

An Assessment of the Impacts of the Runde Water Supply on the Life and Business of the Local People. A Case Study of Lundi Business Centre in Mwenezi District

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Abstract

The research study focused on the impacts of the Runde water supply on the life and business of the local people. The specific objectives included the description and explanation of both direct and indirect benefits of the water supply, the problems of the water supply and the recommendations on the expansion of the project to the surrounding communities. Research methodologies used include questionnaires, interviews, observations and the use of the available information. Findings show that there is improved access to water supply, provision of clean treated water to households and the poor maintenance of the standpipe sites. It has been observed that water supply has played a significant role in the infrastructural development of the local business centre. However, due to the population increase in Lundi business centre, there is need for further expansion of the water supply to the surrounding rural areas. Standpipes need to be maintained and water must be supplied into the houses.

Keywords: Replicability; Sustainability; Water supply systems; Unserved; Maintenance

Introduction

The provision of safe and protected water sources has been a subject of interest over many years ago. Various approaches have been adopted and implemented but within a generation over three billion people will be suffering from water stress. It has been regarded as the crisis of management [1]. In the face of increasing population especially in developing countries, the provision of efficient and reliable water supply systems has proved to be a difficult task to achieve. This is the case of the un-served and under-served rural communities in Zimbabwe such as Mwenezi, Chivi and Chikombedzi.

This phenomenon could be attributed to the top-down (didactic) approaches in implementation of water projects, un-sustainability and the misdirected emphasis on setting up physical infrastructures without ascertaining their operation and maintenance [2]. However, having such a scenario both the positive and negative impacts of water supply systems need not be underestimated. This research oscillates around the examination and explanation of the Runde water supply system and its effects to the targeted population at Lundi Business centre. This will be viable in the provision of information to the policy makers and the field workers to prioritise the extension of this utility to the surrounding rural areas which tap water from rivers, dams and other unprotected sources.

Statement of the problem

In the global context, it has been argued that in developing countries three out of five people have difficulty in obtaining clean water. Some communities have to use a river as a source of drinking water. United Nations International Emergency Children's Fund (UNICEF) has estimated that about four million children die with water related diseases [3].

Hesselbarth argues that inadequate coverage, poor quality as well as unreliable and unsustainable supply of water have an adverse impact on the socio-economic development of developing countries. This situation may be a result of rapid population growth, sustainability, poor operation and maintenance mechanisms, and lack of both community participation and management. Despite the increase

by 24% of the number of persons provided with water facilities, the number of people un-served has largely remained high in Africa [2]. The population is growing very fast in regions which are poorly served with water systems or with strained water supply systems. No wonder why the Decade Review held in New Delhi in 1990 noted the number of people un-served with both safe drinking water and sanitation was higher than at the start of the Decade era in 1980 [4].

Moreover, the provision of reliable and safe water especially in rural areas has been hampered by lack of proper operation and maintenance. This has resulted in most water supply systems falling into the state of disrepair. In addition, the situation has been exacerbated by the exclusion of the rural communities in the planning and provision of water. People were regarded as objects not subjects of development. Although physical development is important, the people must control it and be the centre of that development. This serves to illustrate the stream of thought of regarding communities as the agents of change through both community participation and management by [5].

The positive benefits of water provision range from improved health; economic development to the indirect benefits such as poverty alleviation. Although, some research work has been done on the impacts of improved water provision systems, more is desired on the replicability of these pilot water projects with special reference to the rural poor communities. Moreover, the perceived benefits of dam construction was noted to benefit those who are already well off in the rural societies. As a result, this research serves to shed more information

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Received November 03, 2014; **Accepted** November 26, 2014; **Published** January 03, 2015

Citation: Chauke H, Mudavanhu F (2015) An Assessment of the Impacts of the Runde Water Supply on the Life and Business of the Local People. A Case Study of Lundi Business Centre in Mwenezi District. J Fisheries Livest Prod 3: 127. doi: [10.4172/2332-2608.1000127](http://dx.doi.org/10.4172/2332-2608.1000127)

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on the importance of water provision to the rural communities.

General objective

The general objective of the study is to assess the impacts of Runde water supply system on the population whether it is improving conditions of water provision in rural communities.

Specific objectives:

- To describe water sources used before the implementation of the Runde water supply system.
- To establish the benefits of the supply system to the community
- To describe the negative effects of the water supply system to the community
- To recommend the expansion of the water supply system to other rural communities

Description of the study area

The research was carried out at the Lundi business centre which is 100 kilometres along the Masvingo to Beitbridge highway. The business centre has been built on the banks of the Runde River in Chief Chitanga's area in Mwenzi district of Masvingo province. Lundi business centre is flanked by the Runde River in the north, highway in the east and small hills and mountains in the west as shown by the map of the study area below.

As a thriving smaller commercial unit centre, it is composed of business people both formal and informal. Commercial activities range from groceries, food outlets, horticulture, market gardening and welding. It has been noted that the sitting of the centre had been influenced by the existence of a water source, in this case the Runde River.

In terms of climate, the area experiences the tropical seasonality. It is characterised by hot, wet summers and dry and cool winters. *Colophospermum mopane* is the dominant species and is associated with the *Adansonia digitata*, *Grevia ssp* and *Ximenia Africana* in terms of the vegetation composition [6].

A major problem is that no detailed geological mapping has been done in the study area. The geological information is rather generalised, but will suffice for the sake of this research. The area is composed of vast granite outcrops in the western sides of the business centre in Figure 1. These have made some parts of the Runde River to be non-alluvial causing it to be seasonal in terms of flowing and supplying surface water [7].

Literature Review

Providing safe protected water to the un-served and underserved rural communities has been seen as the most challenging and priority task by most developing countries all over the world. This has stemmed from the recognition of the importance of safe and clean water supplies which has seen the inauguration of the International Drinking Water Supply and Sanitation Decade on the 10th November 1980 [8]. However, having other pressing economic challenges to these governments, the question revolves around the amount of priority that must be given to the expansion, replication and provision of the protected water supply systems especially to the rural poor in most developing countries [9].

Cosgrove and Rijasberman [1] state that more than one billion people cannot get safe drinking water. Moreover, within a generation

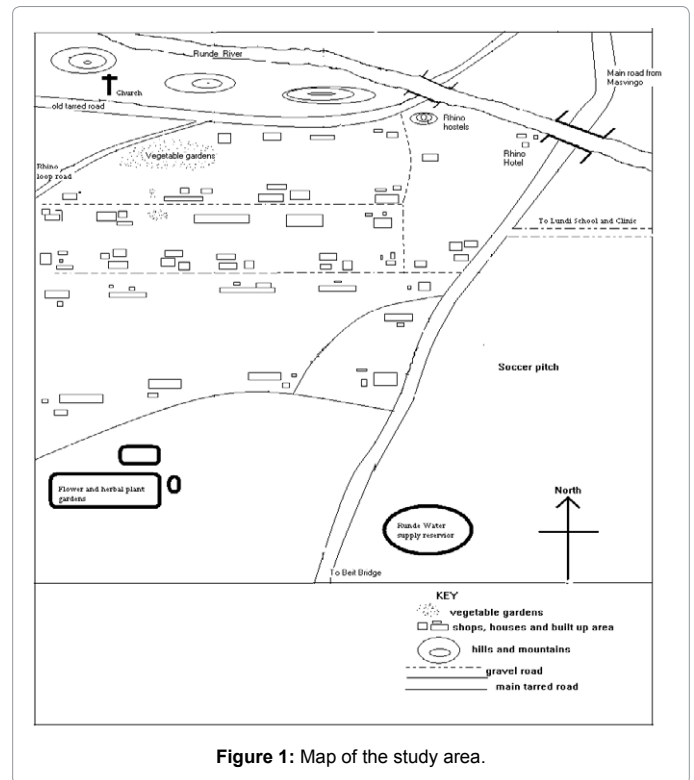


Figure 1: Map of the study area.

over three billion people will be suffering from water stress, no wonder why it may be regarded as a management crisis. World Health Organisation (WHO) and United Nations International Emergency Children's Fund (UNICEF) [3] argue that within the next two generations, an additional three billion people will have joined this group mainly in developing countries thereby increasing the pressure on water requirements in various sectors including the drinking water supply sector. This is against the recognition of the fact that in Africa four hundred and fifty million people lack safe water supply. Applin [10] holds that four-fifth of the diseases in developing countries are linked to the use of dirty water. United Nations International Emergency Children's Fund (UNICEF) has estimated that about four million children die with the diseases emanating from water globally [3].

The situation of poor provision of water supply is as a result of a composite of factors. These include unprecedented population growth, unsustainability of water supply systems, poor operation and maintenance mechanisms, financial constraints, failure of didactic top-down approaches and lack or non-existence of community participation and management. As a result, the inadequate coverage, poor quality as well as unreliable and unsustainable supply of water have adverse impacts on the socio-economic development of developing countries Institute of water and sanitation development (2001) [11].

However, the importance and the positive effects accrued from improved provision of safe and clean drinking water need to be fully appreciated. The thrust of any improved water supply to rural communities is to improve the people's health [12]. This benefit is also accompanied by the increased economic performance of the population, time savings and the indirect benefits such as income generation, sustainable livestock production, improved nutritional status of the households and the provision of water of good quality. It must be borne in mind that unintended problems may be encountered

in a bid to supply water to the un-served rural communities. These may increase the prevalence of some water related diseases such as malaria and schistosomiasis. Few studies have been done in the field of water supply in Zimbabwe's rural and urban communities. However, little has been mapped with special reference to Mwenenzi district, one of the marginal districts in agro-ecological zone five.

Water supply coverage in developing countries

Briscoe and Ferranti noted that the current rural water coverage in most countries is in the region of 30-50%. Despite huge investments into the water sector, Africa has the least rural water supply coverage as depicted by the Table 1 below.

As the case for Zimbabwe, major strides have been noted in the provision of water during its Decade Era of 1982-1992 [9]. This has seen the sinking of the boreholes, construction of dams and shallow well units. About 12, 000 bush pumps are currently under use in rural areas although these statistical records must be regarded with reservations because in most rural communities there is poor record for operation and maintenance mechanisms [13].

However, at the end of the Decade Era, the review commonly known as the "Vision 2000", noted that the number of people un-served remained high and some critics as Nesen [2] argues that the number was higher than the number of those un-served at the start of the Decade Era. This serves to illustrate one of the factors militating against widespread provision of water which is the rapid population growth. This is illustrated in Table 2 below showing observations which were done by Christmas and De-Roy in the African context.

As already outlined, there are a myriad of factors or conditions which militate against the widespread of water supply coverage. Countries in the sub-Saharan Africa such as Zimbabwe, Mozambique, Zambia and Botswana have witnessed great increase in terms of population growth [14]. Although the Millennium Development Goal Number seven was almost achieved, the number of the people in need of water increased substantially. Rapid population growth has been associated with virtually all the problems facing Southern African countries in the efforts to provide safe and clean drinking water, train enough personnel and to finance the drinking water as a sector in general. The population increase is against the face of HIV/AIDS pandemic.

Abaniche [15] further argues that rapid population growth is responsible for economic and social problems of Southern Africa resulting in high cost of energy, unemployment, overcrowded cities and even inflation. The increase in the number of people in Southern African

Region	Percentage covered
Africa	71
Asia and Pacific	56
Latin America and Caribbean	51

Source: World Health Organisation in World water (1986)

Table 1: Rural water supply coverage in developing states.

	1980		1990	
	Urban	Rural	Urban	Rural
Population	119,77	332,83	202,54	409,64
% coverage	83	33	87	42
Number served	99,41	109,83	176,21	172,06
Number un-served	20,36	223	26,33	237,59

Source: Christmas and De-Roy (1991)

Table 2: Water supply in Africa (population in millions).

countries increases strain and stress on the available water facilities. As a result, the implications on the water as a sector manifest itself in form of poor maintenance and degradation of the already established facilities. Moyo [7] observed that governments in the developing states are not able to provide necessary expansion of services to the growing population. This may be contrasted with the case where population growth is good for economic development, for example, United States of America need that population for her economic growth.

In addition, poor water supply coverage in developing countries stems from unsustainability of the facilities or utilities constructed. In Zimbabwe although the government was able to sink many boreholes, the concerns of sustainability of these facilities were not considered in the long run. Nesen [2] argues that it is increasingly becoming clear that some of the major reasons for the lack of safe water are due to the misdirected emphasis on setting up physical infrastructure without ascertaining its use (sustainability) or ensuring that there is effective operation and maintenance.

Financial constraints also hinder the replication of water systems in most developing countries. Applin [10] holds that the sum needed during the Decade Era was £ 25 billion, slightly more than the world spends on its armies in one month. Instead of increased expenditure in water provision, policy adoption such as Economic Structural Adjustment Program (ESAP) in Zimbabwe has seen governments reducing their public expenditure. In addition, many countries have utilities which carry out dual functions of regulatory and operational and this lead to the lack of transparency, accountability and poor delivery of services (The Herald, 13 December 2006).

Moreover, lack of community participation and management have left more to be desired in the provision of water in most developing countries. Srinivasan [5] argues that implementation approaches were or are basically didactic in nature, where communities are regarded as objects not subjects of development. The motive will be characterised by centralisation of activities with the professionals professing the community problems and needs in water supply. Rural communities are largely regarded as pools of backwardness which need modernity. This result in establishment of the facilities which are unsustainable and cannot replicated on a large scale. No wonder why people in villages in India are not willing to use the facilities provided to them [16]. Recent research and experiences have noted the importance of community participation and management in the water supply in particular.

The provision of clean water in Zimbabwe had been noted to benefit those who were already well-off in the rural societies. This may be attributed to the lack of the consideration of the importance of community participation and management. No wonder why the Decade Review held in New Delhi, India recommended that future approaches should aim at "Some for all, rather than more for some." There is increasing recognition of empowering local communities to act as agents of change in the water supply sector.

Effects of unsafe and unprotected water supply

Many diseases such as malaria, schistosomiasis, filariasis, dysentery and typhoid are spread through the water medium. It has been noted that 50% of the diseases in developing countries are water related. Having such a scenario, it can be argued that the use of unsafe and unprotected water sources, communities will be susceptible and vulnerable to many water related diseases. The effects of poor provision of drinking water range from nutrition, education, health to the performance of the economy in general.

Health implications: The use of unsafe and unprotected water

sources has more negative health implications although these are difficult to measure and quantify [13]. It is well known that most of diseases like diarrhoea, cholera, typhoid, scabies and bilharzias are spread through contaminated water or lack of water in its physical existence. As a result, where there are poor supplies of clean and safe water, the prevalence of water related diseases will be very high. Typically, people collect water from any available source and store it in a vessel in the home for domestic and potable use, often without treatment and protection from further contamination [3]. In many cases, such collected household water is often heavily contaminated with faecal microbes and poses risks of exposure to waterborne pathogens and thus to infectious diseases.

In developing countries where water supply sources are surface water, the incidence rate of these diseases is high. Nesen [2] notes that treating these diseases costs about US\$ 20 billion every year. This should be evaluated putting under consideration the poor economic performance of most of the developing states. Most of the drugs for curing these diseases have to be imported and this tends to increase both adult and infant mortality rates in rural communities.

Economic implications: The economic implications of the use of unprotected water sources are quite dire in nature. Most of the productive time is spent in water collection activities. Moreover, those who suffer from water related illness such as typhoid and cholera lose their productive time and indeed need able-bodied people to look after them.

In the long run the economic productivity of a country is lowered. At the family level, people will have less time for child care, community service, income generation and other quality of life matters. Some critics attribute the loss of productivity to the African economy to the levels of about US\$ 3.2 billion per year to the use of unreliable and unclean drinking water sources [11].

Education implications: Observations in African communities have noted that where there is water scarcity, girl children lose most of their time to water collection. In most cases they have to walk for quite considerable distances to fetch water. Being tired, little time is left for academic pursuit through studies. Moreover, girl child school drop outs are higher because in some cases they have to look after the sick. In developing countries where there is high prevalence of the diarrhoea bouts from poor hygiene and unsafe water, women and girl children have to spend time looking after the sick. Girl child then loses school [2].

In addition, most of the food intake calories are lost in activities that are related to water collection. This is apparently correct with reference to women and children. This energy loss is particularly devastating to the health of the growing children and both the pregnant and breastfeeding women [8]. In a nut shell, the implications of poor provision of clean water are dire when assessed from the perspective of the economic performance, curative health and the education of any nation. This analysis forms the springboards for the full appreciation and consideration of the importance of safe and protected water sources especially to the un-served regions.

Benefits of improved water supply

Having explored the negative implications associated with the use of dirty water or non-availability of water, the benefits accrued to the improved water supply have to be assessed. The thrust of any improved water supply is to improve the health of the nation. This cannot be achieved in isolation. Conjointly with the proper sanitation administration has to be fully put under consideration.

Health benefits: After the introduction of a water project, the reduction in the prevalence and incidence rate of water related diseases is noted. As already outlined, the spread of many diseases utilise dirty water as their medium. Contributory factor to poor maternal health is contaminated water and poor hygiene, leading to infection and slow post natal recovery [3]. Where there is an improvement in water provision both in terms of quality and physical quantity, the rate of the spread of diseases is reduced. However, a lot needs to be borne in mind towards the improvement of health and hygiene education, community participation and the improvement of the general standards of living in rural areas. These health benefits must be weighed against the side effects normally associated with the introduction of water projects. Thus, many people where dams are constructed end up suffering from unintended water related diseases such as malaria and schistosomiasis. These diseases have got implications on the economic performance and health of the nation. However, this should not be basis for poor provision of water supplies [1].

Economic benefits: With adequate, sustainable and reliable water provision, economic performance and productivity of a population is greatly increased. This is mainly through the improvement in the health status of the working population, increased time savings and the reduction in the burdens of attending to the sick. Delivery of water closer to the residential areas results in a significant reduction in the number of hours spent looking for water. As a result, time saved will be invested in other activities which result in the improvement in the economic well-being of the household. More amble time will be available for other matters of quality life, community services and increased economic productivity [4].

In addition, poverty alleviation in rural areas can be initiated with the introduction of water supply projects. Water may be used productively in activities such as market gardening, fishing, and brick making and watering of livestock. Thus, the green gardens are used to generate income through the sale of green vegetables and to improve the nutritional status of the households. Moreover, with the lack of year round water supply especially in the agro-ecological zone five in Zimbabwe, water is provided for livestock watering which generate more income when sold. Brick making increases income disposable to communities and helps in the long run in the improvement of the living standards in rural areas. Thus, if properly used rural water supplies can help to alleviate poverty among the rural people. In Indonesia and Honduras, access to a convenient water supply led to the self-help construction of sanitary latrines and changes in hygiene behaviour. Experiences in Guatemala show that successful water development was followed by income generation from coffee production which provided further support for the upkeep and extension of the water systems [11].

From the analysis done, it has been noted that there are a myriad of factors militating against the provision of safe and clean drinking water. Priority has to be given to this sector but how much priority is the biggest challenge for the developing governments. This is as a result of rapid population growth, other pressing economic challenges, civil wars, and droughts, financial constraints, lack of both community participation and management.

The above conditions have seen rural communities resorting to the use of unprotected water sources. This has manifested in the form of increased bouts of diarrhoeas, cholera, dysentery and typhoid. These diseases affect the health of the working population, children and the aged thereby jeopardising the economic performance and productivity of the population.

However, the benefits accrued from the improved water supply

need to be fully put under consideration. Incidence rate and prevalence of water-related diseases is reduced, poverty is alleviated, and improved health and increased economic productivity are associated with safe drinking water supply.

Research Methodology

The research has been based on the field observations, interviews and questionnaire administration. To compound these techniques, reference has been made to secondary sources of information. In order to obtain a better view and picture of the impacts of the water supply to the community, the desk study and interviews were carried out to find the sources of water used before the intervention or the implementation of the water supply system in 2004. The sample sixty questionnaires were administered and twenty questionnaire were analysed which is more than thirty percent. These were randomly selected in order to reduce bias of information.

The main parameters which were observed include the number of households served with water, those un-served, observations of the benefits of the water supply to the business community, problems of the water supply other sources of water preferred and affordable. However, it has to be noted that, the absence of the adequate information on the state of the community before intervention acted as a stumbling block to this research.

Data collection

Data have been collected basically from both the primary and secondary sources. These formed the basis of information concerning the impacts of the Runde water supply on the life and business of the local people. The primary sources of data collection were concerned with the field observations, interviews and questionnaire administration. The secondary sources provided information about researches done by others on the nature of the impacts of improved water supply systems to the communities especially in the rural areas. However, some problems have been encountered in the field survey especially with the use of questionnaires and interviews as methods of obtaining data from the local community.

Field work and observation: Observations have been carried out to find the benefits of the water supply system in the Lundi business centre. Thus, the benefits such as the provision of water nearer to the households, provision of water for building purposes as will be unveiled in the discussion of the findings and results, watering of the small gardens for vegetables and flowers were under observation using visual assessment by the researcher. In this case, the researcher entered into the experience of the local community, recording both the benefits and problems of the water supply to the Lundi business community.

In order to substantiate the field observations, the field work was done characterised by interviews and the administration of the questionnaires. The structured interviews were focusing on the sources of water used by the business community before the implementation of the Runde water supply in 2004. The nature of the information which was under concern included types of water sources, benefits and problems of these water sources, their reliability and the alternatives which were available for the community. However, other respondents were newcomers to the area not knowing the sources of water which were used by the community prior to the implementation of Runde water supply project.

Furthermore, questionnaires have been administered to obtain more on the water sources, their benefits and problems, the number of households served by the Runde water supply, the number of

the household un-served, the direct and indirect benefits of water provision, problems of the Runde water supply and the suggestions to the improvement in the provision of clean and safe water to all members of the business community. The major problems encountered in data collection using the questionnaire include poor cooperation, time constrains and some did not return the questionnaires for analysis.

Secondary data sources: Apart from the field surveys characterised by field work and observations, the research methodology depicts the manipulation of the information obtained from the secondary sources. Secondary sources especially the documentary sources, provided information concerning the direct and indirect benefits of water provision to the rural communities [11], problems of poor water provision [2], ways of improving the water supply [6] and others presented in the literature review of this research.

Other sources contained the information pertaining to the research findings done by others on the impact assessment of water supply to the community. Moreover, some sources contained information on the research methods and tools (Institute of Water and Sanitation Development 2002, Varkevier 1993 and Institute of Water and Sanitation Development 1996). These techniques and tools for research were implemented in the study of the impacts of the Runde water supply to the local business centre to bridge the gap of information especially with reference to the marginalised Mwenzezi district.

Data analysis plan and presentation: The data obtained was analyzed mainly using computer packages after coding the information obtained from questionnaires and interviews. The analysis was both statistical and descriptive depending on how the researcher saw it fit. Data collected is not useful until it has been analysed. In support of this view Bell (1995:152) notes that data collected by means of questionnaire, interviews, diaries or any other method mean very little until they are analysed.

First of all, the researcher checked the number of questionnaires completed. This was followed by checking the items completed and those not completed. Frequency tables were constructed and some of the data presented in tables. Data obtained from interviews and open ended questions was grouped into classes for analysis.

Direct benefits of the Runde water supply: To ascertain the importance of the Runde water supply system, attention needs to be paid the nature of water sources before and after 2004. The sources of water before 2004 are indicated in Table 3 below.

The table above indicates that sixty percent of the respondents used river as the source of water whilst twenty percent either use dam or borehole as their sources of water. The main reason showed that river is the only source of water which was nearer to the residence as the nearest borehole and dam is more distant.

The pie chart above shows that after the introduction of the Runde water supply system seventy-five percent of the residents are using the piped water in Figure 2. The main users of the river as source of water is meant mainly for construction purposes to reduce water costs.

Water	Source	Frequency	Percent	Valid Percent	Cumulative Percent
	Dam	4	20.0	20.0	20.0
	River	12	60.0	60.0	80.0
	Borehole	4	20.0	20.0	100.0
	Total	20	100.0	100.0	

(Source Research Data from the field)

Table 3: Water sources in the community at Lundi Business Centre before 2004.

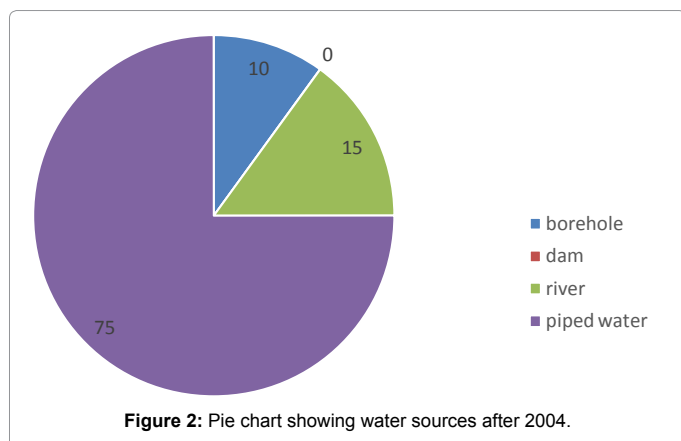


Figure 2: Pie chart showing water sources after 2004.

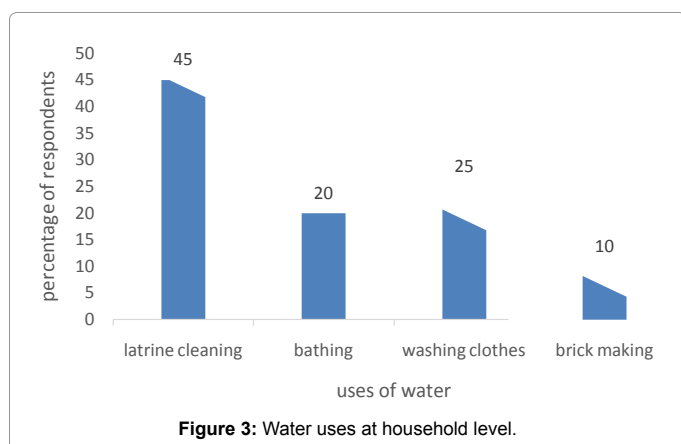


Figure 3: Water uses at household level.

From the research observations, it has been noted that the provision of water nearer to the community have reduced the number of hours and distance travelled in water collection related activities. Hence this has increased the time available for other quality of life matters.

The bar graph above show the uses of the piped water at household level (Figure 3). It indicates that most of the water is also used for the pit latrine cleaning and basic washing of clothes. Thus the other direct benefit of the Runde water supply system obtained is provision of water for the proper maintenance of the ventilated pit latrines. As already discussed, most of the buildings in the Lundi business centre have been built before the implementation of the Runde water supply in 2004. The sewerage system under use is the pit latrines in this case the ventilated pit latrines (VIP). Water is provided conveniently for the cleaning of these structures reducing the odour and cutting down the life cycle of disease-causing organisms. In the long run, the health of the local population is improved. No wonder why some critics noted that the thrust of a water and sanitation programme is to improve the health of the nation [8].

Health benefits

From the desk study which was undertaken, it can be argued that the Runde water supply impacted positively on the health of the local business community. Data was collected by visiting the local clinic after obtaining the permission from the responsible authorities. The clinical records as shown in Figure 2 indicate the reduction in the occurrence of diarrhoea as from 2004 up to date.

The above information needs to be discussed in light of the types of the water sources used by the people prior to the implementation

of the water supply system (Figure 4). High rates of diarrhoea can be attributed to the use of water from unprotected sources especially from the Runde River. Although more is desired on the household hygienic practises, the provision of the protected and treated water has contributed significantly to the reduction of the cases of diarrhoea in the area.

In addition, all of the households are served with the standing pipes. These do not have well improved drainage systems to carry away wasted excess water. As a result, stagnant pools of water have been created at nearly all standpipes. These have created a conducive environment for the breeding of the mosquitoes and other water borne diseases. This may have emanated from the lack of the user education on hygienic practises.

Indirect benefits

The implementation of the Runde water supply has generated more multiplier effects to the Lundi business community. Forty-two percent of the households have engaged in market gardening, that is the cultivation of vegetables for sale. It has been noted that water from the piped system is used for the cultivation of green vegetables. The vegetables grown are mainly rape, cabbage, carrots, onions and sweet cabbage. The income generated from selling vegetables is converted into the financing every day-to-day life demands. In addition, the vegetables are also very essential in terms of boosting the nutritional status of the local community as unveiled by the Institute of Water and Sanitation Development [8].

Apart from the cultivation of vegetables, five percent of the households served with piped water from the Runde water supply system specialise in the growing of flowers and herbal plants for

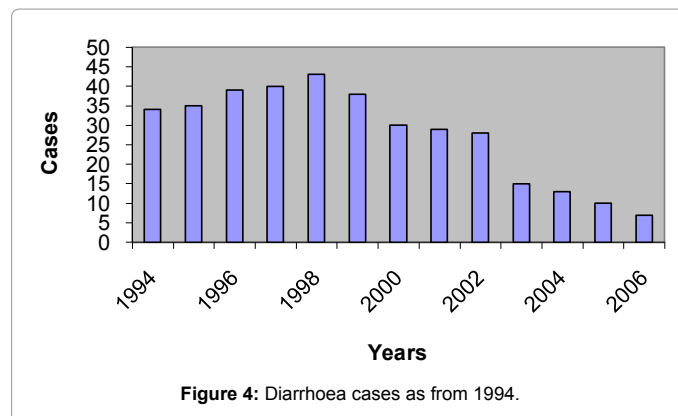


Figure 4: Diarrhoea cases as from 1994.

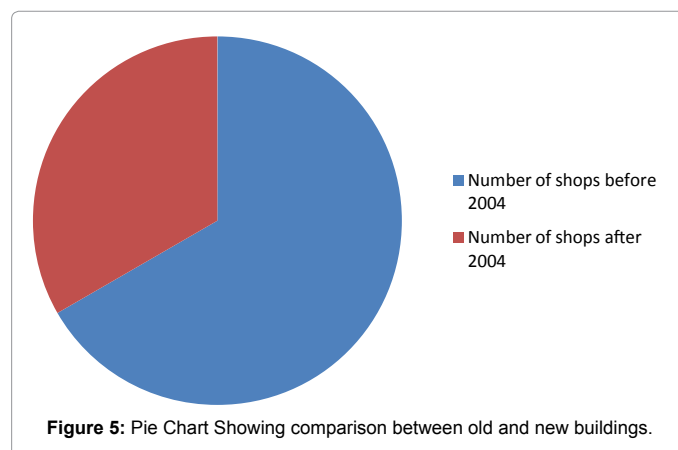


Figure 5: Pie Chart Showing comparison between old and new buildings.

sale that is horticulture. However, this is being done a smaller scale. Research findings indicate that with the introduction of a water supply in 2004 has improved the process of flower cultivation. Prior to the Runde water supply, these households relied mainly with the water from the two shallow wells nearby. These wells are seasonal which greatly affected the cultivation of the flowers and herbs. As from 2004, these people are now able to cultivate flowers and herbal plants for sale throughout the year. The households are able to raise more income through the selling of the flowers and herbal plants to the local people in the surrounding rural areas and the foreigners using the Masvingo to Beitbridge highway.

More residential and industrial stands are under construction ever since the reliability and availability of water improved in the Lundi business centre. As from 2004 nine shops have been built. The residents argued that water provision has greatly influenced the expansion of the business centre in terms of the infrastructural development. This can also be noted as illustrated by the pie chart below (Figure 5).

An important observation made is that prior to building of any structure, there is the installation of the water system. This indicates the incorporation of the water system at the planning phase of the expansion of the local business centre. The old buildings were constructed without providing the facilities for water connections no wonder why there is no water reticulated sewerage system in Lundi business centre. Furthermore, the Mwenzi Rural District Council is now servicing the residential stands at the Lundi Business centre. This expansion drive although at a slower pace than expected, is being facilitated by the availability of a reliable and an efficient water supply system. In this respect, more people will be accommodated and the waste disposal easier due to the availability of water.

From the research finding highlighted above, one may argue that the availability of water nearer to the business community has facilitated the expansion of this centre. In the long run, the combination of water supply and user education will help to improve the sanitation environment thereby upholding the health of the local people.

Conclusion

The main aim of the research study was to examine the impacts of a water supply system to the life and business of the local community. From the interviews done and the use of the available information, access to treated water at Lundi business centre has improved. Thus, people now have water nearer their houses. This was being compared with the previous water sources which were far away from the households. The improvement in the access to treated water has generated multiplier effects of reducing distance travelled in search of water and increasing people's time for other economic activities.

Apart from improved water access, the community is now using safe and clean water as compared to the use of the surface water source, in this case the Runde River. This has gone a long way in reducing the prevalence of water borne diseases such as dysentery, typhoid and diarrhoea. As a result, the Runde water supply system had and is playing a significant role in the thrust to improve the health of the community.

As discussed above, the Runde water supply system had improved the access to water in the community. However, observations depict that standpipe to people ratio is very uneven. Thus, there are more people per standpipe and this has repercussions on the use of these facilities. As there are more people per standpipe this has resulted in the poor maintenance of the standpipe sites.

Moreover, the thrust of any water and sanitation programme is to improve the health of people (IWSD 2001). Research findings show that water supply in the local community has reduced the prevalence of water related diseases but as the number of water users increases per standpipe this tends to result in the poor maintenance of the standpipe sites. It has been noted that there are no drainage systems to carry away excess water. As a result of stagnant pools of water, people are exposed to health hazards.

The benefits of the Runde water supply system to the Lundi business centre need to be assessed in relation to the surrounding rural villages such as Chitanga, Kutanga, Helani and Mukachana. It needs to be borne in mind that some water-related diseases do not respect man-made boundaries. Therefore, these diseases can easily spread from one area to the other. As a result, to uphold the health of the people, there is need also to expand the water supply to the surrounding rural communities. This should be done immediately for these communities rely on dams, rivers and unprotected wells for their water supply. These are the fertile grounds for the spread of many water borne diseases. Having such a scenario, the benefits of the Runde water supply could have proliferated to the outskirts of the business centre.

In addition, the Runde water supply system has impacted on the life and business of the local business centre. With the provision of water nearer to the people, this has increased households time for other activities such as market gardening, flower and herbal plant cultivation. The nutritional status of the households has been improved from the cultivation of vegetables and these activities have helped in the generation of the income. Moreover, observations show that the improvement in the water supply in Lundi business centre has helped in the infrastructural expansion of the business centre.

Recommendations

From the above reflections, there is need for the expansion of the water supply within the Lundi business centre. The project implementers should expand their water supply to nearly all the households. Although this depends on the economic status of the people, the move may ease the pressure at the standpipes. This expansion should also extend to the in-house connections other than relying on the standpipes.

On the standpipes there are no mechanisms to remove excess water and this result in the accumulation of water on these sites. Simple drainage systems must be put in place to get rid of the excess water on the standpipe sites. From this situation, households or the users should put in place simple concrete drainage systems at the standpipes to carry away excess water. This has to be done with the matter of urgency in order to create unfavourable conditions for the spread of diseases. As a result, there is need for the planners of the growth points to consider the integration of water provision and sanitation in the physical expansion of the local business centres.

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Citation: Chauke H, Mudavanhu F (2014) An Assessment of the Impacts of the Runde Water Supply on the Life and Business of the Local People. A Case Study of Lundi Business Centre in Mwenezi District. J Fisheries Livest Prod 3: 127. doi: [10.4172/2332-2608.1000127](https://doi.org/10.4172/2332-2608.1000127)

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