majority of people who visited the boreholes used open buckets to fetch water. This probably led to contamination of water as some of the people who collected water at the boreholes did not wash their hands. Some interviewees revealed that children could accidentally dip their dirty hands into the water as they carried it home. Some of the participants said they forgot to wash their hands before carrying water home. Others said there was a tendency to assume that their hands were clean. During visits to the four boreholes it was observed that some people especially children simply filled up their buckets without cleaning them first. It was also observed that there was an illegal dumping site very close to one of the boreholes. There was evidence of open burning at this site and this raised concerns for possibilities of contamination. Young boys were observed playing a game of soccer in an open space less than a metre from the borehole. They raised a lot of dust that could easily settle in the buckets thereby contaminating the water. Water was also likely to be contaminated during storage in the home as some residents said they never bothered to cover their buckets with lids. Young children with dirty hands could use dirty cups to draw water from the buckets. This could contaminate the water. At any given moment most of the residents kept up to 200 litres of water in and outside their houses. In some cases the containers were not covered hence water was likely to be contaminated during storage in the home. It was also observed that some of the participants never cleaned their containers thoroughly as they assumed they were clean. In all cases there was a likelihood of being infected by contaminable diseases such as cholera and diarrhoea.

A number of individual households dug wells at their premises as a way of cushioning themselves against the challenge of water shortages. These were found to be in various states. Observations made showed that some were protected while others were shallow and unprotected. During interviews some of the participants with wells denied that they had wells at their homes. Probably they were aware that wells were illegal and were unwilling to divulge information on wells in the suburb. The local authority seemed to be turning a blind eye on this aspect. This was because it could not provide households in Village 19 with water. Information obtained during face to face interviews showed that the local authority never gave any single household permission to drill wells. As a result it was observed that the council never certified a single well. During interviews other households revealed that they were proud to own wells since they regarded well ownership as a resilient way of dealing with water challenges in Village 19. They used the water from the wells for domestic purposes such as drinking, cooking, washing and flushing the toilets. Water was also used to water the vegetable and flower gardens. Observations made during some walks through the suburb showed that vegetable and flower gardens signified the presence of a well at a household. Participants revealed that flowers and lawns were regarded as a luxury in the adversity of water challenges.

Most of the wells that were observed by the research team were shallow (less than 10 metres deep). This was particularly the case in the area around St. Peters Catholic Church where the ground was rocky. These wells quickly dried up. Shallow wells had problems in sieving water. As a result water from such wells was likely to be contaminated and therefore unsafe for human consumption. Although most of the wells were protected, some did not have lids or covers hence leaves and other forms of effluent could easily get into the wells. They were also susceptible to contamination by running water particularly during the rainy season.

Unprotected wells were a potential danger to young children who could easily fall into the wells if left unattended. During interviews a number of participants revealed that they boiled the water they drew from the wells before using it for drinking. A few said they used some tablets to treat the water before consumption. There was a good number that simply used the water without boiling it or using tablets. They often used the Shona adage that “mvura haina n’anga”. When literally translated this means that water is pure and does not need any treatment. They argued that people in rural areas had often used water from wells and they thought they had not suffered from any ailments. This was a dangerous assertion as cases of cholera have been reported in rural areas of Zimbabwe (Morof et al., 2013). However, some of the participants revealed that although water drawn from wells had a pale taste, they continued to use it because they had limited options.

Twenty three participants revealed that there were times when Village 19 residents obtained water from unlikely sources. At times boreholes broke down and residents with wells on their premises denied those without wells access to their wells. Such situations forced people to draw water from leaking pipes in nearby suburbs where water was available. Information gathered from interviews showed that leaky pipes in the nearby suburbs (Village 16) were a relief and residents were therefore not motivated to report such cases to the council. A number of households were reported to be benefitting from a public tap at Mkoba 16 shopping centre. Participants also mentioned that it was common practice for Village 19 residents to get water from relatives and friends from the nearby suburbs such as Village 16. During the time of the study vehicles carrying containers ranging from 220 litre drums to 1 000 litre tanks of water were seen coming from Village 16.

It was further established that water had become a commodified product. As already discussed earlier on, some unemployed youths were in the habit of waking up early to join the queue so that they could sell their positions to desperate individuals who were rushing to go for work. During the study some youths with pushcarts were observed supplying water for a fee to residents who could not go to the boreholes for one reason or another. One hundred litres of water were sold for a dollar. The youths capitalised on the desperate and at times physically weak individuals. Some participants revealed that some residents contracted people to fetch water for them on a regular basis for a fee. Some residents mentioned that there were individuals who had resorted to buying water from supermarkets and shops. However, information obtained through the structured interviews showed that only two participants bought water from supermarkets in town where 5 litres ranged between US\$1.90 and US\$3.00. During a walkthrough the suburb empty 5 litre plastic water containers were seen at illegal dump sites. This was a clear indication that residents were buying water from supermarkets. Participants went on to mention that they needed water for their infant children as they did not trust the available sources of water which were likely to expose their children to diarrhoea, cholera and dysentery. They said this was however very costly but they had limited options. One participant said that he was aware of households that bought bulk water from suppliers. Observations made during study visits to the suburb showed that a number of households had 1 000 litre tanks. Observations in the study area showed that only two households had 5 000 litre tanks. The water cost an average of US\$10 for 1 000 litres. For the majority of households this was inhibitive as at the time this study was undertaken many household heads were unemployed because of retrenchments and the economic crunch affecting the country.

Furthermore, the majority of participants in two focus group discussions revealed that they could not afford to buy storage tanks. Some actually feared that such tanks could be vandalised by jealous neighbours. However, those with tanks also utilised them for water harvesting. The tanks were connected to roof gutters. Others were also connected to taps through hosepipes so that they could be filled up at night when water trickled in.

The study established that there were a number of households whose water services had been disconnected because they were not paying rentals and rates. Some said they saw no reason to pay as the services were not there and there was no hope for improvements. Others said they did not have the money to pay for reconnection so they would continue to depend on borehole water until such a time when their economic situation had improved.

6. Conclusions

The water situation in Village 19 is dire. Some households did not have running taps for more than six years. Although residents had adopted a number of coping strategies, the prevailing situation was a time bomb. A number of households no longer used toilets and the bush system had become the norm. The use of boreholes and wells contributed to the ruralisation of the urban environment. Livelihoods were negatively affected and residents were inconvenienced in a number of ways.

6.1. Way forward

The study proposes a number of recommendations which are likely to reduce the levels of vulnerability while at the same time raising resilience levels for residents of Village 19 in particular and other urban communities in areas facing acute water shortages.

- Firstly, it is imperative for the City of Gweru to engage residents of Village 19 in a meaningful and genuine way on water challenge issues. In the past a lot has been said about councils engaging communities but in real terms this was not the case. The city council should have mechanisms in place to include the communities particularly the vulnerable ones and hear their concerns. The council also needs to obtain and consider possible solutions on the water challenges from the communities instead of dictating terms to them.
- There is need to educate residents on sustainable ways of using water which is a scarce resource. For example, they need to practise water reuse. Waste laundry water could be used to flush toilets where there is no running water for this purpose. Laundry water can also be used to water vegetables and flowers depending on the amount of soap in the water. Too much soap can be harmful to plants.
- Households with wells should ensure that they are safe and protected with lids to prevent contaminated water from flowing into them. They should also be safe to avoid children drowning in the wells. As already discussed earlier this contingent measure is illegal and should not be allowed to perpetuate.
- All drinking water whether from wells, or boreholes or running taps should be boiled before it is used.

- The communities in Village 19 should adopt innovative solutions such as water harvesting and conservation techniques.
- Residents need to be aware of their role in service delivery. As responsible citizens they have an obligation to pay their water bills and rates. Service delivery can only be achieved when money is available. They should never allow their bills to accumulate as this will make it very difficult for them to clear the huge balances.
- Residents should take it upon themselves to report all cases of leaking taps and pipes. The city councils should in turn attend to the leaks so as to reduce the amount of water lost through this process. The council should also improve its leak detection and remediation processes.
- The council should be accountable to the residents so that residents develop confidence in it. The tendency has been to divert available funds to meet salaries and wages leaving service delivery unattended. Residents therefore feel it is unnecessary to pay for a service that is never available.
- The council needs to attend to problems at the elevated tank as this is likely to partially solve the water problems affecting Mkoba 19.
- All stakeholders must play their roles in ensuring that water delivery is achieved. The government should desist from making populist declarations such as writing off residents' service debts. Such moves only worsen water woes. Instead the government must create a platform that allows councils to develop twinning relationships with councils in developed countries. This will create opportunities to adopt new water technologies and skills and access financial support to improve their water delivery systems.
- There is need to revamp the water delivery system in the city in general. An additional bigger dam should be constructed to meet the pressure exerted by the growing population. The obsolete pipes should be replaced as a matter of urgency. New pumps should be acquired whilst leaky pipes and valves should be replaced. Ways should be found to make water from Ngamo Dam usable for domestic purposes. The capacities of existing dams should be increased by raising their spillways.
- The city council should install prepaid meters in the city including Village 19. Prepaid meter will ensure that consumers pay for the service. The council should however not use prepaid meters to exclude the poor and vulnerable. Water is a basic right hence certain groups should not be denied access to it. If the council installs prepaid metres it must ensure that water is available at all times. This move should actually be a win-win situation.

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