



UNIVERSITY OF ZULULAND

The Provision of Water and Sanitation in Previously Disadvantaged Rural Communities: A Study of uThungulu/King Cetshwayo District Municipality

by

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DATE: NOVEMBER 2019

DECLARATION

I, Elijah Siphosenkosi Ncube, the undersigned hereby declare that the work contained in this dissertation titled 'The Provision of Water and Sanitation in Previously Disadvantaged Rural Communities. A Study of uThungulu/King Cetshwayo District Municipality in KwaZulu-Natal, is my own original work, and where contributions of others were used, that was clearly indicated with due reference to the literature.

Signature: _____

Date: _____

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- UMthonjaneni Local Municipality
- UMLalazi Local Municipality
- UMfolozi Local Municipality

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DEDICATION

My sincere thanks are due to the following:

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COMMON ABBREVIATIONS AND ACRONYMS

SA	South Africa
KZN	KwaZulu-Natal
MuSSA	Municipal Strategic Self-Assessment
MDGs	Millennium Development Goals
IDP	Integrated Development Plan
ANC	African National Congress
MTEF	Medium Term Expenditure Framework
NCOP	National Council of Provinces
MIG	Municipal Infrastructure Grant
SAHRC	South African Human Rights Commission
RSCs	Regional Services Councils
UDF	United Democratic Front
GDP	Gross Domestic Products
UNESCO	United Nations Educational, Scientific and Cultural Organization
DWAF	Department of Water, Agriculture and Forestry
SABC	South African Broadcasting Cooperation
WSA	Water Service Authority
RWS	Rural Water Supply
FBW	Free Basic Water
FBS	Free Basic Sanitation
VIP	Ventilated Improved Pit

HRC	Human Rights Commission
NHI	National Health Insurance
SACMEQ	South and Eastern Consortium for Monitoring Educational Quality
WHO	World Health Organization
UNICEF	United Nations Children’s Fund
UN	United Nations
SDGs	Sustainable Development Goals
ANA	Africa News Agency
TNA	Television News Agency
DALYs	Disability Adjusted Life Years
WASH	Hand-Wash
WRC	Water Research Commission
DoE	Department of Education
NGO	Non-Governmental Organization
PMTCT	Prevention of Mother to Child Transmission of Disease
HIV/AIDS	Human Immune Virus Acquired Immune Deficiency Syndrome
NWA 1998	National Water Act of 1998
CWC	Colombia University Water Centre
UFC	University Federal Ceara
AD	After Death of Christ
BC	Before Christ
RDP	Reconstruction and Development

	Programme
WSA	Water South Africa
DRWH	Domestic Rain Water Harvesting
MEC	Minister of Executive Council/ Committee
US	United States
BRICS	Brazil, Russia, India, China and South Africa
OD	Open Defecation
DS	Dry Sanitation
ISRDP	Integrated Sustainable Rural Development Programme
COGTA	Cooperative Governance and Traditional Affairs
DWSSA	Department of Water and Sanitation-South Africa
KMO	Kaiser-Meyer-Olkin (Measure of Sampling Adequacy)
Df	Degree of freedom
PCA	Principal Component Analysis
COPAWP	Community Participation on Water Meetings Perceived Effectiveness of uThungulu Local Government on water Provision
PEWAP	Faced Experiences by Communities Without Water
FAEWAS	Perception on Strategies
PERSTRA	

ABSTRACT

The principal aim of the study was to evaluate the status of the provision of water and sanitation in previously disadvantaged rural communities. The study was conducted in uThungulu/King Cetshwayo District Municipality. It was chosen as one of those local municipalities that incorporated rural areas like iNkandla, uMthonjaneni, uMfolozi, uMlalazi and uMhlathuze; where rural dwellers were likely to have no access to essential services. The idea was to evaluate the extent to which these basic services have been delivered to communities that were previously ostracised by the apartheid government and also to determine the strategies and interventions uThungulu/King Cetshwayo District Municipality has for the future development of the rural areas. The human rights-based approach (HRBA) was used with an aim of enhancing human well-being. The study also intended to investigate whether local governments were able or not to carry-out their mandate succinctly as stipulated in the constitution of the Republic of South Africa (Act 108 of 1996), section 87, (to provide basic services to communities). According to the researcher, the widespread of violent service delivery protests across the country (SA), where citizens complain about the poor delivery of essential services, were a sign that it was likely that communities were not afforded an opportunity to participate in the drawing of an integrated development plan(IDP). The quantitative research method was used in this study. The respondents were randomly chosen from uThungulu/King Cetshwayo District Municipality for the study. The questionnaires in a Likert scale; (a five-point scale) were used to solicit data for the study. The SPSS (Version 25) programme was used to process the results. From the findings of the study, it became evident that some parts of rural areas which were previously marginalised have been provided with both water and sanitation. However, residents in the peri-urban were still without piped water and flush/decent well ventilated toilets. The study also revealed that there was a lack of maintenance of the existing infrastructure within the local government. The study therefore, recommended that the policy-makers and politicians should explore the underlying relationship between the level of basic services provided and the violent service delivery protests taking place in municipalities. The provision of these essential services to rural communities would leave an indelible scratch in their minds, marking a realisation of a "Better life for all."

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CHAPTER ONE

GENERAL INFORMATION

1.0 Introduction

The violent service delivery protests in local municipalities in South Africa have become the order of the day; in the print media and other electronic social platforms. The general complaint is about the non-delivery of the basic services like water and sanitation infrastructure, mainly in Black communities. According to Morudu (2017), there is an underlying issue between community violent protests and the local municipalities. The study therefore wishes to evaluate the perception of communities on the effectiveness of municipalities in providing basic services. According to Nagpal and Radin (2014), clean fresh drinking water is essential to human and animal life, necessary for all kinds of agriculture and equally important to the world of economy. It also functions as a universal solvent. However, indications are that in South Africa, there will not be sufficient drinking water by 2025. Therefore, an urgent call on water conservation demands that strategies be put in place at all municipalities to save water at all costs. In the same vein, (Nakagiri et al. 2016) as cited by Changara et al. (2018), say that, worldwide, the provision of sanitation was a huge challenge. They further argue that it was worse in developing countries; and as such, access to improved sanitation worldwide, stood at 64%. On the other hand, Rijsberman (2006), used a water scale called 'Failkenmark', - named after Failkenmark (Failkenmark, 1989) to determine the availability of water in future. According to Rijsberman (2006), from 2000 to 2025 countries were expected to come-up with mechanisms of conserving water for future demand. The scale that is widely used to measure water- "water stress index" show that water is becoming scarce. Surprisingly, there are demonstrations all over South Africa, particularly in black communities where residents complain about non-delivery of water and sanitation infrastructure. South Africa is now into 24 years of democracy, but the picture painted by communities suggest that very little has been achieved in providing water and sanitation infrastructure in previously disadvantaged rural communities. According to (Falkenmark, 2002) as cited by Turpie et al. (2008), a high demand for water was further perpetuated by the fact that water scarcity in developing countries is closely linked to the prevalence of poverty, hunger, and disease, etc. (Turpie et al., 2008).

This chapter therefore presents the structure that will be followed to evaluate the status of services delivery by municipalities (local governments), especially in the previously disadvantaged communities, specifically in uThungulu/King Cetshwayo District Municipality. The human rights-based development approach will be the main hub to explore the effectiveness of municipalities in providing the essential services like water and sanitation in communities. Again, the study will evaluate the perception of communities on future strategies that the municipality has to deal with the issue of scarcity of water and sanitation infrastructure in uThungulu/King Cetshwayo District Municipality. The researcher argues that communities were not afforded an opportunity to design and draw a list (prioritise) their needs in their own wards. In this study the researcher suggests that it is likely the underlying factor on ongoing protests between local governments and dwellers lie on the drawing of Integrated Development Plan (IDP) and the prioritisation of service delivery items.

Water Sector Support in the Department of Water and Sanitation is therefore stressing the importance of improving the municipality's water services management efficiency- Municipal Strategic Self-Assessment (MuSSA) and municipal priority action plan. On the other hand, some municipalities in South Africa are plagued by service delivery problems relating to the failure of providing water and sanitation and at that time, municipalities were chasing the Millennium Development Goals, 2015 target. The Millennium Development Goal number 6 suggests that countries should reduce proportion of households without clean water by half in the 2015. Poor countries have been advocating for foreign aid in order for them to attain the Millennium Development Goals (MDGs) by the year 2015. The Millennium Development Goals were first agreed upon at a summit of all world leaders at the UN in 2000. The low-income countries have paid their attention to UN, World Bank, International Monetary Fund and bilateral discussions with aid agencies trying to achieve these goals – MDGs (United Nations, Africa, and the Millennium Development Goals, (2007)

This dissertation therefore seeks to evaluate the status for the provision of water in uThungulu/King Cetshwayo District municipality, which is a special potential life-blood commodity to communities, especially those that were previously disadvantaged. It will also evaluate the challenges faced by communities who lack these essential basic services (Ramsamy, 2014).

1.1 Background of the Study

According to Uys, (1996) as cited by Tewari, (2005), the water rights history of South Africa was the Water Act of 1956 (Act 54 of 1956). At that time, water regulation was in the interest of the White economic heavyweights, White agricultural farmers, mining, and industry. This was also an Act that clearly addressed business sector and it directly dealt with groundwater issues. The Republic of South Africa at that time was industrialised and urban populace had also grown. The country was ruled by the Afrikaner nationalists (NP). The water demand from urban and industrial sectors had increased. A Commission of Inquiry into the water laws was appointed, and as a result of that, the Water Act of 1956 was then promulgated. The new provisions for the domestic use of water had to be reconsidered. The new Act vested in the Minister of Water Affairs a large measure of controlling of water for the interest of city and town communities in the Republic of South Africa (Tewari, 2005). Therefore, the principle of government to control water was introduced. These arrangements specifically singled out whites and totally excluded rural communities. Redressing this scenario became the principle aim of democratic government in the post-apartheid era. A control over urban and industrial users was also exercised by the introduction of Water Committees or in some areas Water Boards. Those Committees and Boars made provision of bulk water for urban and industrial use and regional sewage schemes in the areas of their jurisdiction. Rural communities were never catered for.

The constitution of the Republic of South Africa (Act108 of 1996) envisages robust local government systems that will provide communities with services in a sustainable manner (Municipal Systems Act, 2003:2). The study will therefore evaluate the status and nature of drinking water and sanitation infrastructure provision in uThungulu/King Cetshwayo District Municipality since its inception in year 2001. Municipalities are regarded as the sphere of government closest to the people. Therefore, they (communities) should actively be involved in shaping their living environment through participation in development processes. After the end of Apartheid, South Africa's newly elected government inherited huge services backlogs in respect of access to clean drinking water supply and safe sanitation. The studies have revealed that about 15 million people were without a safe water supply and over 20 million without adequate sanitation infrastructure. The ANC-led government, through municipalities thus made a strong commitment to high service standards and to levels of investment subsidies to

achieve those standards. Municipalities have executive, legislature and judicial functions too. Under this layer of executive leadership are the ward councillors who represent the interest of communities in the executive council. Ward councillors should hold regular meetings to which ordinary people can bring their grievances and the councillors should then pass them onto the executive council of the municipality for resolution. Municipalities are taken to be democratic and the participatory spaces where ordinary people can participate in the decision making. In this case, the integrated development plan (IDP) is used as the hub for all development processes among communities (Municipal Systems Act, 2003:2). In the run-up to the 2011 local government elections, the Human Rights Commission received two complaints about municipalities that had built toilets without enclosure in their local communities.

According to Cross and Mullen, (1987:1) service delivery is expected in every country after the fall of the colonial government. South Africa experienced the same situation in 1994 when the first democratic elections were conducted. The establishment of local and district municipalities or governments was an attempt of addressing the imbalances of the past. In 1998, legislation on local government was passed, aiming at empowering local governments to fulfil the constitutional objectives (Cross and Mullen, 1987:1). Those areas which lack proper water and sanitation mirror apartheid spatial geography. Former homelands, townships and informal settlements are the areas in which communities, healthcare centres and schools, which are black and poor, predominantly do not enjoy these rights and many others. Municipalities have the responsibilities of developing effective and reliable strategies for coping with climate variability and change, growing water scarcity, and the disappearance of water bodies. To ensure that all have access to safe and adequate drink-water supply and safe sanitation services to meet basic needs of human societies (Quinn, 2012:761).

According to Showers, (2002:625) there are no proper documents on disposal of water after domestic or industrial use in urban Africa that are well archived. Most people in most urban areas use some form of latrines for household sanitation. Liquids put in latrines are expected to infiltrate into—and be purified by—the surrounding soil. Solids are buried, dumped in rivers, or added to municipal water-borne waste streams. A small proportion of households have septic systems, and even fewer have access to water-borne sanitation related or untreated, most sewage ends up in streams or oceans (Showers, 2002).

According to Reid and Vogel, (2006:202) there are few water and sanitation services in most black communities. The time allocated for the collection of water also decreases the overall time budget for other activities. The collection of water, for example, was ranked third as the most important daily job, usually undertaken by women. Energy is mainly provided by the collection of firewood, and this task was ranked the fourth as the most important job of the day for the women, after collecting water. At the 37th United Nations Educational, Scientific and Cultural Organisation (UNESCO) General Conference held in France recently, all participants agreed that the African Centre for Global Change and Water Resources Research be established. The main function of the centre would be on research into water resources impact of global change. It would also investigate the impact of land use on natural water resources conservation and how communities, especially young scientists, should be trained. The theories of Palmer (1980), Rostow (1960), Ghetto (1977), Frank, (1969) and others who treat the topic of development in the post-colonial era will be used, as the springboard to further the discussion.

The South African Municipal Systems Act of 1998 as Amended envisages that all local and district municipalities should render services to communities in order to allow citizens of South Africa to realise their voting dream, which was, getting good service delivery. And also, that service delivery would now for the first time in South African continent history include non-White communities as well as rural areas. The provision of water and sanitation is always on top of the agenda of every Integrated Development Planning (IDP) of each and every local district municipality or government development meeting (Heymans and Totemeyer (1985:52).

According to (Carr, 2011: 5) the Millennium Development Goals that were set-up in the year 2000 state it clearly that by 2015, all countries shall have halved the proportion of communities without safe drinking water and also halved the proportion of communities without proper sanitation. It is therefore believed that by 2015 water and sanitation shall have reached every household, even in the countryside (MDGs-no7). More so, South Africa is one of the few countries in the world that enshrines the basic right to sufficient water in its Constitution, stating that "Everyone has a right to have access to sufficient food and water" The former president of Republic of South Africa Thabo Mbeki made a promise in his State of the Nation Address in May 2004 "all households will have running water within five years." For the equitable share within the Medium Term Expenditure

Framework (MTEF), R279 billion go to municipalities of South Africa. The distribution amongst provinces, indicates that KZN Province receives the highest amount due to the formula currently utilised based on the population dynamics of a particular area-Northern Cape (De beer, 2014). The study will, therefore, focus on the issue of basic services delivery, “water and sanitation” in the uThungulu/King Cetshwayo District Municipality in (KZN Province), following the huge amount received as Municipal Infrastructure Grant-(MIG) (De beer-NCOP, 2014). Protests by communities in a number of municipalities in South Africa were a sign that people, especially in previously disadvantaged areas were still facing water and sanitation woes and were still ravaged by water related diseases (SAHRC, 2012 and 2013). Therefore, a visit by then president in King Cetshwayo District Municipality, in KwaZulu-Natal, to launch a drought relief programme raised hope to communities. The sum of R23 million from the Drought Relief Fund was allocated to the district for the development of 32 new boreholes, following it’s the approval of its business plan by the Department of Water and Sanitation for implementation in April 2015. A portion of that money was to be used to repair other seven existing community water springs (Moody, 2015).

The money allocated would include people leaving in local municipalities falling under this district which are uMbonambi, iNkandla, uMlalazi and uMthonjaneni Local Municipality (Moody, 2015). According to (Madzivhandila, 2016), in the financial year 2015/16 there were 29,4% and 29% of water and sanitation backlog supply in King Cetshwayo District municipality. An annual budget of King Cetshwayo District municipality, 2016/17 to 2018/9 in March 2016 raised greater expectations to communities in these local governments (www.uthungulu.org.za). However, despite the huge sums of money entrusted to municipalities, there is still an increase in service delivery protests in most local municipalities in South Africa. The general complaint is about the lack of delivery of the basic services (Morudu, 2017).

1.2 Statement of the Problem

According to Yannopoulos et al. (2015), water is an absolutely necessary element for all human beings in life, suggesting that no man can survive without it. The recent riots and loss of life in most parts of the country in South Africa, communities protesting for the lack of basic services like water, is indeed a living testimony, that water is essential to all, but still not available to all. This is affecting Black communities. The mushrooming

of these riots usually take place in black previously disadvantaged communities (Yannopoulos et al. 2015). And yet, in the new dispensation, municipalities were regarded as a vehicle for the delivery of services (Quinn, 2012:761). Apparently the current *modus operandi* does not solve the problem of access to basic services; hence there are endless violent riots in Black areas, mainly in townships and rural communities.

Nearly three decades ago, the Nationalist Party government introduced what was known as the Regional Services Councils (RSCs), which was seen as an attempt to give Black people a great share of regional power and wealth in the running of their affairs. These RSCs would specifically address Black community needs. More importantly, the RSCs needed to be assessed in the light of community development. But, later, all the major Black political organisations and civil organisations including UDF, National Forum, Congress of South African Trade Union and Inkatha, made it clear that the RSCs were unacceptable to Black communities (Heymans and Totemeyer, 1988:192).

In 2000, municipalities came into existence in South Africa mainly on the demand of citizens as they sought ways through self-government to meet their needs brought along by the establishment of municipalities. About 800 local authorities in South Africa were consolidated into 284 municipalities, of which 64 are in KwaZulu-Natal. Despite all these changes in government or administration, communities are still complaining about water and sanitation. However, the *modus operandi* has not change that much because Integrated Development Plans (IDPs) are still driven by municipal councils in various municipalities and taken to communities who might have decided otherwise in terms of prioritisation of items on the list of services. And for that reason, municipalities start by providing that which suites their budget and not according to the urgent needs of a particular ward community within that local municipality. Therefore, a different attitude and change of mind is required in this regard for better results, otherwise, the current style will continue be engulfed by violent protests. According to Heymans and Totemeyer (1988:64) the main function of local government is to supply 'water'. Water is a national concern, therefore, Water Act 156 prescribes water requirement to be met by all municipalities. It is against this background that the study evaluates the status of the provision of water and sanitation infrastructure which is a mandate of municipalities.

During the 2016/2017 financial year the uThungulu/King Cetshwayo Municipality appraised communities about the status of backlogs in service delivery. It became evident that uThungulu/King Cetshwayo DM had 33688 households without piped water, and 41555 households without sanitation services or infrastructure. These figures were recorded in rural local municipalities like Ntambanana and uMlalazi, both municipalities falling under uThungulu/King Cetshwayo District Municipality (SA Statistics, 2011). With the high levels of maladministration and corruption in local governments making news head-lines daily, it is likely that the R23 million allocated for water infrastructure may not finally be utilised for its purpose. In this study, King Cetshwayo District Municipality will be used as a yard stick to evaluate the current status of the delivery of piped water and decent sanitation infrastructure in rural areas. The eruption of protests in most parts of South Africa is as a result of municipal councils who take to communities a list of tailor made activities and decide upon for communities what will come first (priority list) may be the route course of unabated protests. The development plans should be produced by communities and not by municipal councils, the current model of producing the IDP does not carry the sentiments of the communities. This requires policy-makers and politicians to re-visit Local Government: Municipal Structures Act, No.117 of 1998 and Regulations, Chapter 5, section 84, subsection (b)(c) together with Local government: Municipal Systems Act, No.32 of 2000 and regulations, Chapter 5, section (27-30), with all subsections of the mentioned sections. Together, policy-makers and politicians may begin to do things differently (towards the right direction). The national executive of the ruling party suggested that district municipalities (IDPs) need overhauling (ANC Lekgotla, 21/01/20).

1.3 Motivation of the Study

Previous studies revealed that structures like Regional Services Councils were once set up by the Nationalist Party Government with an intention of addressing services in rural communities, especially blacks in rural areas who were previously disadvantaged, but they did not last long. Instead, communities revolted against them (Smith, 2003). According to Dalhisen and Nijkamp (2004), rapid population growth increase, urbanisation and standards of living both in towns and cities was seen as a threat to the need for greater efficiency water use, consumptive and production. Therefore, the situation of water scarcity requires a need for a balanced distribution of water, taking into account societies living in rural areas as well. Similarly, it was estimated that 2.5

billion people, which translates to a third of the world's population, did not have access to latrines. Further to that, over 1 billion of them had no facilities at all and they had to go out in the open field for defecation (CBS News, 2013). The lack of sanitation can lead to contamination of drinking water found in streams and wells, which may be dangerous for children and people with compromised immune systems due to diseases like AIDS. Unsafe sanitation carries risks for women, who are at times forced into situations where they are vulnerable to sexual attacks. At times women have to use the bathroom in the open space, and spend almost 97 billion hours a year looking for a safe place to go for defecation (CBS News, 2013).

A number of studies have revealed that, despite substantial progress made, but it looks like some essential services or goals have not been fully addressed or achieved. In certain rural areas, women and children spend up to one-third of their time fetching water from streams and wells. Protests and loss of lives in, Ficksburg, Standerton, Ermelo and other parts of the country on non-service delivery protests could be a tip of an ice bag. These demonstrations take place in black townships where the majority of the poor communities reside. Does the government have a solution for black communities residing in rural areas as they also normally take their frustration to the street? The South African government might be sitting on a time ticking bomb. The delivery of clean drinking water and safe sanitation is therefore very crucial (Smith, 2003).

From the findings, the researcher will be able to make conclusions on the progress or no progress made by uThungulu/King Cetshwayo district municipality in terms of the provision of water and sanitation to the rural communities under its jurisdiction. Research findings will assist government to focus on rural communities as they are at times neglected because of low income they generate in rural areas compared to towns. Municipal councils should refrain from preparing the IDP (integrated development plan for communities, but instead, communities must under the guidance municipal officials prepare the IDP for their own development benefit.

1.4 The aims of the study

1.4.1 The main aim of the study

The aim of this study is to evaluate the status of the provision of water and sanitation, following numerous violent protests in most municipalities in South Africa, especially in Black communities. The research will be conducted in KwaZulu-Natal, specifically in the uThungulu/King Cetshwayo District municipality.

1.4.2 The other aims of the study

1. To evaluate the participation by communities in the provision of water and sanitation service delivery (water conservation as well as the night soil handling).
2. To examine factors contributing toward poor provision of water and sanitation in previously disadvantaged rural communities in uThungulu/King Cetshwayo District Municipality.
3. To explore the challenges experienced by rural communities who are without water and sanitation infrastructure.
4. To explore strategies and interventions the municipality has to improve the status of the provision water and sanitation in previously disadvantaged rural communities.

1.4.3 Research Questions

The research questions which the researcher intends to answer are as follows:

1. How do communities participate in service delivery processes, water and sanitation (Drafting IDP) in uThungulu/King Cetshwayo District Municipality?
2. What are factors that contribute toward poor service delivery of water and sanitation in previously disadvantages rural communities by uThungulu/King Cetshwayo Municipality?
3. What are the challenges that communities in rural areas face if there is no water and sanitation infrastructure provided by uThungulu/King Cetshwayo District Municipality?
4. What are the strategies or interventions that the municipality has to improve the status of water and sanitation in previously disadvantaged rural communities?

1.4.5. Research Hypotheses

1. There is an influence of community participation in water and sanitation provisioning on perceived strategies for the provision of water at uThungulu/King Cetshwayo District Municipality
2. There is an impact of faced experiences about water and sanitation on perceptions about water and sanitation provisioning at uThungulu/King Cetshwayo District Municipality
3. The faced experiences about water and sanitation provisioning have an effect on perceived strategies for the provision of water and sanitation in uThungulu/King Cetshwayo District Municipality
4. There is an existing relationship between perceived strategies for the provision of water and sanitation and the perceptions about water and sanitation provisioning

1.5 Data collection

Questionnaires will be used to solicit the data. The questionnaires will be administered or delivered by the researcher with an aim of obtaining the sufficient valid and reliable data that can be transformed into information which will prove or disapprove the prediction or assumption of the study. The researcher will visit clinics, schools, tribal/political councillors as well as municipal water service managers to gather more information.

1.6 Target Population of the Study and Sampling

Sarantakos (2000) as quoted in de Vos et al., (2011) argues that the major reason for sampling is the feasibility, which is the complete coverage of the total population, which is not possible in the research project. The researcher will use purposive sampling, which is based entirely on the judgement of the researcher whereby a sample is composed of elements which contain the most characteristic, representative or typical attributes of the population which serve the purpose of the study best. The purposive sampling was chosen on the bases of selecting only municipal workers specifically hired in water and sanitation departments. This would offer an opportunity of getting the relevant information needed for this research. For other respondents, the purposive sampling was suitable since there had to be proportional representation of all categories

found in communities. This will be achieved through the use of questionnaires. The following will be the order to solicit data for this study:

1.6.1 Sampling from the Respondents

Target: municipal Officials	Target: Consumers
Senior manager =3	Councillors: Tribal/Political =10
Senior Develop. Manager =3	Health Centre (clinic) =10
Senior Water Superintendent =3	Education Centre =10
Senior Technical Manager =3	Library =10
Other (Specify) WSSA =3	Families 45
Municipal Officials =15	Other Respondents 85

1.7 Limitation of the Study

1. Not all questionnaires were filled because some government (municipal) officials said that they never had time to complete them.
2. Some questionnaires were not available because some municipal officials were absent, and some attending sandwich courses, and their offices locked.
3. The respondents did not answer all the questions in the questionnaire.
4. One Tribal councillor refused to fill in the form, fearing victimisation if they give information about the area.
5. Political party/traditional leaders were reluctant to participate in the process -fear of the unknown consequences.
6. Insufficient funding for the research hampered the process- collection of data.

1.8 Data Analysis

The statistical analysis of the data will be done through the employment of the Statistical Package of Social Sciences (SPSS, Version 25). The researcher will use the SPSS because it is applicable to a wide variety of research problems. According to Kreuger and Neuman (2006), as cited by de Vos et al. (2011), a code sheet should be created which will be useful in providing guidance for both the guide and the record of how the responses gathered from the questionnaire are to be coded and analysed (de Vos et. al., 2011).

1.9 Operationalisation of Concepts

Basic Sanitation

According to DWAF (2002) as cited by Madi (2016), basic sanitation services refer to a minimum acceptable standard of sanitation service required by people in a particular area.

Rural

According to Goldman and Reynolds (2008), rural is defined as the sparsely populated area in which people depend on natural resources including small villages and towns

Community Participation

It is a process by which a community mobilizes its resources, initiates and take responsibility for its own development activities and share in decision making for and implementation of all other development programmes for the overall improvement of its health status.

Apartheid and Apartheid Government

It is translated from the Afrikaans meaning 'apartness', apartheid was the ideology supported by the National Party government and was introduced in South Africa in 1948, which called for the separate development of the different racial groups in South Africa. (South African History Online).

Local Government:

It is the level of government created to bring government to the local populace and to give citizens a sense of participation in the political processes that influence their lives. There are three types of local governments, Metropolitan category A, local municipality category B and a district municipality, category C (Reddy 1999 as cited by van der Walddt et al., 2015:53).

Local Municipality

It refers to the area of jurisdiction of a local or municipal government (van der Walddt et al., 2015).

District Municipality

District municipalities are made up of a number of local municipalities that fall in one district, and there are between 4 - 6 local municipalities that come together in a district council.

Metropolitan Municipality

Metropolitan municipalities are found in the big cities. These municipalities are broken into wards, and they have more than 500 000 voters and it co-ordinates the delivery of services to the whole area. Half of the councillors are elected through a proportional representation ballot, where voters vote for a party and the other half are elected as ward councillors by the residents in each ward (www.etu.org.za/toolbox/docs/localgov/webundrstdlocgov.html).

Apartheid

Translated from the Afrikaans meaning 'apartness', apartheid was the ideology supported by the National Party (NP) government and was introduced in South Africa in 1948. Apartheid called for the separate development of the different racial groups in South Africa (South African History Online).

Water Scarcity

Water scarcity is the lack of sufficient available water resources to meet the demands of water usage within a region or area (Wikipedia, the free encyclopaedia)/ (Lopez-Gunn & Ramón, 2008).

Water Harvesting

It refers to the accumulation and storage of rainwater from roofs for reuse on-site, rather than allowing it to run off (Pacey & Cullis, 1986).

Decent Toilet

It refers to shaped device into which a person excrete waste with a seat that has a hole in it (Collins English Dictionary)

Open Defecation

It refers to the practice of human beings relieving themselves on the open veld in full view of the public (Fisher, J. (20

Community Development

Community development is an action that helps people to recognise and develop their ability and potential and organise themselves to respond to problems and needs which they share and it also supports the establishment of strong communities that control and use assets to promote social justice and help improve the quality of community life (<http://www.scdc.org.uk/who/what-is-community-development>).

Decentralisation of Power

According to Antwi-Boasiko (2010), decentralisation of power is regarded as a process where central government transfers political, fiscal and administrative powers to lower levels, for administration.

Integrated Development Plan

It is a five-year plan which all local governments are required to compile to determine the developmental needs of the municipalities and the projects within the IDP are also linked to the municipalities' budget (<https://www.informationvine.com/index>)

Desalination plant

It is a process that extracts mineral components from saline water, and it generally refers to the removal of salts and minerals from. (<https://en.wikipedia.org/wiki/Desalination>)

Dominus fluminis

It refers to the head of the household owning a river/the owner of the well/river (<https://www.etymonline.com/word/domino>).

Municipal Systems Act

It is a document that provides for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities (LOCAL GOVERNMENT: MUNICIPAL SYSTEMS ACT 32 OF 2000)

1.10 Organisation of the Work

This study consists of eight (8) chapters.

Chapter One: This chapter introduces the study by presenting all elements that are usually included in the research. It presents the main aim of the study, the statement of the problem of the study, the objectives of the study, the research questions, and the

significance of the study. The chapter also highlights the significance, problems and limitations of the study.

Chapter Two: This chapter discusses the relevant literature, based on previous studies conducted which dealt with the provision of basic services such as the water, sanitation and electricity and how societies perceived local government.

Chapter Three: This chapter further discusses the literature relevant to the need of the provision of basic services specifically to rural communities in the new dispensation (after 1994 and beyond).

Chapter Four: This chapter discusses the literature that presents local governments (municipalities) as agents of the national government who have the state mandate or responsibilities of providing basic needs to the communities, both in towns and peri-urban areas. It also gives the background on how services should be rendered in communities, using the Integrated Development Plan as a guiding thread to both the service providers as well as the beneficiaries.

Chapter Five: The chapter presents the theoretical framework (human rights-based development theory) as well as the conceptual framework (other developmental theories). These framework theories (human right- based development) are discussed and indicate how they fit or applicable in this study; and how other theories relate to development.

Chapter Six: This chapter discusses area of research, the design, methodology, data collection tool, as well as the instrument used in the interpretation of the data. The latter was carried out with the special attention given to ethical issues which safe guard both the researcher as well as the respondents.

Chapter Seven: The chapter presents, discusses finding and interprets data collected. The data collected were analysed using the SPSS (scientific) programme which is mostly used in social sciences research projects.

Chapter Eight: This chapter concludes by providing a summary of the study, contribution to the body of knowledge and the recommendations for further research.

1.11 Summary

This chapter presented the background of the study, the statement of the problem, the motivation of the study, the literature and how data will be collected as well as the anticipated value of the study. According to Heymans and Totëmeyer (1988), nearly three decades ago, the then government of the Nationalist Party introduced.

The chapter also highlighted that nearly three decades ago, the Nationalist Party government introduced the Regional Services Councils (RSCs), which were an attempt to give Black people a share of regional power in the running of their affairs. The RSCs were specifically designed to address Black communities' needs and infrastructure development. More importantly, the RSCs had to be assessed in the light of community development. The chapter presented how the major Black political organisations and civil organisations and civil society at large, including UDF, National Forum, Congress of South African Trade Union and Inkatha, reacted to the RSCs during those years (Heymans and Totëmeyer, 1988:192). The next chapter will explore the literature that will paint a picture of how the White Regime ruled South Africa and how resources (basic infrastructure) were delivered to the Blacks and whites as well as the entire well-being of the South Africans prior 1994.

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

This chapter discusses the literature relevant to water and sanitation while evaluating the status of the provision of water and sanitation to the previously disadvantaged rural communities. Safe drinking-water and safe sanitation are basic needs to the health of every person on the planet; however, studies have shown that many people throughout the world still do not have access to these crucial social needs. To say that “water is life” and “sanitation is dignity” suggests the importance of these services to human kind. According to Nagpal and Radin (2014), clean fresh drinking water is essential to human and animal life, necessary for all kinds of agriculture and equally important to the world of economy and it also functions as an important universal solvent. The study on the access to clean drinking water and improved sanitation reveals the intricate link that these services have, and it is therefore very important for all government service providers to understand their magnitude, that is, how many people on this planet who still lack access to drinking-water and proper sanitation (WHO, 2008). According to Meissner (2016), water is essential for development and for the eradication of poverty and inequality in communities. Water needs to be conserved by all as it is important to everyone and it is for job creation. Water has to be protected, developed, used, conserved, controlled and managed in an equitable and sustainable manner

The main objective of the study is to evaluate the status of the provision of water and sanitation in rural communities residing in King Cetshwayo District Municipality. For the South African perspective, water and sanitation is like a glove in the hand. There is no doubt that human health is strongly affected by the environment in which they live, that is, the air they breathe, the water they drink, and the type of food and nutrients they get. Therefore, proper community water systems and water safety plans are important ways to guarantee the health status of communities at large. Municipalities should therefore not lack the capacity to effectively adapt their current systems for water, sanitation, and hygiene to the community's changing needs (WHO, 2008).

The year 2005 marked the beginning of the "International Decade for Action: Water for Life" and renewed effort to achieve the Millennium Development Goals (MDGS) which suggest that all countries should reduce by half the proportion of the world's population

without sustainable access to safe drinking water and proper sanitation by 2015. All countries of the world committed themselves to meet the Millennium Development Goals (Moe and Rheingans, 2006). To the researcher, this could only be achieved by local municipalities/governments who serve as the operational wing for the national and provincial governments and serving as the closest structure of government to the people. Furthermore, according to World Health Organisation, each household is supposed to access 20 litres of water per day (SAHRC, 2014). And each household should have a quantity of 6000 litres of clean drinking water per month, and it should not be very far from his or her dwelling place (DWAF, 2002). According to the World Bank Report, (2014) as cited by Walker (2016), access to safe water and safe sanitation boosts economic growth, and also contributes immensely to poverty reduction and relevant to achieving all of the Sustainable Development Goals (SDGs), from health and education to food security as well as environmental sustainability (Walker, 2016)

Transition from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs)

A meeting for the review of the MDGs brought together UN and World Bank Group staff were able to identify the countries' situation, the bottlenecks to MDG attainment, and potential answers to be implemented. MDGs have been absorbed into the Sustainable Development Goals (SDGs), many of the observations and solutions provided proved to be useful to the implementation of the SDGs. Sixteen countries from across the world and the sub-region of the Pacific Island countries took part in the CEB reviews, addressing several different MDGs. Three main conclusions led to the transition from the MDGs to the 2030 Agenda:

- Support cross-institutional collaboration between the UN system and the World Bank;
- Advance better understanding of cross-sectorial work, and the interrelatedness of goals and targets; and
- Promote global and high-level advocacy.

SDG6: To Ensure Access to Water and Sanitation for all

Industry accounts for over 19% of global water withdrawal, and agricultural supply chains for 70% more. What gets measure gets managed, and at community development participation (CDP), there has been an increasing number of companies

tracking, managing and implementing water solutions. It is clear that SDG 6 cannot be achieved without corporate action, but significant progress will rely on robust data on the current landscape and what needs to change to ensure environmental sustainability on water. With the largest corporate water dataset in the world, CDP can offer insights to measure and track progress and accelerate action towards meeting Sustainable Development Goal

After a number of cases where communities complained about poor services, the South African Human Rights Commission was quick to launch a project labelled as: 'Water and Sanitation, Life and Dignity Accountability to People who are Poor'. But, in view of what is happening in many parts of the world, where access to clean water is still a Utopia, this raises a concern. What happened to a learner in South Africa (Limpopo Province) is a living testimony, where a 6-year-old Michael Komape from Chebeng Village, fell into a pit toilet at his school and died tragically in February 2014. The six-year-old learner was at the local Mohlodumela Primary School and he was doing Grade R class. It is said that after the death of that school child, the commission met with the school staff, the community and the education officials to deliberate on the issue. The government education officials were asked to install decent and dignified toilets linked to proper infrastructure.

The Commission also arranged a meeting with community representatives-tribal councillors as well as tribal-heads/ indunas which was followed by a meeting with local government representatives, that is, municipal manager and political councillors, requesting them to provide residents with clean drinking water and dignified toilets linked to sustainable long term solutions. It is said that the then National Water Affairs Minister, Ronnie Kasrils secured army trucks to ensure access to clean drinking water. The Premier of that province also redirected a water tanker truck that was going to a nearby mine to deliver the water to the affected community.

Meanwhile, the Limpopo Education Department had admitted that some schools in the province had no proper sanitation facilities. The government spokesperson, Phuti Seloba indicated that a sanitation programme had been launched in that province, however, funds were not enough to address all the sanitation problems at the same time, but he was optimistic and adamant that all sanitation challenges would be addressed by the year 2016 (SABC News, Tuesday 21 January 2014).

2.2. The Significance of Water and Sanitation

The amount of water that is on the surface of the earth is 70%, but of this, approximately 97% is salt water. Only the remaining 3% is regarded as fresh water and it is believed that of this 3%, less than 1% is available for life on earth. The rest of it is in the form of ice at the poles (Water Wise-Rand Water, 2019). According to HRC (2014), the delivery of water and sanitation is the mandate and the responsibility of both the local as well as the district municipality. Ultimately, a local or district municipality should develop and adopt an indigent policy so as to ensure that communities which are in dire need of these services are indeed able to access them. Each municipality is responsible to all residents or potential consumers falling in its jurisdiction. Again, the Water Service Act 108 of 1997 serves as the primary legal instrument relating to the accessibility and provision of water services. These include drinking water and sanitation services, to households and other municipal water users by local government (HRC, 2014).

The Water Services Act defines water service authority (WSA) as “any municipality, including a district or rural council as defined in the Local Government Transition Act, 1993 (Act No. 209 of 1993) responsible for ensuring access to water services.” Each provincial government has the responsibility to support municipalities (all three levels) in fulfilling their mandate or functions. Section 139 of the Constitution of the Republic of South Africa confers on them (Provincial governments) the responsibility to intervene where possible to municipalities which fail to deliver services, as mandated by their Constitutional and Legal obligations. In particular, the South African Government White Paper on Basic Household Water and Sanitation (2001: 24) states that the Provinces have an important role to play in supporting municipalities in achieving their objectives and in ensuring that local municipalities perform effectively through “finance, human resources and technical support”. South Africa is regarded as one of the most progressive legislative and policy framework for basic services in the world, which also includes a constitutional right of access to sufficient clean drinking water, a right to basic sanitation, and a Free Basic Water (FBW) policy and Free Basic Sanitation (FBS) policy at the national level. The Free Basic Services (FBS) policy suggests that there should be,

- Free services to indigent households, providing a minimum of 6 kilolitres of water per household, 22 per month within a 200 metre radius of the household; at least a ventilated improved pit (VIP) sanitation facility; and
- Solid waste management- (Couzens, E., Maduramuthu, D., & Bellengère, A. 2017).

According to the South African Human Rights Commission 2014, " Water is life and sanitation is dignity", but the commission concluded that many citizens of the country, (South Africans), that has been not a reality. To them, the state of access to water and sanitation in South Africa, particularly for the poorest people in rural areas, needed to improve. After the assessment by the South African Human Rights Commission in rural communities in all nine provinces, where the infrastructure was bad and little or no access to water and sanitation", such report was made known to all (Jadoo, 2014).

According to Ashton and Haasbroek, (2002) water is a critical issue for almost all developing countries where shortages of water, food, and energy are regarded as the source of poverty and other social ills. Water, as a natural capital, is becoming the contributory limiting factor most to a number of development projects as Scholes (2001) as cited by Ashton and Haasbroek 2002 states that:

The availability of water of high quality is predicted to be the single most urgent development constraint engulfing many countries of the world, including South Africa. Apparently, the surface waters have been already committed for use, and groundwater resources are limited. Above all, sustaining and maintaining the quality and the use of such water is a key issue, especially in rural areas. As suggested earlier, climate change in Southern Africa could threaten the livelihoods of communities. The inappropriate response and adaptation options to risks, including climate stress, could further undermine development efforts by local and district government in the southern region. What is actual water scarcity? When an individual does not have access to safe and affordable water to satisfy her or his needs for drinking, washing or their livelihoods we call that person water insecure. When a large number of people in an area are water insecure for a significant period of time, then we are tempted to call that area water scarce. It is important to note, however, that there is no commonly accepted definition of water scarcity. Whether an area qualifies as "water scarce" depends on, for instance:

- (a) How people's needs are defined,

(b) What fraction of the resource is made available?

It is true that water is scarce in the physical sense at a global scale and it should be used sparingly. Water is definitely physically scarce in densely populated arid areas, - third world countries, mostly found in Northern Africa. This scarcity relates to water; drinking water, for food production and sewer systems, and other domestic use. As indicated earlier, due to the weather condition-global warming, the department of water and sanitation has cautioned and continued to urge members of communities to use water sparingly and that water levels in most dams in South Africa were at an alarming rates. Most dams were sitting on an average of 71.9%. The department said that there was a falloff in an average dam levels in all provinces (Madisha, 2017)

Accounting for water for the environmental requirements shows that abstraction of water for domestic, food and industrial uses already have a major impact on ecosystems in many parts of the world. Water will be a major constraint for agriculture in the coming decades and particularly in Asia and Africa this will require major institutional adjustments. Therefore, water is a very complex resource (Ashton and Haasbroek, 2002). Sullivan et al. 2003 developed a "Water Poverty Index" that attempts to reflect both the physical availability of water, the degree to which humans are served by that water and the maintenance of ecological integrity. The index clusters components in five dimensions: access to water; water quantity, quality and variability; water use for domestic, food and productive purposes; capacity for water management; and environmental aspects. It has been applied at the community level for pilot sites in Sri Lanka, Tanzania and South Africa and its developers see great potential in its use (Seckler et al., 1998). Water is regarded as a critical issue for developing countries where shortages of water, food, and energy are closely linked with poverty and other social disorders in society (Ashton and Haasbroek, 2002). Water, as natural capital, is increasingly becoming the limiting factor to development as Scholes (2001) once said: "The availability of water and acceptable quality is predicted to be the single greatest and most urgent development constraint facing South Africa. The surface waters are already committed for use, and in most cases water is imported from neighbouring countries. Groundwater resources are quite limited; maintaining their quality and using them sustainably is a key issue"

In rural areas for instance, poor communities face a number of stressors that curtail livelihood options and reduce human dignity and quality of life. Climate stress in Southern Africa threatens the livelihoods of many rural communities. Inappropriate response and adaptation options to risks, including climate stress, might further undermine or development efforts made in most parts of the sub-Saharan region. It is very difficult to determine whether water is truly scarce in the physical sense at a global scale or whether it is available but should be used sparingly (Ashton and Haasbroek, 2002).

It is likely that, in most parts of the world, especially in rural areas, the availability or sources of clean drinking water are still a challenge. The water scarcity indicators and global assessments are based on these indicators. The most popular and widely used indicator is the Falkenmark indicator, it is easy to apply and understand, but, it does not help to explain the true nature of water scarcity. Water is definitely physically scarce in densely populated arid areas like Central and West Asia, and North Africa and South Africa, with projected availabilities of less than 1000m³/capita/year. The scarcity relates to water for food production, however, and not to water for domestic purposes that are minute at this scale. In most of the rest of the world, water scarcity at a national scale has as much to do with the development of the demand as the availability of the supply. Accounting for water for environmental requirements, shows that abstraction of water for domestic, food and industrial uses already have a major impact on ecosystems in many parts of the world, even those in those countries where it is not considered as “water scarce”. It is also envisaged that water will be a major constraint for communities and agriculture in the coming decades and particularly in Asia and Africa. Such predictions have become a reality as all countries complain about the lack of water resources. This is a clear indication that water will require major institutional adjustments as well as conservation methods, to address water scarcity, and also focusing on increasing overall water harvesting productivity.

Water is a very complex resource. Contrary to a static resource such as land, water occurs in a very dynamic cycle of rain, runoff and evaporation or run down to rivers or oceans, of course with enormous temporal and spatial variations as well as variations in quality that completely govern its value to people as well as ecosystems. Therefore, from the simple Falkenmark index to the all-inclusive, holistic Water Poverty Index,

where the latter addresses, all drawbacks of the former. This author finds it unlikely that the use of the Falkenmark indicator will be replaced by the indicator such as the Falkenmark indicator. It can only be replaced by a complex dimensionless index. The overall conclusion of all global water scarcity analyses is that a large share of the world population up to two-thirds – will be affected by water scarcity over the next several decades (Shiklomanov, 1991; Raskin et al., 1997).

South Africa: Water Management

As water is shared by everyone, there have to be some rules to govern the way it is used. But it's a difficult resource and when things go wrong, the temptation is to blame the unpredictable water – or the rules. In fact, the problem is usually neither the water nor the rules, but the people concerned (SAST, 2018). When politicians in trouble say that the rules need to be changed, be wary. Experience around the world is that, more often than not, water laws aren't the problem. They're simply not implemented. So proposals from South Africa's minister of Water Affairs Nomvula Mokonyane to revise the two laws that underpin South Africa's water security are worrying. South Africans need to ask whether the problems are with the laws or with her department's administration of them.

The two laws are the 1998 National Water Act and the 1997 Water Services Act. The Water Act sets out how South Africa should cope with the vagaries of the country's climate and the demands of a growing population. It stipulates what different tiers of government and water users should do and what procedures should be used to address particular problems. The Water Services act regulates municipal water supply and sanitation services.

2.3. The Status of Water in Some of Previously Disadvantaged Rural Communities in South Africa

2.3.1. Western Cape Province

A resident in the Western Cape (South Africa) stated that departments at different levels and spheres of government are not talking to each other to solve problems of basic services. According to this resident the government was also not talking to communities to solve such problems. The idea was that the government had a responsibility of

interrogating meaningfully with communities falling in their areas of residence about innovative ways of conserving water. Another Western Cape (SA) resident explained, that the “participation was not just a dissemination of information, but it should also be an engagement in the whole process. The language for water management must be made accessible and participation must be more meaningful”. A number of residents had expressed their disappointment at the lack of training on the use and handling of water and sanitation facilities, particularly previously disadvantaged rural communities (Lehohla, 2017).

2.3.2. North West Province

It is said that a resident in the North West (SA) stated that they did not have tissue paper to use in the toilets, but instead, they were using a newspaper. Some people who had Ventilated Improved Pit toilets (VIPs), but they had not been educated on how to use them and were still using newspapers instead of proper toilet paper rolls. Another resident of the same province also highlighted a similar problem, stating that, squatter camps did not have toilets and ladies had to go to the fields and they were being raped. The problem in the shanties was that, the community needed toilets at every household because some of the elderly people, especially women were vulnerable and could be raped by hooligans at night (Lehohla, 2017).

The general perception out there was that the rural district municipalities, which are in greater need of the support from National Treasury were not benefitting from its expertise. Additionally, given the sustained challenges faced by local government in this regard, Provincial Treasury, which has been responsible for monitoring and providing assistance to local municipalities for an extended period, was clearly not able to adequately monitor the use of funds and provide sufficient assistance to local municipalities when they face challenges. One of the five committee members raised the importance of ring-fencing funds designated specifically for water and sanitation, so that communities would eventually realise the much spoken about democracy and its impact in their life time. Another challenge was based on the Minister of Human Settlements’ response, that some “municipalities do not sufficiently prioritise sanitation delivery from grant funding such as the Municipal Infrastructure Grant (MIG) and form their own resource”. In addition, a lack of capacity and adequate guidance in spending public funds serves as a further challenge to the delivery of basic services. Other

challenges could be of allegations of corruption and maladministration by municipalities when it comes to the spending of MIG funds. The inability of most municipalities to maintain infrastructure further exacerbates these challenges. For the government to address these challenges, monitoring, at project level and in the use of public funds, become crucial.

2.3.3 KwaZulu-Natal Province

2.3.3.1 The status of toilets in Previously Disadvantaged Rural Communities in South Africa

Aside from the general perception that most communities do not have access to proper sanitation, but in South African schools the situation was especially dire. According to Mvlisi, (2013) the status of 17 schools' toilets that fell within quintile four of the National Health Insurance (NHI) pilot Programme -South African Government Improved Health System piloted in districts were in appalling condition. That is, according to an informal survey conducted by e-News Service Health. In almost all the schools, there were some form of sanitation infrastructure; but many of them were blocked, broken and filthy. The study showed that a large number of learners would prefer to go to bushes than to go to those uncondusive structures. Where these facilities were much better, they could not service or accommodate the number of learners needing to use them during school recess time. There were no toilet paper and hand-washing basins for learners to clean their hands after using these toilets Mvlisi (2013). According to SAHRC (2014), 'The Right to Education Organisation' released a report in 2004 which revealed that the Eastern Cape, Limpopo and KwaZulu-Natal Provinces were the most affected provinces by backlogs in toilet infrastructure.

According to Hoadley as cited by Mvlisi, (2013), the level of infrastructure provided in most public schools in South Africa were really embarrassing and did not meet the requirements of an environment conducive for learning and it also deprived a learner the right to formal basic education. The South African Human Rights Commission (SAHRC) and many other health institutions confirmed in a number of reports and research studies that the lack of decent infrastructure in most government schools infringes on a child's right to education. Such structures also deprived a learner rights to equality and human dignity in the Bill of Rights (The Bill of Rights 29(2), Act 108 of 1996). Archbishop Thabo Makgoba led a group of nine members to visit the Eastern

Cape schools and it is said that on arrival, they were shown schools in dire conditions, schools that were without toilets, classrooms, security or water. To the team, such a tour raised awareness about the school infrastructure crisis in the country, South Africa, and the need for quality Minimum Norms and Standards for School Infrastructure (Mvlisi, 2013). A principal's gathering in Ulundi, North of KwaZulu-Natal Province echoed a similar concern about the poor state of many schools in the Province-KZN (SABC NEWS, Tuesday 22, 2017).

The international researchers noted with a concern, monthly absenteeism by school going girls during their menstruation because of a lack of proper sanitation facilities in schools. In Malawi for instance, a study revealed that a third of the 104 girls interviewed said that they never used the school toilets while menstruating, because of poor their conditions, but instead, they would rather either wait until they went back home, used the bushes or simply not went to school until the menstruation period was over. A report released by the Department of Basic Education and the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) in January 2014 had discovered that there were too many schools where the ratio of learners to the number of toilets provided was too high, particularly for girls. The World Health Organisation had recommended a ratio of 1 toilet to 30 learners (Mvlisi, 2013). According to Mvlisi (2013), in another study in Nepal, about 53% of the respondents (school children) said that they absented themselves from school during menstruation because of a lack of cleaning material or washing facilities, and unavailability of a disposal system for sanitary pads and a lack of water supply. A number of girls at school, if they were on their period would rather ask to go home and miss the rest of the school day than use the school's bathroom to change (Mvlisi, 2013).

A young school girl in Khayelitsha reported that the bathrooms at school were stinky and infested with flies and that one could only use the bathroom when you were completely desperate. She further said that at times even if one could go to these bathrooms, they were so dirty that you do not sit on the toilet seat and one could use a foot to flush the toilet because it was not easy to touch the cistern handle. Such a description or picture fits that of the many rural school toilets in South Africa, especially in previously disadvantaged black communities. Further to that, this confirms the

researcher's conviction that schools in South Africa are in dire need of toilet infrastructure.

Recommendation for the Provision of Water and Sanitation in Schools

According to the report compiled by Mvlisi (2013), schools had to install one water supply terminal for 130 persons within 200m of the main building. On the other hand, DWAF recommended that Toilet Planning should be for one toilet seat per 25 girl learners and one toilet seat per 40 boys plus 1 Urinal per 40 boys and that schools hand washing facilities had to be accessible with one facility per four seats or four urinals in all schools. According to Olivier, (2017) a consultancy for JG Afrika geohydrologist groundwater remains an unnoticed resource that normally does not get implemented according to guidelines and legislated criteria. Groundwater in that state could be described as very much in 'no-man's land. The KwaZulu-Natal government appointed JG Afrika to deal with 'Bringing water and sanitation to schools in KZN', a project driven by KwaZulu-Natal Department of Public Works on behalf of the KwaZulu-Natal Province Department of Education, right from the outset, was to make sure that members of the surrounding community buy-in project. Therefore, the team had to consult relevant councillors, iNdunas and school headmasters. These stakeholders had to be kept posted for both during and after the project's full implementation. That company was appointed as the professional geohydrologist for a large water and sanitation project for schools in rural areas of KwaZulu-Natal.

That project would soon be followed by a number of interventions with an aim of improving water and sanitation woes for learners in remote areas of KwaZulu-Natal. The Company appointed Ramgoolam as the professional geohydrologist for a large water and sanitation project for schools in rural areas of KwaZulu-Natal. Therefore, the public participation in this regard is important and the community leaders to be kept informed throughout the process (Olivier, 2017).

2.5. International Target-based in Development Cooperation for Water and Sanitation

According to Brundtland (2000), from outer space, the earth looked like a "blue" planet because its surface was covered by water. He further says that only 2.5% of that water is fresh, and that most of its form lies frozen and inaccessible in the icecaps and

Greenland, thus leaving less than 1% fresh and accessible in lakes, river channels and underground. Accessing these other forms of water for public consumption has been always a challenge. The provision of water and sanitation by countries has been always on top of the agenda for many decades, but still, communities do not have sufficient clean water. According to the report of the International Target-Based in Development Cooperation for Water and Sanitation Supply, water and sanitation issue has always been on top of the agenda of quantitative target setting since 1970s. But still, indications are that very little has been achieved in accelerating progress towards access to basic water and sanitation in most parts of the world. Again, even those targets that were set in the early 1990s were more of a “paper variety” so to say because they could not be achieved. According to Diamant (1992) as cited by Easterly, (2009), it is said that at the 1990 Global Consultation on Safe Water and Sanitation in New Delhi, the assessment results revealed that very little had been achieved due to expensive technologies. It was noted that the whole process was jeopardised by a shift to privatisation of water. Nonetheless, the sanguinity over the effectiveness of target setting continued in the water and sanitation sector, with international officials. The heads of states were still committed in fulfilling their obligation post-2015 framework (WHO and UNICEF 2013b). The 1970s and 1990s targets were later followed by the popular Millennium Development Goals (MDGs) towards the issue of providing water and sanitation in different states (Easterly, 2009).

2.6. Millennium Development Goals on Water and Sanitation Provisioning

As mentioned earlier that the year 2005 marked the beginning of the "International Decade for Action: Water for Life" and renewed effort to achieve the Millennium Development Goals (MDGs) which suggested that all nations should reduce by half the proportion of the world's population without sustainable access to safe drinking water and proper sanitation by 2015. The impacts of the MDGs in the water and sanitation sector seemed to be a very difficult exercise due to the methodological and technical challenges and the fact that the period for their achievement was to close. Some of these goals look positive, whilst others are negative or non-existent.

It is reported that in March 2012, the then UN Secretary-General Ban Ki-moon announced that the MDG 6, water target were met globally in 2010. He reported that about 89% of the world's population had improved drinking water sources. That

appeared to be a very significant result. But he (Ban Ki-moon) further reported that, the sanitation target had not yet been achieved and complained that it was off-track. The perception was that by 2015 global access to sanitation was projected to rise slightly to 67%, obviously below the 75% required to meet the set target. Whether the success water target can be attributed to the MDGs, or not, that was not easy to tell (WHO and UNICEF 2012).

According to the report by WHO and UN-Water (2010, 31) only a few donors targeted a portion of funding towards basic water and sanitation systems, which would have been most likely to contribute to the achievement of the MDGs. In some quarters of the world, countries were not happy that the simplistic translation of a single global target into one-size fits-all nations. Those countries were of the view that such a linear refraction penalized poor countries and favoured wealthier countries and could not cohere with resource based on human rights obligations (Easterly 2009; Langford 2010; Vandemoortele 2011). If better-resourced countries could easily meet the targets, then the MDG framework could not provide any extra leverage. In South Africa, for example, a target of universal access to water had already been set by 2008 and the sanitation for 2010. The MDGs permitted the South African government to regularly announce that it had met those international commitments and refuted the criticism that it was failing to meet its national targets, particularly on sanitation (Dugard & Langford, 2014).

On the other hand, the MDG framework could not appreciate efforts that had been undertaken by many low income countries, mostly found in Africa and in Asia. Instead, they were labelled as “off-track” since the MDG metric did not reward progress made on water and sanitation for states from a very low baseline. Anderson and Langford (2013) presented a positive picture on achievements made on a range of resources relevant to the provision of water and sanitation. They found that many low-income countries had made a good progress in the provision of water and sanitation. One good example of such a country climbing the rank was the Ethiopia, which had increased access to sanitation from 3% in 1990 to 21% in 2010. According to O'Reilly (2010) water and sanitation provision are regarded as key elements in progress towards the Millennium Development Goals (MDGs). Women's participation should be considered as an integral to the sustainability of the projects created to meet these two MDGs (O'Reilly, 2010).

2.7. A commitment by Nations of the World on Access to Water and Sanitation

According to Moe and Rheingans (2006), the year 2005 marked the beginning of the "International Decade for Action: Water for Life" which marked the renewed effort to achieve the Millennium Development Goals (MDGS) which suggest that all countries should reduce by half the proportion of the world's population without sustainable access to safe drinking water and sanitation by 2015. According to the statistics provided at that time by UNICEF and WHO, it was estimated that 1.1 billion people lacked access to improved water supplies and 2.6 billion people lacked adequate sanitation (Moe and Rheingans, 2006).

The World Outcome and Millennium Summits

The World Outcome Summit in 2005 and Millennium Summit in 2010 both served as opportunities for comprehensive review of the progress of the MDGs. Lack of consistency among states on not having incorporated human rights principles into their development policies was identified as a key area. During the World Summit 2005, the significance of MDGs in national development policies and strategies was highlighted. Some results were encouraging. For instance, states that incorporated human rights into their national policies, they were more likely to achieve the MDGs by the 2015 deadline.

The improvement in the provision of water and sanitation can significantly reduce disease burden in disadvantaged rural communities. Furthermore, safe clean drinking water and proper sanitation services should reach those who are vulnerable or at risk, i.e., rural communities. It is therefore important to ensure that universal access to safe drinking water and proper sanitation become central to achieving that goal. However, such a long-term goal requires an enormous investment in infrastructure and services that would exceed resource that were available in the past. For now, access to hygiene education, that is, information about sanitation alternatives, and access to household water treatment would provide a relief of some kind in protection and to benefit those countries and individuals who would otherwise had not managed to reach the MDG targets. For safe water and proper sanitation provision, several simple and low-cost approaches should be made available, including POU water treatment technologies and safe storage. Certain types of technologies, chlorination, coagulation with chlorination,

and solar disinfection, have shown significant reductions in diarrhoea prevalence in clinical field trials in most underdeveloped and developing countries (Clasen et al., 2004).

According to Clasen et al. (2004), filters have indicated to be effective, of course with appropriate maintenance. Hutton, G., Haller, L., Water, S., & World Health Organisation (2004), further suggested that those technologies could greatly improve drinking water quality, and also prevent record of contamination, and were much less expensive than large-scale infrastructure improvements that may require billions of dollars (Hutton, G., Haller, L., Water, S., & World Health Organisation 2004).

According to Rheingans (2006), the year 2005 marked the beginning of the "International Decade for Action: Water for Life" and renewed effort to achieve the Millennium Development Goals (MDGs) which suggest that all nations should reduce by half the proportion of the world's population without sustainable access to safe drinking water and proper sanitation by 2015. At that time, the UNICEF as well as the WHO had estimated that about 1.1 billion people lacked access to improved water supplies and nearly 2.6 billion people lacked adequate proper sanitation. Providing safe water and basic sanitation to meet the MDGs would require substantial economic resources and sustainable technological solutions. There were five recorded major challenges to the provision of safe water and sanitation on a national basis:

- (1) Contamination of water in distribution systems,
- (2) Growing water scarcity,
- (3) Implementing innovative low-cost sanitation systems,
- (4) Providing sustainable water supplies and sanitation for megacities, and
- (5) Reducing global and regional disparities in access to water and sanitation and also developing financially sustainable water and sanitation services. (Moe & Rheingans, 2006)

2.8. World-Waterday Summit: KZN Province- South Africa (2017)

On the 22 March 2017 the President of South Africa Jacob Zuma opened the United Nations (UN) World Water Day Summit. In his opening remarks he made it clear that world leaders had to prioritise the improvement of access to water and sanitation service, and to accelerate the implementation of the United Nations Sustainable Development goals (SDGs), especially SDG 6 on water and sanitation The President in

his address revealed that there were only 147 countries that had managed to provide safe drinking water and only 95 countries had met sanitation target and that there were only 77 countries that had met both (ANA Reporter,2017).

According to the President of the Republic of South Africa Jacob Zuma, by the year 2050, the United Nations Commission on Population and Development had already indicated that the population shall have grown to 9, 7 billion and the largest increase will be in Africa followed by Asia. He emphasized that some of the regions were already affected by water and sanitation problems. President Zuma gave hope to the delegates that South Africa was well ahead in contextualizing access to water and sanitation as a basic development right. The President of the country, South Africa was quoted as talking about an initiative to be launched by a Panel on a Wednesday “Access to Water and Sanitation Services for 10 Billion People Initiative” He further stressed that all countries had to commit to achieving a pledge of “Leaving No One Behind” in support of achieving of SDG 6 on Water and Sanitation (ANA, 2017). In the recent past, the South African government through the Department of Water and Sanitation was up and down raising awareness of water also verifying users to ensure that available water was accounted for (Manoko 2017). According to Manoko (2017), this was done so that all relevant stakeholders should understand the entire water serving process and the country’s water management strategies (Manoko 2017).

2.9. Water Harvesting Methods

2.9.1. Waste Water Processing-Mpumalanga Province: SA.

A number of researches on water projects conducted have revealed that by 2025 there will be a worldwide shortage of water (Rijsberman, 2006). It is clear that a collaborative effort of all stakeholders was necessary to put their heads together to address looming water crisis, globally. According to da Silva et al. (2012), a team of stakeholders that addressed water crisis in Brazil included engineers, sociologists; policy scholars as well as researchers, to identify and test a rural water supply planning approach that would meet sustainability criteria and that could be applied across multiple communities in the rural areas. A research project on waste water pioneered by a researcher Alison Lewis nearly ten years ago should be regarded a living testimony in so far as addressing South Africa’s water crisis. The project is all about the hi-tech system that uses a specialised freezing process to extract clean water from the brine by-product of desalinated mining

water. The project was tested in Glencore's Tweefontein Coal Mine in eMalahleni in Mpumalanga Province, South Africa. According to the project leader, Professor Lewis (researcher) and the dean of engineering at the University of Cape Town, when the project becomes fully operational, it will produce 500000 litres of potable water a day which could be sold to the municipality. Such a move, according to her, would bail-out the local municipality which was desperately in need of water for its citizens. Furthermore, it said that a project of this magnitude would be the first of its kind in the world. This type of technology would be regarded as a breakthrough to the use of the unusable water that had to be previously disposed of in large and expensive ponds which could now be recovered. To Lewis, if a plant would be well managed about 95% of polluted coal mining water could be converted to potable water through desalination (Steenkamp, 2017).

As mentioned earlier on, no single effort or individual can succeed in pursuing a project of this magnitude all by itself or himself. The afore-said project was a joint venture as it was funded by Water Research Commission and Coal-tech Research Association, also a collaborative effort between the Chamber of Mines, several mining companies and the University of the Witwatersrand, Johannesburg and Pretoria. Already, it is reported that the National Department of Human Settlement is in the process of assisting in funding the construction of a pipeline that would transport water for communities living in Pola, Ogies and Wilge which fall under eMalahleni Local Municipality. The Department of Water and Sanitation was reportedly to have had a number of visits to the plant in Mpumalanga Province (Steenkamp, 2017). An interest shown by Water and Sanitation Department was a clear indication that it could also be a partner in the project for future sanitation infrastructure development purposes.

Finally, the pioneers of the project have also discovered that the eutectic freeze crystallisation process can also be used in industries such as textiles, fertilizers, gold and copper mining and fracking. The following type of salts are produced in the process:

- 1.3°C: Glauber' salt used in washing powders and detergents
- 2.0°C: gypsum, used for buildings, wall, plaster of pairs
- 3.9°C: Epsom salt
- 21.12°C: table salt

2.9.2 Status of Water in KwaZulu-Natal

(i) Desalination Water Harvesting–uThungulu/King Cetshwayo District

In Richards Bay, North of KwaZulu-Natal Province, companies like South32 Hillside Aluminium, South Africa Red Cross and City of uMhlathuze have partnered for the water project in a bid to address the water shortage in KZN Province and also to support water provision services for education in uMhlathuze local municipality. The project will also be involved in educating the community on water conservation, water treatment, water quality, healthcare as well as hygiene and sanitation processes.

South32 Hillside Aluminium Company funded the project with the sum of R1-million for the provision of and installation of 135 water tanks to improve the access for local communities in uMhlathuze area which is in uThungulu/King Cetshwayo District Municipality. Funds were also earmarked for further enhancement of South32's desalination plant which was launched in 2016 by Hillside Aluminium Smelter project to supply water to the plant in times of critical shortage (Jolly, 2017).

During a launch of the mobile sea water purification plant, the Minister of Water and Sanitation in South Africa, Ms Nomvula Monkonyane, said that the plant was located in an area that was highly affected by drought and it was not going to help the private sector only, but the local citizens as well. These would include areas like Meerensee, Mandlazini, Brackenham eNseleni, kwaKhoza, Mapolwane and the surrounding industries (UMhlathuze Newsletter/www.uMhlathuze.gov.za). A Mandlazini village citizen in attendance was heard as saying that they had been drinking water with animals for year and that such a practice caused many people to get sick (www.uMhlathuze.gov.za).

(ii) Jozini (KZN) Water Treatment Plant Launch

The mushrooming of water projects in KwaZulu-Natal Province in the recent past was a clear sign that the province was lagging behind in water delivery services. The Minister for Water and Sanitation, Ms. Nomvula Monkonyane in her opening remarks made it clear to the masses of people who attended the ceremony that, “one could live without electricity but not without water”. She further explained that a total amount of R1.075 million rand had been expended towards the building of the bulk water infrastructure, and that since the establishment of Jozini Dam in 1955, that was the massive project

ever brought to uMkhanyakude District Municipality. Furthermore, 15 storage water reservoirs were to be built in the entire district (Ndlovu, 2017). The project had created 920 new jobs for the local community. The minister reported that the plant would provide about 16200 households with sustainable portable water. All five local municipalities under the jurisdiction of uMkhanyakude District were going to benefit from the scheme (Ndlovu, 2017).

2.10. Traditional Methods of Water Harvesting

This section discusses various methods of water harvesting.

2.10.1. General Rainwater Harvesting Methods

Rainwater harvesting refers to the method whereby rainwater is accumulated and deposited for reuse on-site, rather than to allow it to run off to the rivers or oceans and seas of the world. Furthermore, rainwater can also be collected from rivers or house roofs, and in many places the water collected in this way was redirected to a deep well. It could also be a reservoir with percolation, jojo tank or other tools. Water collected in this way can be used to water vegetable or flower gardens, livestock, even for the large scale irrigation. If it had to be used for domestic purposes domestic, it would require proper treatment, and indoor heating, and so on.

Such a practice, (rainwater harvesting) would provide citizens with an independent water supply during regional water restrictions and in developed countries it was often used to supplement the main supply. This method could provide water in times of drought. It could also help in the availability of potable water because rainwater is substantially free of salts. The use of rainwater harvesting in urban water system provide a substantial benefit for both water supply and wastewater subsystems by reducing the need for clean water in distribution systems, as well as a reduction in storm water runoffs thus polluting freshwater sources (Tender Reference no- ZNB3693/17A, 2017).

2.10.2. Ground Water Collection in Egypt (Africa)

According to Yannopoulos et al. (2015), 'Water is an absolutely necessary element for life', they emphasized that the availability of water in any community has always played a key role in the development of all civilizations, and even in the ancient times, water scarcity jeopardized the development of settlements. The securing of water availability

in other regions necessitated the use of high volumes of energy. At that time, electrical energy and energy from fossil fuels were not known, therefore people had the manually operated devices, or devices propelled by natural forces, such as wind, were invented for water lifting. Other water lifting devices, such as water wheels and chutes were developed and they required the use of animal muscle to provide the energy needed to move the wheels. As the time progressed, pumps, such as helicoid pumps, also known as “Archimedean” were invented. Other types of water lifting devices like “tympana” (drums) were used for irrigation and mining, up until the recent past century. The invention of these various systems water lifting devices enabled the development of many settlements with low water availability and not only the survival of the ancient Hellenes, but it also improved the quality of these people. In other words, water lifting devices have been in existence way back from ca. 3000 BC in various parts of the globe. According to Eubanks as cited by Yannopoulos et al. (2015), Danus of Alexandria in 1485 BC dug wells of Argus on the coast of Peloponessus and he installed the Egyptian chain-o-pots as means of pumps, in place of the “atmospheric” pump. The other nations that developed similar water lifting devices were Chinese, Indians, and Persians (Yannopoulos et al. 2015).

2.10.3. Water Harvesting in USA

According to Grossman, (2004) water harvesting is defined as the redirecting and productive use of rainfall. He says that redirecting of water is like an old or primitive type of irrigation. Traditional water harvesting could be referred back to human history, almost as far as the origins of traditional agriculture methods. Grossman stressed the point that rainwater harvesting did not depend on a constant flow of water; but it relied heavily on rainfall (Grossman, 2004).

There were many methods of rainwater harvesting that were used to get as much water as could be possible out of each rainfall as long as that rainwater was clean. These various methods of rainwater harvesting sustained ancient people to go on with their agricultural activities. According Grossman (2004), in some parts of the world people have continued to rely on water harvesting methods for their survival. In some cases, communities have returned to that method in order to relieve themselves on overburdened municipal water systems or high charges or to save money (Grossman, 2004).

2.10.4 Domestic/Drinking Water

According to Grossman (2004), rain water has traditionally been one of the few water sources which have usually been regarded as clean and safe for human consumption. However, he acknowledges the fact that nowadays water harvesters would be wary of pesticide contamination, bacteria and many other impurities in the runoff water. Grossman also refer to filtering technologies that were used in the past to purify groundwater by passing it through a series of rocks, gravels and sands in order to remove out contaminants to be true and correct. Those traditional methods of purifying water before human consumption were proven to be very effective (Grossman, 2004).

2.10.5 Crop Irrigation Water

According to Grossman (2004), rainwater was regarded as the primary source of irrigation for crops around the world. Various water harvesting methods have been used in different countries in order to improve crop production. It has been in existence for many years.

2.10.6 Livestock Water

According to Palmbach (2004), harvested rainwater was often used as the primary source of water for livestock, because of animals' higher tolerance for bacteria and other impurities, in other words, Palmbach (2004), was of the idea that cattle and sheep were well adapted to drinking rainwater for their survival.

2.10.7 Traditional ways of Water Harvesting- India

According to Khan and Shah (2010), the method and knowledge of hydrology was used during the ancient times in India to harvest water for domestic use. The knowledge of hydrology and this method were used as water resource engineering. During those times people in India designed and constructed dams and a number of varieties of water structures much earlier than the consciously Roman and many other ancient civilisations. It said that each and every region had its own water harvesting techniques, depending on the geographical situation and cultural uniqueness of various communities (Khan and Shah, 2010).

The Thar Desert boasted of a tradition of water conservation. There was a vision of exploiting the natural water catchments in the forts created by undulating hilltops.

Rainwater was collected in many ways like in situations where water flowing down the hill slopes was stored in a water body. It is said that water flowing down the hill was purified by a sieve between the two structures and it would then flow into the water body where it was stored. In Rajasthan, rainwater harvesting has traditionally been practiced by the people of the Thar Desert. Water harvesting systems are widely used in other areas of Rajasthan as well, for example the chauka, (a round stone) system from the Jaipur district served as prominent method in of harvesting water (Khan and Shah, 2010).

2.11. New Water Harvesting Methods

2.11.1. Rain Water Harvesting Method Using Gutters

According to (Palmbach 2004), due to the global climate change, modernized versions of water harvesting are making a comeback in countries like North America with some environmentally conscious individuals as well as business people. Small holdings and homesteads, especially in the Pacific Northwest, install water harvesting systems within their premises. It is said that the rainwater storage systems modify the rain gutters that are already on many small industries and homes. The gutters collect rain water to a large storage tank (Jojo tank) where it is held for future use. The collected water from the tank is filtered first to remove some twigs, leaves, shingle dirt, insects and other forms of impurities. Water then passes through two micron filters witch eliminates tiny contaminants to the size of many bacteria. From there it passes under an intense ultraviolet light to finish sterilizing it after which it becomes ready for showering, laundry, dishes, and cooking. It is currently not yet used as drinking water, but it is speculated that they easily could in the near future (Palmbach, 2004).

The other modern use of water harvesting in India is known as harvesting for groundwater recharge. This kind of system is more or less similar to the previously discussed system because it gathers the water that would otherwise have run off the roof. Instead of saving the water in a container, it redirects water back into the aquifer. This may sound overly simple or useless, but this is not just putting the water back onto the ground. Water that falls to the ground goes into the underground water reserves, and it is redirected downstream to a river or pond or the sewer system and be transported far away. The process actually puts the water through a gravel filter with biological components to clean it and then directs the water down a deep well.

Communities in arid and semi-arid climates are encouraged to use this technology. (Palmbach, 2004)

In the state of Tamil Nadu for instance, rainwater harvesting was made compulsory in every building to avoid the ground water depletion. Within five years of such practice, it became popular to all citizens of that region and every state took it as role model. Since its implementation water levels in all dams improved significantly.

The new method of collecting rainwater using the roof for catchment, is the one created as a Rain-Saucer, which looks like an upside down umbrella. This method collects rain right from the sky. According to students at Orphanage in Guatemala that method decrease chances for the contamination of water and it makes it potable water and it is used in most of the developing countries because it was easier to apply and suitable for gardening and small plot farming.

According to that report, in China and Brazil (both developing countries) rooftop rainwater harvesting was being practised for the provision of drinking water, domestic water, water for livestock, and for the irrigation of the small vegetable gardens (Palmbach, 2004).

2.12. Prevention of Water and Sanitation Related Disease

2.12.1. Improving Water Quality and Hygiene

The Millennium Development Goals (MDGs), especial goal number 7 requires improvements in access to improved water and sanitation sources to all nations of the world. However, the larger issue of water quality remains a challenge. Sources categorized as 'improved' are generally considered to be of better quality than untreated surface water, but the actual safety of those improved sources cannot be guaranteed. However, it can be mentioned here or noted that, improvement in water quality show an equal status (if not greater) of reduction in diarrhoea incidences as a result of improvements in water quality as well its availability. The issue of water quality is important in two key areas: - the risk of contamination during household storage and the possibility of contamination of municipal water treatment systems. In most cases water used by communities still requires regular collection, transportation, and storage for a significant portion of the world's populace (Rheingans, Dreibelbis, & Freeman, 2006).

If unclean hands and many other objects or equipment come into contact with water, surely those eventually lead to several diseases which are harmful to human life (Wright et al. 2004). In the rural areas for instance, water sources are far from where people reside and therefore it requires transportation and storage. It may happen that in the process of transporting water from various sources can create the likelihood of contamination of water. Also, in urban areas households often respond to frequent service interruptions by municipal officials and then store water in unprotected containers, thus depleting residual chlorine levels used by municipalities to purify water and thus increasing the risk of contamination. Usually the chlorine treatment used by the municipal system is depleted when it reaches the tap of users; therefore, the frequent service interruptions when municipal officials or workers do maintenance also create negative pressure, thus resulting in wastewater being drawn into the system. (WHO/ UNICE 2000).

From the look of things, since the majority of the world's future population growth is concentrated in urban areas (shacks and townships), therefore, more and more municipal systems should be regularly compromised without significant investments in infrastructure or improvement (UN, 2003). Water quality should definitely be addressed through infrastructure improvements in distribution systems and provision of household connections with reliable services, and development of new protected sources and sufficient chlorination to ensure constant residual protection. In the same vein, local acceptable strategies must be used to purify water, including household water treatment, hygiene education and product campaigns, sanitation markets and community mobilisation. In most rural areas, the high levels of indiscriminate disposal of human excreta on an open sites and bushes as well as the practice of open defecation poses a high risk to human life. These high levels of water related diseases; particularly diarrhoea, may affect children under six years of age. The various unsatisfactory personal, domestic and environmental hygiene practices could be regarded as the major cause of diseases in many communities (Angko, 2013). Long time ago, before the advent of modern medical care, countries, especially the industrialized countries dealt with levels of water-related disease through good water health styles. In most countries nowadays, developed, developing and under developed countries, preventable water-related disease resulting from bad hygiene were ranked among the leading causes of ill-health and even death. Therefore, water contributes

much to health and that good health is the essence of development (Brundtland, 2000). As a result of that, poor water resources, according to the World Health Organisation diarrhoeal disease was still a leading cause of death in the underdeveloped and developing countries in the world (Brundtland,2000).

2.12.2. Access to Clean Water and Safe Sanitation and Hygiene

Problems of unsafe water and inadequate sanitation systems were most acute in developing countries. According to Pruss et al. (2002) as cited by Rheingans, the inadequate of water, sanitation, and hygiene were a major cause of diarrhoeal disease in most of the third world countries and lead to about 2.2 million deaths and 82 million Disability Adjusted Life Years (DALYs per year. According to that report, children under the age of five (5) years were usually the casualties of the scourge. Together, water, sanitation, and hygiene related diseases account for about 5.7% of the burden of diseases in the world. It is said that the report did not include the effects of other water-related vector borne diseases, such as malaria. The World Health Organisation has cautioned that diarrhoeal diseases remain a leading cause of illness and death in the developing world or countries. The report indicates that 90% of deaths in these developing countries are among children and are as a single type of bacteria known as “Shigella”, which causes dysentery or bloody diarrhoea. This type of diarrhoea can be controlled by improving hygiene, clean drinking water and safe sanitation. The washing hands with soap and water can reduce Shigella and similar types of diseases by up to 35%.

Cholera was regarded as a diarrhoeal disease caused by infection with the bacteria known as ‘Vibrio cholera’. It was also regarded as something caused by water- and foodborne disease with person-to-person contact or resulting from poor hygiene, as well as the limited access to proper sanitation, and insufficient clean water provisioning. That was seen as a contributory factor to the outbreak and the progression of the scourge. According to the report, cholera outbreaks occurred primarily in settings where water supply, sanitation and hygiene infrastructure was compromised. In such cases, the government would be expected to provide services such as water trucking of chlorinated water. Furthermore, local government would be expected to provide citizens with chlorine to an individual or every family to put it in water containers or for household water treatment. Government mobile clinic usually attend affected areas

focussing on reducing mortality by ensuring prompt case management, and reducing morbidity by providing medication and talking to health promotion for the affected community. Education on health issues usually became part of the interventions implemented at the affected areas (WHO, 2014)

2.12.3. Hand-Washing with soap

Despite a wide body of evidence investigating the effectiveness of WASH interventions against endemic diarrhoeal disease, many studies considered the poor quality of water to be root cause of the disease. Assessing the impact of WASH interventions was challenging due to methodological issues; for example, a blinded trial of sanitation was impossible because people could not be induced to use a toilet. A further challenge relates to epidemiological issues where for example, improvement in the amount of water available would likely also have an impact on water quality and hygiene in some households. Each intervention may seem to be less important but for diseases like cholera, with multiple transmission routes, all interventions were important and that they should be implemented. The health impact of WASH interventions to control cholera was very crucial in saving lives. A review of WASH interventions in 1991 concluded that sanitation and water supply to improve hygiene showed greater reductions in diarrhoeal disease than those for water quality alone. Given the rapid high mortality associated with cholera outbreaks, water quality interventions were perceived as being the easiest and cheapest to provide, especially when compared to sanitation and water supply programmes that require huge investments in infrastructure in affected areas (Dawn et al., 2015).

2.13. The Spread of Water-borne Diseases

According to the study conducted by Ryan et al., (2017) on baseline assessment of Water, Sanitation, and Hygiene (WaSh) Infrastructure and Practices in Government Schools of Trapeang Chour Commune, Cambodia, focusing on existing water supply and storage infrastructure, latrine cleanliness access ability to drinking water and other WaSH related physical resources in schools revealed that seven of the eight schools in the area had an untreated water source and one functioning latrine. The report also discovered that no school in the area provided treated drinking water to students. Furthermore, the baseline data suggested that the primary water source at three of eight schools tested positive for *Escherichia coli* (E. coli). Therefore, it became clear that there

was a need for the sustainable WaSH programme interventions for water infrastructure in the eight government schools of Trapeang Chour Commune in Cambodia (Ryan et al. 2017).

According to Remigios (2011), Kadoma, in Zimbabwe had experienced water and sanitation problems for many months; they were without water and sanitation supply reaching households. As a result of the unsanitary conditions the entire population was afflicted by cholera. Cholera usually spread easily in conditions where drinking water is contaminated (Remigios, 2011).

It is alleged that proper hygiene practice could prevent person-to-person transmission of various diseases as well as food and household water contamination. However, there was limited evidence for the role of family contacts in the transmission of infection, although studies have found that having a case at home is a risk factor and that family members can spread *V. cholera* in stored water and food through the contaminated clothing or fingers. It is said that in Zambia for instance, an outbreak investigation identified that the consumption of uncooked vegetables was the source of the epidemic, especially the poor hygiene practices of street market dealers. Hand-washing practice with soap was regarded a strong protective solution. The hand washing with soap was regarded as the easiest to any cholera control measures of the infection, compared to household spraying. The use of the electronic media like the radio stations and television was mentioned as popular for the propagation of the information. Therefore, media would be used to spread the messages to communities.

Given the rapid high mortality associated with cholera outbreaks, water quality interventions were seen as being the easiest, cheapest to provide, especially when compared to sanitation and water supply programmes which may require huge investments in infrastructure alone. However, the distribution of soap was an affordable intervention that could be practised in every household. The use of cans or any other vessel for water transportation also raised a concern regarding household hygiene practice. Water containers could also be a cause in spreading of disease associated with contaminated water at the household level. Recontamination of water storage vessels are likely to be caused by members of the household bringing a bacterium into the household and possibly passing it to other family members. There was no proof for the role of family contacts in the transmission of infection. According to Dunckar (2000),

as cited by Rietveld et al. (2009), water-borne diseases remain a cause for concern in developing and developed countries worldwide, and that globally, diarrhoea was the third largest cause of morbidity especially in rural areas and the sixth largest cause of mortality (Rietveld et al., 2009).

Communities were at times vulnerable to diseases like malaria if they live in environments receptive to the breeding of insect vectors that carry and transmit parasites such as malaria, filaria and trypanosomes. Nearly 300 million people lost their lives through malaria and it is estimated in sub-Saharan Africa alone malaria kills an estimated 1 million people per year, and the majority of them were children under the age of five years. South and South-East Asia, and other parts of South America were regarded as malaria hot spots. Currently, there were two ways of controlling the spread of malaria disease, namely the low-cost insecticide-treated mosquito nets as well as the use of drugs. However, the report revealed that the method of using drugs was weakened by the counterfeit drugs and mosquito nets affordability (Rietveld et al. 2009).

According to Esrey, et al., (2008) a number of studies illustrated that a variety of mechanisms to the improved water and sanitation can protect people from being affected by diarrhoea, hookworm infection, trachoma etc. The study also revealed that child mortality fell by 55%, which suggested that water and sanitation had a substantial impact on child survival or mortality. Water for personal and domestic hygiene was important in reducing the rates of diarrhoea, and trachoma. The study also revealed that proper sanitation facilities decreased diarrhoea, morbidity and mortality and infection. That was a clear indication that better water quality reduced the incidence of dracunculiasis, but its role in diarrhoeal disease control was less important than that of sanitation and hygiene. A total number of 144 cases that were analysed to examine the impact of improved water supply and proper sanitation facilities on diarrhoea, hookworm infection, and trachoma were indeed, an impact of improved water supply and proper sanitation facilities (Esrey, et. al, (2008).

According to the statement issued by the (WHO, 2004) all developing countries were still associated with diseases because of poor water and sanitation. A study after study has clearly shown that where a community water provision has improved, its hygiene and/or sanitation then health also improve drastically. In 2003 it was estimated that nearly (60.7million DALYs) of the global burden of disease and 1.6 million deaths per

year were attributable to unsafe water supply and sanitation, including poor hygiene infrastructure. As a result of that, during the 1990s there was considerable investment in the provision of water supply and sanitation in most of the developing countries. However, by the year 2000, still a significant proportion of the world's population still remained without access to clean drinking water and proper sanitation. In Africa alone, it was estimated about 40% of the population did not have access to improved water supply and sanitation (WHO, 2004).

2.14. United Nations Water Resources Commission on World Toilet Day

Countries of the world usually celebrate the day popularly known as 'World Toilet Day'. That is a day which is officially recognised by the United Nations in order to promote awareness and to the world to tackle the global sanitation challenge facing them. On 19 November 2016, the world celebrated World Toilet Day. The 2016 theme for World Toilet Day was "Toilets and Jobs". The theme itself highlighted the link between job opportunities and toilets, focusing on South African and sub-Saharan initiatives under the leadership of the Water Research Commission (WRC). One may wonder as to what kind of jobs were there in toilet infrastructure or toilets; it must be care-taking and plumbing, both of which could be critical to maintaining community health through maintenance and provision of safe clean toilets. Providing of new latrines to converting faecal waste into beneficiated products, like crop manure, has the potential hold of a monetary value. Therefore, World Toilet Day is celebrated across the globe, and that "going" to the toilet is important from health perspective. It was never meant to break the taboo about toilets, but also to raise awareness of the challenges facing underdeveloped and the developing countries of the world as mentioned earlier. On the World Toilet Day, it is always emphasized that the main purpose of toilet was to create a barrier to the spread of disease and pollution. It was also noted despite the importance of sanitation; the developing countries were still struggling with the provision of sanitation in comparison to other critical basic services.

In 2012, the WHO/UNICEF reported that there were 644 million (70%) of the population in sub-Saharan Africa, that were using an unimproved toilet facilities or having to resort to open defecation. Therefore, the means of safe access to clean toilets was critical to the implementation of Goal-6 of the United Nations on Sustainable Development Goals (SDGs), which require countries of the world to provide clean water and sanitation for

all (WRC). Furthermore, in 2009, the WRC launched a project with an aim of introducing social franchising for water and sanitation delivery for 400 schools in the Eastern Cape; South Africa. The whole project was funded by Irish Aid and in partnership with the Eastern Cape Department of Education (DoE), the franchise-like partnership model.

It was also introduced in 250 households in the Eastern Cape. More than 20 sustainable jobs and more than 50 part-time informal employment opportunities were created. A service provider from East London called 'Amanza'abantu was responsible for the project. Such an activity clearly showed the relationship between job creation and service delivery through an innovative public-private partnership which was alluded to earlier on (WRC).

A similar project as that one above took place in Kampala, (Uganda), - 'Water for People'). That was an NGO mandated by the WRC in 2013, working hand in glove with the Bill and Melinda Gates Foundation, to lead a project titled 'Sanitation as a Business'- the Sani-Hub Project. The project was meant to provide services to people by incorporating innovative products across the board that saw sanitation servicing businesses more viable. The project developed a pour flush system for the Ugandan market called the Dura-San (UN News Letter, 2016).

The toilet structure was made of pre-fabricated interlocking Lego-like concrete blocks to reduce the construction costs as well as the level of expertise that would be required during construction. The latrine superstructure was very easy to disassemble in order to relocate if the toilet-pit was full or just if the owner wanted to relocate. The NGO could build about 10 of these toilets in seven days and at a very low cost. The type of structure promoted sludge-emptying business, using low-cost local material. This type of business attracted many emerging entrepreneurs and it also afforded local people with building skills. The beneficiation of dewatered faecal sludge using carbonisation techniques and black soldier fly digestion were also used in that type of toilets. The products that were used in the system also had potential monetary value and led to the establishment of an industry based on collecting faecal waste and converting it into beneficiated products. With that type of toilet superstructure, it became clear that there will always be an opportunity for job creation linked to sanitation services (UN News, 2016). According to the Secretary-General of the United Nations, Ban-Kin Moon "every dollar invested in water and sanitation leads to \$4 in economic returns" He emphasized

that toilets play a crucial role in creating a strong economy (GDP) and that a lack of toilets at work and at home may lead to severe consequences. Poor toilet infrastructure could result in poor health system which could even lead to absenteeism, a decrease in company productivity. According to the United Nations General Secretary, investing in appropriate toilet infrastructure was crucial, especially for women and girls, so that they could have private, clean and safe facilities, and would be able to manage menstruation or pregnancy period safely (WRC, 2016).

2.15. Healthcare System in Previously Disadvantaged Rural Communities

According to Jones et al. (2003), the healthcare system usually does not reach groups mostly in need of water, sanitation, and hygiene interventions. If health measures are not taken care of adequately, it is the young children and their mothers who usually bear the brunt of the resultant health burden. The health system should include among other things the: safe-motherhood programme, prevention of mother to child transmission of disease (PMTCT) clinics, vaccination, nutrition programme, diarrhoea treatment and control programmes. Again, Jones et al. as cited by Freeman 2005 complained that different kinds of some education services were not adequately provided to a number of rural communities.

According to Jones et al. (2003), in Western Kenya for instance, results demonstrated that clinic-based promotion of hand-washing and household water treatment with chlorine was effective in generating changes in hand-washing practices in 45% of those exposed to the intervention programme. Again, Parker 2005 as quoted by Freeman a campaign on water treatment and hand-washing promotion into HIV/AIDS patient care and outreach could also be an effective way of reaching an additional population that could be vulnerable or be at risk of diarrhoea mortality (Freeman, 2005).

2.16. National and International Water Laws

Although water is often seen as a source of conflict, recent research suggests that water management can be a source for cooperation between countries. By the 2050 about two-third of the world population in nearly 66 countries will face severe water shortages. More than 1 billion people live without fresh drinking water and more than twice that number has insufficient sanitation, and therefore, managing scarce water resources for increasing demand becomes very crucial (Wouters, 2000).

2.17. South Africa Water Management Law

As water is shared by everyone, there have to be some rules to govern the way it is used. But it's a difficult resource and when things go wrong, the temptation is to blame the unpredictable water – or the rules. In fact, the problem is usually neither the water nor the rules, but the people concerned (SAST, 2018). Experience around the world is that, more often than not, water laws are not the problem. They're simply not implemented. So, the proposals from South Africa's Water Affairs were to revise the two laws that underpin South Africa's water security. South Africans need to ask whether the problems are with the laws or with her department's administration of them. The two laws are the 1998 National Water Act and the 1997 Water Services Act. The Water Act sets out how South Africa should cope with the vagaries of the country's climate and the demands of a growing population. It stipulates what different tiers of government and water users should do and what procedures should be used to address particular problems. The Water Services act regulates municipal water supply and sanitation services.

2.18. Water Rights under African Customary Rule in South Africa

According to Tewari, (2005), before the arrival of the Whites (European settlers) in South Africa in 1652, led by Jan van Riebeeck, water rights was governed by the African indigenous law and they were observed by all. Needless to say, though, these rights were never codified but they were known and never contested any individual in a community. Water rights could only emerge if there was a dispute around the nearby community members who would come (encroaching) and collect water in a dug-well originally meant for a particular group, thus disadvantaging them. It is reported that the San and the Khokhoi communities were occupiers of the land when the Whites invaded them, south of the continent, Africa, Davis (1989) as cited by Tewari (2005). During those times, commodities like, water, land, etc. were free, although a feudal system was in place for land tenure, and the chief or king controlled these commodities, but he did not condone private ownership. The issue of private ownership was encroaching as per Bennett, (1995) as cited by Tewari (2005), indicated that there was a colonial community beginning to align itself in commercial terms and brought its own foreign values of community commodities, as opposed to the native community which was subsistence-inclined and had ownership of resources entrusted to the chief's control without an individual ownership. According to (Burman 1973), as cited by Tewari (2005), it is said

that such a move led to a dual system of land ownership and also to a dual system of water rights within one place. This resulted in a dual system of land ownership, and as a result, a dual system of water rights developed. It therefore became clear that when a farmer had invested money and labour in a water supply, surely, that would become a private resource for the exclusive use of a farmer who developed it for his personal use (Tewari, 2005).

As the time progressed, South African communities were fully subdued by settlers and finally brought to White regime, but water rights remained separated. Black communities were impoverished of their land and water resources. The colonial governments never took interest in developing water resources for Black communities, but instead, they chose to exploit them. Therefore, water rights for the history of South Africa in a way allowed Whites to enjoy access to water and water used by them (colonists) alone- the Dutch under the Company and subsequently the British as well as the Afrikaners (Tewari, 2005).

2.19. Water Laws during Apartheid Era

According to Uys, (1996) as cited by Tewari, (2005), the next important benchmarking in the water rights history of South Africa was the Water Act of 1956 (Act 54 of 1956). At that time, water regulation was in the interest of the economic heavyweights, agriculture, mining, and industry. This was also an Act that clearly addressed business sector and it directly dealt with groundwater issues. The Republic of South Africa at that time was industrialized and urban populace had also grown. The country was ruled by the Afrikaner nationalists. The water demand from urban and industrial sectors during the first half of 20th century had increased and led to a burden on the limited water resources for the government. The increased demand of water could not be accommodated by the traditional way of doing things. An increase in the demand of that important commodity necessitated a change in the water laws. A Commission of Inquiry into the water laws was appointed, and as a result of that the Water Act of 1956 was then promulgated. The name of Irrigation Department had to change to the Department of Water Affairs in order to cater for its broadened scope. The new provisions for the domestic as well as industrial uses of water had to be reconsidered. The new Act vested in the Minister of Water Affairs a large measure of controlling of water for the interest of communities in the Republic of South Africa (Tewari, 2005).

Therefore, the principle of government to control water was introduced. This principle was systematically extended to cover all sources of natural water clinging on the following acts, Act 75 of 1957, Act 56 of 1961, Act 63 of 1963, Act 71 of 1965, Act of 11 of 1966, Act 79 of 1967, Act 77 of 1969, Act 36 of 1971, and Act 45 of 1972 and many other pieces of legislations. By these amendments, the state wanted to control all water sources in the country because of the increasing demands of this commodity and to fix water supply. The state defended this status on the basis of the fact that the increasing scarcity of water in the country required the state interference for the purpose of development and maintenance of water resources of the country. These arrangements specifically singled out whites and totally excluded rural area communities. Redressing this scenario became the principle aim of democratic government in the post-apartheid era. A control over urban and industrial users was also exercised by the introduction of Water Committees or in some areas Water Boards. Those Committees and Boars made provision of bulk water for urban and industrial use and regional sewage schemes in the areas of their jurisdiction. Similar measures were also introduced to control water pollution activities. In addition to the original provinces comprising the Union of South Africa (Transvaal, Orange Free State, Natal, and Cape), there were four independent and autonomous states and six self-governing territories. The formation of these states was a policy of apartheid to create separate jurisdiction for the original inhabitants, mostly blacks. These territories and states had legislative powers to repeal, amend, or replace the 1956 Act. However, according to Thomas et al. as cited by Tewari, (2005), none of them, except Bophuthatswana, made any changes in the Act. Bophuthatswana adopted the dominus fluminis (the owner of the river) principle into the law in 1988. In a nutshell, the right to the use of water continued to be based on the principle of dominus fluminis as the majority of land was state owned and self-governing territories; the land ownership in these states was governed by the African customary law (Tewari, 2005).

2.20. Water Rights under Democratic Rule in South Africa 1990s and beyond

When South Africa became a democracy in 1994, the founding principle of the constitution had to deal with the water law reform to match with the international acclaim. Water Laws were promulgated and couple with that was Africa Water Vision 2025 (Nevil, 20102). According to Tewari, (2005) when the democratic government took-over in 1994, the most important challenge for post-apartheid democratic South Africa with its

neo-liberal inclination was to balance between the traditional view which suggested that water was a public good and the modern view which suggested that water had a commercial value too. The democratic government legislative framework had to make a shift from previous water laws, and also to address the social inequities as well as the environmental issues. As mentioned earlier, the development of water rights in South Africa largely hinged upon Roman-Dutch law in which rivers were seen as being resources which belong to the nation as a whole and were available for common use by all citizens irrespective of their colour or Creed, but which were controlled by the state for the public interest. Therefore, the concept of public trust dates back to the Roman time.

According to Lee (1956), as cited by Tewari (2005)-IWRA, it is said that the Roman Emperor Justinian codified the law as way back as in 528 AD, popularly known as Institutes of Justinian. According to that law it was generally assumed that the English Common Law was judge-made and it also twisted the Roman notion of common property. By the law of nature, some of the things were accepted as common to mankind, things like air, water, seashore, etc. and nobody could claim them. And therefore, those could be available for mankind free-of charge. Even the king himself held them “in trust” for the benefit of all citizens. As a result of that, the idea of trusteeship was finally incorporated into the South African law. These principles were now in line with the African customary law which regarded water as a common good used in the interest of the community (Tewai, 2005).

In the new dispensation, the South African parliament passed two important laws:

- (1) The Water Services Act of 1997 and
- (2) The National Water Act of 1998

The National Water Act of 1998 repealed over 100 water acts and related issues, and all previous public and private rights to water (NWA1998, s.4 and Schedule 7). In the new dispensation the government has the responsibility to manage and maintain the water resources for the benefit of all persons in accordance to the constitutional mandate (NWA, 1998, s.3). The new Water Act ensured that the water resources of the nation were to be protected, used, developed, conserved, managed, and controlled in ways which take into account issues like:

- (1) Redressing the results of the past racial and gender discrimination,

- (2) Promoting equitable access to water,
- (3) Meeting the basic needs of present and future generations,
- (4) Promoting the efficient, sustainable, and beneficial use of water in the public Interest
- (5) Meeting international obligations, establishment of bodies to implement international agreements (Chapter 10) etc.

In the National Water Act, it is stated that water is a scarce resource, and that it belongs to all people, and that no discriminatory law should be established to prevent access to water by other people. The new Act requires the uniform protection of all water resources and it also emphasizes the sustainability of water resource management principle by all. The Act attempts to redress the problem of past groundwater mismanagement. The key objective is to ensure the effective partnerships between various water institutions to ensure the sustainable water use in the country. In 1997, the WSA declared that every person had a right of access to basic water supply and basic sanitation. The main objective of this principle was to give:

- 1. The right of access to basic water supply and the right to basic sanitation necessary.
- 2. Authorities a mandate to secure sufficient water and an environment not harmful to human health or well-being;
- 3. National standards and norms for tariffs in respect of water;
- 4. Promotion of effective water resource management and conservation.

The new laws of water thus recognize that water is a very scarce resource and needed to be used efficiently, sparingly and equitably by all (Tewari, 2005).

2.21. Current Status of Water Demand and Supply in South Africa

According to Salman M.A. Salman (2014), the population growth shows a major challenge to water resources and sanitation system around the world. It is estimated that by the year 2013 the world population grew from 1.6 billion to 6.1 billion, and had already surpassed 7.2 billion inhabitants. The latter figure was expected to reach 9 billion people by 2050, and all of them eyeing for the same finite amount of water. Also, hydrological variability, environmental degradation and climate change (drought) are other major challenges to water resources in the world. This kind of situation leaves government officials and municipalities in a state of limbo on how to deal with the

challenges of variations and variability, the competing demands of the different uses and users of water resources, and how to guarantee access of the poor and vulnerable rural population to adequate amount of water and the provision for sanitation. The question that would immediately follow from the recognition of the human right to water and sanitation is the possibility content of this right. It is said that according to General Comment No.15, the right to water contains both freedoms and entitlements. The General Comment emphasizes that the entitlements include the right to the system of water supply and management and also provides equal opportunity for people to enjoy the right to water. Furthermore, elements of the right to water should be adequate for human dignity, life and health. The comment suggests that water should be treated as a social and cultural good, and not to provide it to people as an economic good or commodity. The right to water must also be sustainable and ensuring that the right can be realised for now and by future generations (Salman M.A. Salman, 2014:974). Therefore, the reality is, water is life blood of every human being, and therefore should be conserved by all. In South Africa, some provinces were already making plans for the conservation of water because they are aware of the future demand of this scarce commodity called water.

2.22. Water and Sanitation Summit in Limpopo Province-2015

It is said that on 9th July 2015, the Limpopo Provincial government had a meeting at Karibu Leisure Resort, in Greater Tzaneen Municipality on Water and Sanitation. The theme of the Summit was “Water is life; Sanitation is dignity”. That meeting was attended by stakeholders from the mining sector, the farming fraternity, academia, Traditional Leaders, non-governmental organisations, civil society organisations as well as the private sector. They all deliberated on solutions of how to protect, develop, conserve, manage, use and control this scarce commodity, water.

The Premier of the Limpopo, Stanley Mathabatha as well as the Minister for Water and Sanitation were reportedly to have given keynote address at that meeting. The Premier emphasized the point that as a province they were still committed to what they had promised in the State of the Province Address that they would fight to the last atom in their body until they resolve the water challenges they were facing as a Province. The Premier added that he pinned his hope to the minds of all Provincial stakeholders that were in attendance on that day, that together they would definitely come up with the

lasting solution to help Provinces with Water and Sanitation challenges. According to that report, officials from Provincial Districts Municipalities were also present since they were in the fore front for the provisioning of Water and Sanitation in the entire province. He also emphasized that the meeting held on that day was as a result of a meeting held before, which was addressing water for mining and industry usage and not for social consumption, and it was felt that all stakeholders needed to be on board from the onset.

As mentioned earlier, the Minister for Water and Sanitation was also in attendance, she added on what the Premier of the Province had said and that the country was facing a huge challenge in terms of providing water and was also compounded by the persisting climate change globally. The Minister urged the delegates at that meeting to come up with Limpopo Water Infrastructure Master Plan. She was quoted saying “We need to move beyond policies and strategies”; in other words, encouraging delegates to roll-up their sleeves and to come-up with an everlasting solution and not policies that do not take the country or the Province forward, and that as government, they had an obligation and were mandated by the constitution and National Water Act to ensure that the citizens of Limpopo have access to water and descent sanitation. Furthermore, she told the delegates that the availability of water in that Province would bring a relief to a number of women and girl children who have a burden of collecting water for their families for domestic use. To her (Ms. Monkonyane) the availability of water in the Province would mean the emancipation of women. She added that, Limpopo was a home to more than 5 million people and as the custodian of water resources in the country, as different stakeholders they were mandated by the constitution and the National Water Act to ensure that the citizens of South Africa, including Limpopo, had access to water and descent sanitation. She emphasized that thorough water; government could eradicate inequality, fight poverty, create jobs and promote peace and prosperity and that Water must contribute to emancipation of women (Seloba, 2015-Cell: 082 807 0796). Limpopo province is already up in arms trying to solve the problem of the lack of water.

2.22.1 Strategies on Water and Sanitation in Limpopo Province

After some deliberations in four commissions, the Summit concluded that resolutions had to be taken:

- Circulate a draft Limpopo Water Infrastructure Master Plan for stakeholder's inputs.
- Develop Provincial Sanitation Plan, including alternative technology and target rural areas.
- Establish a dedicated Technical Team to consider approval of technical reports.
- Develop an implementation Plan focusing on water service hotspots (Polokwane, Mogalakwena and Mopani)
- Filling of vacant Technical Services Managers.
- Develop a sustainability plan for the existing river system.

Develop a comprehensive Waste-Water Treatment Works Plan (www.gov.za).

(Phuti Seloba for Limpopo Provincial Government: 0828070796). According to a report by Blue Drop Certification Programme (2014), a body that was developed in 2008 to monitor the quality of water used by members of communities, it had discovered that thousands of people in Limpopo were drinking water which was not suitable for human consumption. The report also revealed that more than half of the municipalities in the province were responsible for the provision of water not suitable for human consumption. This was despite the fact that an access to clean drinking water is a right enshrined in the Constitution of the Republic of South Africa, 2(27) (1b). This was as per SABC News. Mookgophong municipality in Limpopo Province had scored 26% which was the lowest, followed by Vhembe district municipality at 39% (Posted 10 February, 2016). South Africa is a member of countries that are well afoot in terms of their GDP, and infrastructure. The study will reflect briefly on some of those countries in water and sanitation provision.

2.23. OTHER BRICS COUNTRIES (SOUTH AFRICA'S PEERS IN BRICS COALITION) ON THE ISSUE OF WATER AND SANITATION PROVISIONING

2.23.1. Brazil: Water and Sanitation Provision in Rural Communities

As stated earlier, one of the United Nations 2000 Millennium Development Goals (MDGs) was to increase the proportion of the world's population that have access to safe drinking water and basic sanitation, that is, according to the report that was issued by United Nations in 2010. According to da Silva et al., (2012) a report issued by the United Nations in 2011 revealed that the international community had made advancements toward this goal over the past ten years, however, progress made in

rural areas was lagging compared to that of urban areas. The United Nations 2010 report showed that about 80% of the people who still had no access to drinking water supplies were in rural areas. According to Brikke and Bredero, (2003); Moe and Rheingans, (2006) as cited by da Silva et al. (2012) even where rural supply systems had been developed, many of them were in disrepair or not even functioning properly at all. The report pointed to a number of factors which could contribute to the difficulty in developing sustainable rural water supply systems in rural areas. Such factors may vindicate the researcher in the sense that municipal infrastructure was not well taken care of which result in vandalism. At the same time, households in rural areas have limited capacity than their counter-part communities in towns and cities to raise the money needed for water infrastructure repair, or lack the technical expertise needed to operate water systems properly. In rural areas that are barren and arid to hydrologic variability, reliable water supply systems may require more energy-intensive infrastructure to access groundwater sources for multi-season storage which can add to the financial and technical difficulties facing poverty stricken and poor rural communities (da Silva et al., 2012).

In a country like Brazil, full of beautiful distractions—nature, people, music and soccer, it is often easy to forget what is going on beneath your feet. According to da Silva et al. (2012), a report for a village called Ceara in the Northeast Brazil in the year 2008 revealed that the state of affair for water supply was in appalling condition. In light of a number of challenges facing rural communities, it is important to note that local governments/municipalities needed to provide an ever lasting solution or framework for sustainable rural water supply and explore how the framework can be applied in semi-arid regions. The situation in that region serves as a yardstick for many of the challenges facing rural communities or semi-arid regions around the world. Efforts have been undertaken to provide rural water supply systems in Ceara' since Brazil's shift to democracy in 1988 (da Silva et. al. 2012). In view of the situation of a country like Brazil that got its independence way back in 1980s, one can simply deduce that South Africa, a country that acquired its impendence in 1990 should still be grappling with the apartheid regime backlog programmes.

The method of rural water supply required all stakeholders to come together as it was not easy to fund such a project by municipalities alone. In Brazil for instance, it was a

collaborative effort between the Columbia University Water Centre (CWC) and the Federal University of Ceara' (UFC). According to da Silva et al. (2012), a team included engineers, sociologists and policy scholars, to identify and test a rural water supply planning approach that would meet sustainability criteria and could be applied across multiple communities in the rural areas. The project targeted rural communities in the state of Ceara', specifically the municipal district of Milha~. According to the report provided by United Nations in 2010, it became clear that worldwide, about 80% of the people who had limited access to clean drinking water supply lived in rural areas (da Silva et. al., 2012).

2.23.2 Challenges in the Provisioning of Water and Sanitation in Brazil

According to Chikersal & Bhol (2016), the biggest challenge was the regulating of the water and sanitation effectively which would involve the bringing in of accountability. According Nadalin and Mation, (2014) as cited by Chickersal & Bhol (2016) the rural areas, especially in the native populace in Brazil, had the least access to water and sanitation, and that a wide gap existed in the provisioning of these services and conditions that which existed between urban slums and non-slum regions. This had an impact in reducing efforts that had been made to the provisioning of water and sanitation infrastructure. According to (Harvey & Reed, 2004) & (Katz & Sara, 1998) as cited by da Silva et al. (2012, other social factors relate to the technical, administrative and financial capacities for a system to operate effectively over time and at a reasonable cost were important criteria for sustainable rural water supply systems. According to the Ministry of Cities, about 30% of the population in Rio de Janeiro alone was not connected to a formal sanitation system, even in those areas with formal connections; even in areas that technically had sanitation, at times, the systems were not in proper working condition. It was reported that only about half of sewage waste was treated before entering into waterways (Hosek, 2013).

The involvement of local communities played a pivotal role in project planning. According to the maintenance plan that was developed in Brazil, communities were taken on board at the very initial stage so as to ensure the technical support needed in the implementation of the project, that is, from the local contractors. A support needed would include an electrician to maintain the electrical systems for the pumps, a plumber with skill to service the hydraulic pipes, as well as a mechanic to repair pumps when

necessary. An office (municipal structure) was also established in the small rural community or village of Ceará to deal with urgent needs to run the project (da Silva et al., 2012).

In (Ceará) Brazil, a survey conducted revealed that the method of water supply in municipal districts using trucks had numerous problems. The previously used method of relying on trucked delivery of water collected from distant reservoirs and small reservoirs was just like the water collected by individuals from small wells, rainwater collection, surface water collection carrying water in barrels from nearby ponds or small wells because it caused public health problems as it was often untreated or full of impurities. The community in Ceará was dissatisfied with wells that were used as a water supply source because the highly saline groundwater in that region was non-potable without expensive treatment. On the other hand, rainwater collected through cistern tanks, was reported to be insufficient for supplying water throughout the year and susceptible to leakage (da Silva et al., 2012)

A survey conducted proved that proper consultation with members of the community yielded good results in the sense that residents felt being part of the project and they were free to express their desire for systems that would service them and they also allowed flexibility, given the fact that most rainwater was available during only a short period of the year, and that the area was subject to droughts in certain seasons of the year. With the involvement of the members of the community in the project it is reported that Milhã district municipality in Brazil had an opportunity for developing different supply options with the help of communities. Cooperation with community members assist project management (developers) to have the clear understanding of topography, the local geology and road networks of the area between the water sources and the communities, which would affect the pumping of water and the local geology and road networks, which influence laying (reticulation) of water-pipe pathways as well as land ownership and so forth. Such experience and knowledge with managing community-level relationship established also help community members to receive benefits and incentives from government programmes designed in order to alleviate idleness and poverty in rural areas. Furthermore, holding meetings with community members and associations to identify means and ways of development in the area reduce the type of top-down service delivery style which at times would cause unnecessary service

delivery demonstrations by communities were avoided at all costs. All members of the community were invited, including local leaders (Traditional leaders). For the developers in Ceará, meetings were held during the day and most of the attendees were women or homemakers because most of the home-heads would be at work, and therefore, later, more meetings were held in the evenings so as to accommodate more family members.

During this project, individual household options were not preferred by the developers, but instead, they reticulated the entire area with the stand-alone type of system (communal tap) system. They also decided not to have a system that would connect the two communities, instead, Ingá (section area in Ceará,) had its own community system. What can be noticed here also is that connecting the communities to a municipal system (via a major pipeline) and to an integrated regional system (via pipelines between several municipalities) was an option to go (da Silva et al. 2012). For the researcher, a type of development that took place in Brazil is what local municipalities were or should be meant for in South Africa, that is, the incorporation of rural areas into town and cities development. The constitution of the Republic of South Africa (1996) as well as the Local Government: Municipal Systems Act, No.32 of 2000 and Regulations envisage the local government that would incorporate rural areas for development programmes purposes into well-established cities and towns.

But according to Barbossa (2015), a number of regulatory agencies had increased in the last 10 years (from 11 to 50) however there was still a diverse panorama of the regulation of water services across the country. In some regions and municipalities, there was local regulation, whilst in some cities, water entities were not supervised at all by agencies.

2.23.2. India: Water and Sanitation Provisioning in Rural Communities

Briefly, according to Khan and Shah (2010), the knowledge of hydrology in accessing water was rooted in the science of ancient India. Few examples of traditional water harvesting will be mentioned here. It said that for many decades, Indian ancestors applied the hydrology knowledge in water resource engineering. They constructed dams and a number of water structures much earlier before resorting to the Greek, Roman and other ancient civilisations. Different communities in India had had their own water harvesting techniques, which reflected the geographical peculiarities and cultural uniqueness of different communities in that particular region (Khan and Shah, 2010).

In Rajasthan, which was usually covered by the Thar Desert, builders of the famous Bundi and Chittorgarh forts exploited the natural catchments in the forts created by undulating hilltops. It is reported that rainwater flowing down the hill slopes was purified by means of a sieve between the two structures and then stored in a water body and accumulated there. Such water would be used for irrigation and drinking purposes then later on, when these reservoirs dried up, the pond were used for cultivation (Khan and Shah, 2010).

It must also be noted that there were various methods of water harvesting from region to region. Wells had been dug in the cities of the Indus – Sarasvati Valley for instance, wells had been dug already in the cities by the third millennium B.C., and on the other hand, the “Great Bath” was probably used as a water storage tank. The Indus Valley cities were reported as having marvellous systems of water harvesting. From Kashmir to Kanyakumari, and throughout India, several ways were applied to catch and store rainwater for later use. As indicated earlier, the traditional water harvesting systems differed from region to region, depending on whether they were to provide drinking water or harvesting water for irrigation. If the system was meant for drinking water only, those were relatively generally smaller in size, with small steps leading down to the water. In that type or system, people could collect water in small quantities to meet their domestic or family needs. On the other hand, for irrigation, spread over of complicated network of pipes and channels would be created for collecting and distributing water (Network, N. G. O. CPR ENVIRONMENTAL EDUCATION CENTRE).

2.23.2.1 Challenges in the Provisioning of Water and Sanitation in India

According to Yusuf and Hussain (1990), household sanitation in developing countries more especially in rural areas was very poor. The report revealed that even in areas where a safe water supply and sanitary latrines were provided, people did not use those latrines. According to Cavaye (2001), at times, developers were faced with numerous challenges in approaching communities for development; for example, new ways of participation, greater recognition of community values, fostering community confidence and changes to the role of government, coping with perceptions, etc. Therefore, development within rural communities depended on several interdependent components. Further to that, the delivery of services in rural communities allowed the

local economy and social system to function, population and the quality of life in rural areas (Cavaye, 2001).

However, according to Misra (1975), the fact that one can take the water to the people but one cannot make them drink. By that, (Misra 1975), was of the view that in most rural India, various agencies had been trying for years to install safe water infrastructure, but many have failed, mainly because the communities themselves had not been made to feel involved in the planning of development processes and as such, they had not been responsible for maintenance; they also did not own the supply.

23. Status of Water in other African Countries

23.1. Water and Sanitation Provision in Zimbabwe

Zimbabwe's experience of water and sanitation sector development is showing a model of African countries, showing signs of collapsing. Again, that shows the vulnerability of service development built on donor or state subsidy with the lack of focus on sustainability. That means that a second generation is now required for new reform in the country, that is for capacity building and for filling in of policy gaps in governance sector, putting in place sector monitoring accompanied by an annual review processes (African's Minister's Council on Water, 2011)/www.wsp.org

With the new vision in place, in 2008 about 46 percent of Zimbabweans had safe drinking water, and 30 percent with improved sanitation. This happened in spite of the fact that the country needed funds for the rehabilitation of the existing dilapidated infrastructure. By this time, the Ministry for Water Resources Development and Management had assumed leadership for the sector (African's Minister's Council on Water, 2011). What must be noted with Zimbabwe in spite of all-ups and downs of its economy, its local government managed to establish rural district and urban Development (MoLGRUD) council with operational Policy to deal with water and sanitation. Zimbabwe has established a sector called: Rural Water Supply Actions for RWS:

- Develop a national programme to repair and rehabilitate existing Infrastructure (wells and bore-holes)
- Update RWS with mapping and needs
- Place ownership of assets of RWS to rural district councils

- Rethink maintenance/repairs Policy
- Address the needs of resettled Zimbabweans
- Develop alternative to high cost of sewage
- Initiate sanitation behaviour change programme to discourage open defecation
- Develop a private local latrine sector capacity for latrine capacity.
- With the above programmes in place, Zimbabwe water and sanitation sector became stable (www.wsp.org)

23.2. Water and Sanitation Provision in Mozambique

Although access to drinking water is a human right, and it has been included in the Millennium Development Goals, but more than 1 billion people live with no access to drinking water, especially in developing countries, specifically in Mozambique, 43% of the population that have access to improved water sources and 32% of the population live with access to improved sanitation (Arnal, et al., 2010).

In Mozambique, the water and sanitation status was at some stage rescued by the African Water Facility which was managed by funding bank with an aim of addressing rural water supply and sanitation facilities for millions of inhabitants found in rural areas of Mozambique who were like deprived of development (African Development Bank, 2010). The Mozambique National Rural Water Supply Report of 2010 revealed that the country intended to provide 3, 8 million rural people with clean drinking water and improved water and sanitation infrastructure by 2015. The country was expected to increase rural water supply from 55% to 70% by 2015 and new rehabilitated water points, 151 small water supply systems and increase sanitation water coverage from 40% to 50% and that required the construction of about 200 00 improved household latrines (African Development Bank –Appraisal Programme Report,2010)

The Government of Mozambique, UNICEF, and the Australian Government were focusing on achieving the United Nations' Millennium Development Goals for water and sanitation in the province of Nampula. They paid their attention on five small towns in Nampula Province. Before implementation of water, sanitation, and hygiene (WASH) interventions in these towns, a baseline survey was carried out in 2012 to gauge the

working of the interventions offered to these towns (Admiraal and Doepel 2014). Rural communities in Mozambique still do not have access to safe drinking water.

24. Water Supply and Sanitation in Namibia

“The right to water and sanitation is contained in existing human rights treaties and is therefore legally binding”, that is according to De Albuquerque quoted by OHCHR, (2010:1) as cited by WIENECKE, et al., (2017), surprisingly, with the exception of Namibia, where you hardly find any references to water and sanitation rights in official documents or policies. However, in some documents there is information relating to government planning to eradicate the bucket system in Namibia (WIENECKE, et al., 2017).

Water accessibility in informal settlements remains a challenge in sub-Saharan Africa. Here, the lens is on water accessibility in the Goreangab informal settlement in Windhoek (Lewis, et al. 2018). In Namibia there are still portions of the population of communities that do not have access to clean drinking water and supply of safe sanitation. Therefore, according to (Dirkx et al. 2008) for the country to attain vision 2030, the country needs to have the majority of its population accessing safe drinking water. On the other hand, Vision 2030 seeks to ensure that water resources are available and used by communities to ensure social well-being. Planning to address water supply and demand requires the country to take cognisance of the climate change. Therefore, the country's Intended Nationally Determined Contributions emphasises that climate adaption is very crucial for the country.

24.1 South Africa: Water and Sanitation Provision in Rural Communities

According to Rheingans et al. (2006), the challenge of providing safe drinking water where it is needed most is at the core of a global health challenge. According to Fewtrell and Colford (2004) as cited by Rheingans et al. (2006), studies conducted in developing countries have shown or demonstrated good health benefits in communities after the improvement of water and sanitation. Therefore, changes in household attitudes towards hygiene and sanitation are likely to contribute to the reduction of disease in society. Putting a lot of emphasis on water and sanitation improvements in order to reduce the transmission of diarrhoea and many other diseases was a good thing to do, but there was still a need for information on the hygiene status of rural communities in

South Africa (Phaswana-Mafuya, 2006). The study itself focuses on the provision of water and sanitation in rural communities residing in King Cetshwayo Municipality (KZN), therefore the provision of such an infrastructure could reduce numerous diseases ravaging rural communities.

Phaswana-Mafuya (2006) conducted a survey in the Eastern Cape, one of the provinces with the highest levels of poverty, underdeveloped infrastructure (as per EC Department of Social Development 2004). Out of seven district municipalities, one district municipality was identified for the study, which is Amatole District Municipality (ADM). According to Phaswana-Mafuya (2006), sanitation resources were not adequate, especially to rural communities, hence most of these communities could not afford to practice safe hygienic even if they wished to, because of the absence of the necessary resources (Phaswana-Mafuya, 2006).

24.2 Challenges in Provisioning of Water and Sanitation Infrastructure in South Africa

According to Act 108 of 1996, which is the Constitution of the Republic of South Africa, it defines development as the mandate of the local governments. Local municipalities are expected to become a key catalyst for the locally-led social and economic development. Therefore, municipalities have a great challenge in promoting human rights and at the same time meeting those human needs, addressing past backlogs and, and planning for a sustainable future (RSA, 1998). In 2005 the South African government launched a programme to eradicate the use of bucket toilet system in black communities. In that system, a bucket was placed under a toilet seat in a formally established settlement. The bucket was emptied on a daily basis by the municipal employees and its content taken to a sewage treatment plant. At that time, year 2005, there were nearly 250,000 bucket toilets in formally built squalors. On the part of the South African government, there was a strong political will to tackle and to eradicate the bucket toilet system in communities. By the year 2008, the bucket toilets had been replaced by Ventilated Improved Pit Latrines where piped-water was not readily available. The communities in other municipalities resisted the construction of pit latrines demanding for flush toilets, thus forcing construction of latrines to a standstill, and asked for flush toilets. The entire programme lacked community participation from the onset for the choice of the type of technologies. The South African government

introduced a Free Basic Sanitation Implementation Strategy in March 2009, aiming at reaching a universal access to sanitation by 2014.

25. UThungulu/King Cetshwayo District Municipality (Local Government)

25.1. Geographical Position/ Location

King Cetshwayo District Municipality is one of the 11 District Municipalities in KwaZulu-Natal Province- South Africa. It is located in the North-Eastern region of the KwaZulu-Natal Province on the Eastern sea boarder of South Africa. There are five Local Municipalities which fall under the jurisdiction of uThungulu/King Cetshwayo District Municipality. These Local Municipalities are UMhlathuze, uMlalazi, iNkandla, uMfolozi, and Mthonjaneni. The uThungulu/King Cetshwayo District Municipality is currently the third highest population municipality in the Province after the eThekweni Metropolitan Municipality and the uMgungundlovu District Municipality. It stretches from the town of KwaGingindlovu (Gingindlovu) in the south, to the UMfolozi River in the north, and inland to Nkandla in the region of the KwaZulu-Natal province. It covers an area of approximately 8213 square kilometres. The N2 highway links the district to other significant economic centres such as Durban and Johannesburg. The town INkandla, Melmoth, Kwa-Mbonambi, Eshowe and Richards Bay are other administrative nodes in the district. The National Road (N2) highway links the district in Richards Bay Harbour to the economic hubs like Durban, Dube Trade Port and King Shaka International Air Port (Web: www.uthungulu.org.za). UThungulu/King Cetshwayo District Municipality is a category C municipality, whilst five local municipalities within it are labelled as category B.

2.25.2. Poor Status of Water and Sanitation in King Cetshwayo District Municipality and Vulnerability of Population

According to Gaffney (2009), there were enormous backlogs in service infrastructure, especially in rural areas in King Cetshwayo District Municipality. A need had been identified for the bulk infrastructure in the area, especially in rural areas, as well as the maintenance of existing urban infrastructure. According to the strategic plan, the infrastructure prioritisation in King Cetshwayo District had to focus on a dual strategy of urban infrastructure maintenance and replacement, as well as addressing rural backlogs in water and sanitation, including bulk infrastructure in other areas of development. Water infrastructure is the main contributor to the improvement in the

district's infrastructure in general. A report showed a slight increase as in access to piped water below RDP level. A number of households in the district did not have access to piped clean water at all. The table below shows only one local municipality performing well, and the rest of them were severely vulnerable (Gaffney, 2009). Within the King Cetshwayo District Municipality there are local municipalities, and out of these local municipalities one local municipality has most of its inhabitants are in town and townships hence it has a lesser number of rural households as it is the case with others. The following table indicates levels of poverty (lack of resources) in communities in different local municipalities as classified by the district, followed by the population statistics in each local municipality.

2.26. Vulnerability of Communities in various Municipalities falling within the Jurisdiction of uThungulu/King Cetshwayo District

Local Municipality	Classification
UMfolozi (Mbonambi)	Second most vulnerable
Mthonjaneni	Second most vulnerable
Nkandla	Most vulnerable
Ntambanana	Most vulnerable
UMhlathuze	Highest performing
Umlalazi	Second most vulnerable

UThungulu/King Cetshwayo News Letter- (2015)

2.27. Statistical Representation of the District and its Local Municipalities-2011

Municipalities in the District Municipality	Area (km ²) in 2009	Area (km ²) Local Govt. Elections & % change	Population	No. of Households	Poverty Rate
	8,213.39	8,213.39		186,806	62.50%
UMfolozi	1,209.98	1,209.98	119,548	21,902	55.82%
UMthonjaneni	1,085.97	1,085.97	47,592	10,805	57.83%
INkandla	1,827.58	1,827.58	129,040	22,666	72.76%
Ntambanana	1,082.75	1,082.75	95,359	15,029	56.65%
UMhlathuze	793.18	793.18	336,288	82,015	60.13%
Umlalazi	2,213.94	2,213.94	177,555	34,389	71.81%

UThungulu/King Cetshwayo News Letter- (2015)

2.28. Water Shortage in King Cetshwayo District Municipality and a visit by the President of the Republic of South Africa- The Honourable Jacob G. Zuma

According to Moodly et al. (2015), president Zuma visited King Cetshwayo District Municipality as part of government's efforts to support all areas across the country that had been affected by drought. The district municipality was the most stricken area by the drought in KwaZulu-Natal. The district had the bulk water infrastructure in its small self-supporting towns comprising of Eshowe, Melmoth, Mthunzini, Nkandla and uMfolozi. The City of uMhlathuze (Local Municipality), because of its strong muscle had been granted a permission to act as a water service authority for its local municipal area.

On the day of the visit by President Zuma, the district was allocated the sum of R23 million from the Drought Relief Fund (National Government) for the provision of 32 new boreholes following the approval of its (uThungulu/King Cetshwayo District) business plan that was approved by the Department of Water and Sanitation for the implementation in April 2015. Furthermore, on that day, it was reported that

uMthonjaneni Local Municipality had 9 712 households and that about 2 824 of these households had no access to clean drinking water at all.

Both, the town Melmoth and i-Thubalethu Township were supplied water by the small water treatment plant (2.8 ML/d), getting water from the Melmoth dam which was also drying out. It is said that in February 2016, the Department of Water and Sanitation under the leadership of Ms Nomvula Mokonyane donated a water tanker truck that was to deliver water in Melmoth area. With the help of the National Government, the district municipality managed to put up 12 Jojo (plastic) tanks in Thubalethu and another twelve Jojo tanks in town to alleviate water crisis in the district (Moodly, et al. 2016). The drought task team had a responsibility to look for additional water sources which would include working hand-in-hand with private local farmers to allow pumping of water from their farm dams for community use, as well as drilling of boreholes. The upgrading of bulk pipelines, the reservoirs and other pump stations to effect a connection to the regional water scheme was also part of the exercise the team had to undertake. There was also a need to construct a 1 500 kilolitre reservoir for Melmoth (Moodly, et al. (2015). A similar investigation was conducted to verify the progress made by municipalities in previously disadvantaged communities in respect of the provision of clean drinking water and improved sanitation (Madi 2016). It is against such commitments made by the government to service delivery that the researcher would want to investigate the realisation of these services by community members in the grassroots in uThungulu District Municipality (Moodly et al., 2015).

The absence of basic services in communities such as water supply and sanitation is still a symptom of poverty and underdevelopment. In South Africa for instance with its mix of developed and developing districts, about 9.7 million (20 per cent) of the population did not have access to safe drinking water and further to that, about 16 million (33 per cent) were without proper sanitation services which in most cases led to health risks (Department of Water Affairs and Forestry, 1994).

2.29. Water Levels in uThungulu/King Cetshwayo District Municipality as of the Month of September 2017.

UThungulu local government as a region, for water, largely depends on Tugela transfer scheme, Goedertrouw Dam, Lake Mzingazi and recently acquired Desalination Plant as

its source for water (Savides, 2017). An overview in these resources indicate that with uThukela Transfer Scheme the latter dams were experiencing problems and the Department of Water and Sanitation was in contact with the contractor AECOM which had been charged with the responsibility of maintenance work to assist. With regard to Goedertrouw Dam, the dam levels were at 32.02% - downward trend continuing. At Lake Mzingazi, water had been stopped being pumped because of the water quality issue which was related to manganese taste. A concern was raised for the potential algae as well as the possibility of hyacinth bloom. The manganese problem issue was being investigated and pumping had been suspended as from September 13, 2017. The uMhlathuze Local Municipality was waiting for an independent water quality test results. A similar concern (manganese taste) was raised from water pumped at the newly established Desalination Plant. Therefore, according to the report presented by Savides (2017), the general idea was that level 4 restrictions would remain in place with the consumers being urged to conserve and use water sparingly as never before and to report any leak since a dry period was forecast from the month of September to December 2017. Rain was only predicted during the month of January 2018 (Savides, 2017).

2.30. Drought and Provision of Jojo (Water tanks) to Assist Community in Nhlabosini Reserve (King Cetshwayo District Municipality)

According to Mthiyane (2017), for (Eyethu Bay Watch News Paper) (August, 23, 2017), uThungulu/King Cetshwayo Municipality delivered water tanks (Jojo) to the uMfolozi Local Municipality owing to the report received by district the municipal officials that community in that local municipality were still trapped in poverty due to the lack of clean drinking water. These water tanks were earmarked for Nhlabosini area where the community was in dire need of water, but instead, old drums had been used to provide community with water (Eyethu Bay Watch, 2017). This report confirms that there is still water crisis in communities living in rural areas.

2.31. UThungulu/King Cetshwayo District Municipality Draft Medium Term Revenue and expenditure forecasts-2016/17 to 2018/19

According to section 84 (b) and (d) of the Municipal Structures Act, Act 117 of 1998 as well as chapter 3 of the Water Services Act, Act 108 of 1997, both stipulate that the

provision of clean water and managing waste water in uThungulu District Municipality is a responsibility of Water Services Authority (www.uthungulu.org.za.)

However, according to the report presented by the uThungulu/King Cetshwayo District Municipality it sounds like it was not in a position of servicing all communities because most of the municipalities under its jurisdiction were rural and that it had only 20% of municipalities that included towns and townships. The district municipality indicated that its mandate could only be applicable to the four local municipalities namely; uMfolozi (formerly Mbonambi) Municipality KZ 281, uMlalazi Municipality KZ 284, uMthonjaneni Municipality KZ 285, and Nkandla Municipality KZ 286. The South African Municipal Systems Act of 1998 as Amended envisages that all local and district municipalities should render services to all communities. Also, that service delivery would for the first time in South African history include non-White communities and rural areas. The provision of water and sanitation would always be on top of the agenda of every Integrated Development Planning (IDP) of each and every municipality or government development meeting (Heymans and Totemeyer, 1985).

According to the uThungulu District Municipality 2016/17 Annual Budget and MTREF March 2016 shows strategic priorities programmes, it could not be easy for the district alone to carry-out successfully the task of providing water to the entire municipality. For that reason, the WSA undertook a Section 78 capacity assessment as prescribed in the Municipal Systems Act, Act 32 of 2000. The municipality had to undertake such an exercise to assess the capacity of local municipalities to ascertain if they could be able to handle the provision of water in all local municipalities well. It became very clear that it was not an easy task to perform, and that municipalities did become very clear that it was not an easy task to perform, and that municipalities did not have the strong shock-absorbers for such a heavy load in the area of their jurisdiction with limited infrastructure. The in-cooperation (wall to wall) of vast rural areas into these five municipalities brought with it huge challenges and they (municipalities) were caught off guard or flat-footed. A great number of households were supplied with water from over 250 water schemes. The issues of water quality had to be addressed or managed, based on the Department of Water Affairs guidelines to be online with the SANS 241 standard (blue and green drop). In terms of sanitation infrastructure supply, the uThungulu District Municipality 2016/17 Annual Budget and MTREF March 2016 showed that almost 79523 households

had been provided with rural sanitation (VIP) as well as water borne sewerage systems in some urban areas, except for Mbonambi Town which was on septic tank system. The backlog on sanitation stood at about 36844 households (Annual Budget of uThungulu/King Cetshwayo District Municipality, 2016/17 to 2018/19 Draft Medium Term Revenue and Expenditure Forecasts March 2016).

2.32. Challenges for the Provision of Water in the Rural Community

According to Kahinda et al. (2007), South Africa is one of those countries that committed itself to the implementation of Millennium Development Goals. South Africa did that knowing that it had both developed and developing regions with 3.7 million people who have no access to any form of water supply infrastructure and with an additional of 5.4 million people who had to be brought up to a basic level of services. The commitment was to halving the proportion of people without sustainable access to safe drinking water and basic sanitation by the year 2015, that is, target number 7 of the Millennium Development Goals (MDGs) (Kahinda et al. 2007). But due to the lack of technical resources and financials in the rural areas, more particularly in the Province of KwaZulu-Natal, this posed a huge challenge for effective local governance-service delivery (Reddy and Biyela, 2003). However, Nengwekhulu (2009) argues that whilst the lack of technical skills does occupy a centre stage in the delivery of services, they alone cannot be enough to explain public service delivery delay. In his view, there were other latent factors such as corruption, nepotism and the interference by some political principals (ministers and MECs), in the day to day management and administration of departments that should be considered (Nengwekhulu 2009).

As mentioned earlier, South Africa has developed and developing regions that were without safe drinking water and proper dignified toilets. Hence according to Kahinda et al. (2007), the issue of “Domestic Rainwater Harvesting” (DRWH), that can provide water directly to households and enables to provide small-scale water to a number of families. Kahinda (2007) suggest that (DRWH) has the potential to supply water to many families even in rural and peri-urban areas which conventional technologies cannot afford to supply. Hence uThungulu/King Cetshwayo Municipality according to Eyethu Bay Watch News Paper (August, 23, 2017), delivered water tanks (Jojo) to the uMfolozi Local Municipality for Nhlabosini rural community which was still trapped in many forms of poverty and also lacking clean drinking water. Domestic rain water harvesting should

be done however, with caution because it normally has some impurities collected on the rooftop (Eyethu Bay Watch News Paper, August, 23, 2017).

2.33. Conclusion

The discussion above indicated a concerted effort by the uThungulu/King Cetshwayo District Municipality to address the backlog on water and sanitation provision. However, it has been a while though since the democratic government took over from the Nationalist Party (nearly 26years), but not that much has been done, especially for the rural communities. Throughout the literature consulted, the weakest link has been on the issue of maintaining the existing and providing new infrastructure where necessary throughout the country. From the water infrastructure point of view, there has been no mentioning of how these bulk water reservoirs/tanks and water tankers would be serviced for communities so as to have the uninterrupted water supply. Furthermore, the latrines supply to communities was also never dislodged by municipalities. As a result, communities are vulnerable to numerous diseases. This is over and above a slogan by government officials in South Africa, which says ‘Water is Life and decent Sanitation is Dignity’.

The uThungulu District Municipality 2016/17 Annual Budget and MTREF of March 2016 showed government strategic priorities with attractive development programmes. What was missing though was the involvement of community members’ participation in terms of how they wish to have these funds expended according to their needs. This shows that the municipal council may utilise the money without the involvement and wishes of ward communities. The study therefore wishes to draw the attention of politicians to the lack of considering the content of Local Government: Municipal Structures Act, No.117 of 1998 and Regulations, Chapter 5, section 84, subsection (b) to(c) together with Local government: Municipal Systems Act, No.32 of 2000 and regulations, Chapter 5, section 27 to 30 with all subsections of the mentioned sections. The municipal councils neglect the implementation of the content above-named legislations where the IDPs should be community needs driven rather than councils’ wishes. The human rights-based approach views human beings through the same lenses.

According to the Constitution of the Republic of South Africa, Act 108 of 1996, Section 27(1) (b), by virtue, “everyone has an access to sufficient food and water”. Since the research is about the evaluation of the status of the provision of water and sanitation, it

is imperative that the human rights are taken care of by municipalities. Therefore, the implementation of the Rights-based Municipal Development Strategies must prevail in order to achieve its main objective. For an example, according to Sarwary (2016), who used the human rights-based approach (HRBA) in Afghanistan, he argues that this approach offers a framework which puts people at the centre of the whole scenario. He regards the human rights-based approach as a linking to local governments as duty bearers and communities as rights holders.

One of the main objectives of local municipalities is to provide water and sewage systems for communities which are part of the human right. A number of popular human development theories do not consider human rights as a pillar of all forms of community deployment. The study views the provision of services for communities as a human right and therefore it should be honoured by all service providers. What is crucial in the new dispensation with local government as the vehicle of services is to allow communities to exercise and enjoy the benefits of democracy by participating in development processes that affect their own lives (van der Waladt, 2012).

CHAPTER THREE

SIGNIFICANCE OF WATER AND SANITATION INFRASTRUCTURE IN RURAL COMMUNITY

3.0. Introduction

Water is regarded as an essential and indispensable element for life, also as a finite resource without an alternative, and upon which there is total dependence for the survival, of human beings, fauna and flora. As a result of that, poverty is prevalent in areas that face water scarcity. Furthermore, water-related diseases, caused by unsafe drinking water and the absence of proper sanitation facilities, were leading causes of death in most developing countries (Salman M.A. Salman 2014). Furthermore, according to Rietveld et al. (2009) despite all good reports about South Africa, and progress made, clean drinking water remain a huge problem, especially in rural areas (Rietveld et al., 2009). This chapter therefore discusses the importance of water and sanitation in rural communities and its significance to humans

According to the International Drinking Water Supply, eight out of ten people which translate to 780 million rural dwellers, who are without access to improved water supply live in a rural area, therefore, from 1981 to 1991 the target was to provide “safe water for all”. It then started paying focus on rural water supply. In sub-Saharan Africa alone, the disparity was even greater with 272 million rural dwellers lacking access to safe water. According to Seckler et al. (2010), there will be a water supply and demand for 118 countries over the 1990-2025 periods. The research has shown that there will be water scarcity in the twenty-first Century. Some of the semi-arid regions like Asia and the Middle East, including the major breadbaskets of the world, show their ground water table depletion at an alarming rate. The study by Seckler et al.(2010), reveals that as the next century draw nigh, more than a quarter of the world's population in developing countries will experience severe water scarcity (Seckler et al. 2010).

According to Wagner and Lainox (1959), the history of public health has both tragic and glorious milestones where water was the important factor. They both wish us all to imagine life without water or this popularity fluid as they label it having been in existence since the dawn of human history. Wagner and Lainox (1959), say that biological life is dependent upon water and alerting everyone else of its death-dealing as opposed to its life-giving nature. According to The World Bank Observer (1993) repot millions of people

in developing countries were facing daily problems in getting water for domestic use and that governments of developing countries had mounted different programmes trying to correct the problem but in vain (The World Bank Observer (1993) report. Water needs assessment was once conducted in the Mutale Local Municipality within the Vhembe District Municipality in South Africa. Vhembe is one of the six districts of Limpopo province of South Africa, and it is regarded as one of the poorest provinces. Further to that, the Vhembe District Municipality embraces a huge area with rural villages and towns away from the metropolitan centres of South Africa, an area where communities stay for a number of days in the month without drinking water. A report revealed that Mutale Local Municipality consists of about 58 rural villages and towns and has about 60,000 people (Rietveld et al., 2009).

According to Briscoe and Ferranti (1988), for any development, local people themselves should be the primary decision makers, investors, maintainers, organizers and also overseers, instead of looking up for government or governmental agencies and donors to do everything. Furthermore, local communities and local ability should sustain resources and must be the guiding force right from design through to the implementation of the project. The integral part of strategy need to mobilize the community's involvement, which means that the primary role of government and donors alone must change from direct providers of services to that of facilitators. Of course, this does not suggest that the government should stand aloof, but it can play an advisory role in providing information, technical and managerial assistance (Briscoe and Ferranti, 1988). According to the World Bank Research Observer (1993), improving the quality of water supplies was a priority for rural development in developing countries. The strategies of governments and some international donors for tackling the water problem have always been supply-driven, neglecting the selection of appropriate policies. Later it became clear that effective planning should take into account what the rural community wanted and were prepared to pay for was the impetus for the World Bank's multi-country study of households' needs for the improved water service delivery (World Bank Research Observer, 1993) According to Jorgensen et al. (2009), the population increase, water pollution, urban development, climate change and drought have contributed immensely to the disparities between the availability of clean drinking water sources and the demand for human consumption. Indeed, in uThungulu/King Cetshwayo District Municipality that was confirmed by the visit by the President of the

Republic of South Africa, J.G. Zuma. On the day of visit, the district was allocated the sum of R23 million from the Drought Relief Fund (National Government) specifically earmarked for the provision of 32 new boreholes following a business plan that was approved by the Department of Water and Sanitation for the implementation in April 2015 (Moodly et al; 2015).

3.1. Water management strategies

According to (Chen et al., 2005; Marsden and Pickering, 2006; Kenney et al., 2008) as cited by Jorgensen et al. (2009), governments and water providers were planning to introduce a range of water management strategies. The researcher investigated the issue of water management or supply strategies which would assist municipalities in their endeavor to provide water to communities that were previously disadvantaged. According to Jorgensen et al. (2009), the current water consumption behavioral model did not encourage communities to conserve water appropriately and for that reason, they were proposing a new model for the better understanding of how household water should be managed by both providers and consumers. To them, Jorgensen et al. (2009), trust, consumption behavioral models and water conservation had pivotal role in household water management and consumption, in other words they would not save water if they felt others were not minimizing their water usage (Jorgensen et al., 2009).

According to Karpiscak et al. (1990), one single-family residing in Tucson, Arizona, was retrofitted with water-conserving instrument (fixtures), rainwater harvesting as well as gray-water reuse systems. After a four-year period of study, the use of water proved that there has been significant decrease at the house without reducing the residents' quality of life. The use of municipal water was reduced by 66 percent per day and total household use was reduced by 27 percent. Water for toilet flushing was only 14 percent of interior water used (Karpiscak et al. 1990). This behaviour presents a picture that if consumers were well educated by the municipalities on water conservation, a lot of water could be saved as well as unnecessary expenditure. Municipalities first, according to Jorgensen et al. (2009) need to lead the way by educating communities and providing equipment (fixtures) that would enable consumers to use water sparingly. According to Inman and Jeffrey, (2006) as cited by Willis et al. (2011) researchers have determined that water consumption within household hinges on numerous factors, which include; the number of occupants of the house (family members), the age of residents, education

levels of residents, lot size, residents' income, efficiency of water consuming devices (i.e. clothes washers, shower heads, water fittings, dishwashers and toilets) beliefs as well as the behaviour of consumers. Jorgensen et al. (2009) were of an idea that the understanding by communities or consumer on how water should be used and in what ways water savings can be realized could help to save billions of rand as well. Therefore, according to (Land & Water Australia, 2006) as cited by Jorgensen et al. (2009), developing of integrated socio-economic models of water conservation was surely needed. According to Howard and Bartram (2003) as cited by Kahinda et al. (2007), the quantity of water delivered and used for households is an important aspect of life, which in turn influences hygiene and therefore the public health at large. Kahinda et al. (2007), argue that lack of access to water supply and proper sanitation infrastructure constraints opportunities for people to escape poverty and it exacerbates the problems of vulnerable groups, like those individuals affected by HIV/AIDS and many other water related diseases (Kahinda et al. 2007).

Accordingly, outdoor use (garden irrigation, cleaning and car-wash) were thought to be more discretionary compared to indoor use and therefore, should be the first target for regulations through water use restrictions (Jorgensen et al. 2009). According to Bates et al., (2008) and Commonwealth of Australia, (2008b) as cited by Willis et al. (2011), the increasing demand on potable water resources which was as a result of population increase, droughts and unpredictable weather patterns caused by climate change was common in many parts of the globe. The uThungulu district municipality covers most of the arid land which has poor rainfall and such; it is one of areas in the KZN that lacks water, leaving its populace desperate. Therefore Corral-Verdugo et al., 2003) as cited by Willis et al (2011) confirm that saving water was a key whenever one designed educational water saving strategies. According to uMhlathuze Newsletter-June 2017 Edition for the uMhlathuze Local Municipality which falls under the jurisdiction of uThungulu/King Cetshwayo District Municipality, South Africa was regarded as a water scarce country. Therefore, water being one of the valuable "commodities" it was important to protect, save and manage this scarce resource to the best of municipality's ability. It was reported that as the City of uMhlathuze was regarded as the key to economic hub in KwaZulu-Natal, and a home to numerous industries it was important to sustain that large and growing economic centre as well as its residents and to understand their dependence on an adequate supply of water. According to the report,

a long term solution to water supply was eminent as the municipality and industries were eyeing for the waste water re-use within the area. The City of uMhlathuze had appointed a Transaction Advisor to conduct a feasibility study for the project so as to comply with Section 120 of the MEMA, the Municipal PPP Regulations (1 April 2005) and the Municipal PPP guidelines (2007) and other pieces of water legislations. On the other hand, the stakeholder engagement was rolled out on 3 and 4 May 2017 (www.umhlathuze.gov.za).

3.2. Water Restrictions for uMhlathuze Local Municipality Rural Communities

The rainfall received did not do much on Lake Levels hence the Drought was still persisting. Lake levels: Goedertrouw 19%, Cubhu 35%, Mzingazi 12%. The Department of Water and Sanitation was going to Level 5 restriction in July, 2017. User Level of restriction:

Industry 20% (was 15%)

Domestic 50% (was 40%)

Irrigation 80% (was 80%)

The City of uMhlathuze implemented water Restrictions as follows per day:

	TIMES			
HOUSEHOLDS	Morning, Water Supply (50%)	During the Day Water Supply (50%)	Afternoon, Water Supply (50%)	Evening No Water Supply
Urban	05h00 - 07h00	09h00 - 16h00	16h00 - 20h00	20h00 - 05h00
Rural	04h00 - 08h00	09h00 - 16h00	16h00 - 20h00	20h00 - 04h00
Commercials	07h00 - 22h00			22h00 - 06h00

(a) New tariffs/ Drought tariffs were implemented from the 01 July 2016.

- (b) Drought tariffs apply to ALL consumers regardless of usage, not only those who use more than 15kl. If a consumer used 11kl he would still be billed on stage 4 drought tariffs.
- (c) Communities were urged to harvest rain water and to save water at all times.

South Africa is fast running out of water. UMhlathuze municipality has been experiencing the worst drought since 1992, with dams at critical levels and diminishing rivers and streams. In light of the above, the City of uMhlathuze is currently faced with a complex challenge in the management of water supply and demand. This has affected all customers receiving water. The situation was expected to continue until water levels at the raw water source were increased, through rainfall. In an attempt to manage the situation, the municipality would apply water restrictions in the form of water closures at times that would be announced to the public in due course.

According to Ashton and Seetal, (2002 as cited by Turpie et al.), the increasing scarcity of water across the Globe has made it a highly tradable commodity. According to Sathyamurthi (2013), water is considered as extremely important for all developing countries or nations, such as India and South Africa. Water is also a basic resource which maintains daily life (Sathyamurthi, 2013). According to (Mackintosh and Colvin, 2003) as cited by Kahinda et al. (2007), drinking water quality provided in many rural areas was substandard. The common source of collecting water in South Africa and in most parts of rural areas for domestic use included rain water harvesting (DRWH), and collecting water from rooftop. Collecting water from roof surface requires that the first millimetres of rain water be flushed since it would be impractical to clean the roof surface to prevent pollutants and contaminants from getting into the storage tank. According to Kahinda et al. (2007), the sources of contamination of rooftop collected water could include dust from the soil, leaves from the trees, repellent insects, chemical deposits, as well as possible bird droppings. While applauding what was done by uThungulu/King Cetshwayo Municipality according to Eyethu Bay Watch News Paper (August, 23, 2017), that is, delivering water tanks (Jojo) to the uMfolozi Local Municipality for Nhlabosini area community which was still trapped in poverty, lacking clean drinking water. According to Kahinda et al. (2007), domestic rain water harvesting should be done with caution because normally, there was no regular cleaning of the water storage tank to improve the water quality (Kahinda et al. 2007). Further to that, the lack of access to clean drinking water supply constraints opportunities for communities to escape poverty

and also exacerbates the problems of vulnerable groups, especially those affected by HIV/AIDS and other diseases. According to (Dillaha and Zolan, 1984) as cited by Kahinda et al. (2007), where rooftop has been used as water catchment, periodic addition of a disinfectant such as chlorine to the water tank (Jojo) should be deposited to kill bacteria. Caution should also be practiced that microbial chemicals do not exceed international guidelines of drinking water (Kahinda et al. 2007).

3.3. Rural Women Water Woes and Child Mortality

Women and children usually bear the burden of water collection from dug-wells or communal water taps. It is said that in Africa alone, women and children may spend up to 40 billion hours every year walking for water collection, at times, in unsafe environments, which make them vulnerable to sexual assault and accidents. Time spent walking and the resulting diseases, at times keep children away from school (Cullinan, 2014). A lot of time is also wasted by women who should be doing some work at home and taking care of their families. Unclean and unsafe water and a lack of proper basic sanitation were seen to be undermining efforts to end extreme poverty and diseases in the world's poorest countries. Sub-Saharan African countries face some of these biggest challenges for an example, it was reported that 358 million people in the region lacked access to clean water and nearly 600 million lacked access to proper sanitation facilities. Out of those, the 82% who lacked access to improved water live in rural areas, while just 18% live in urban areas (RSWDS, 2014).

According to the report provided by SAHRC (2014), both unclean water and poor sanitation were a leading cause of child mortality in most underdeveloped and developing countries. At that time, statistics estimated that about 1,553 children die every day from diarrhea, caused by poor sanitation and poor hygiene systems. Notably, in most African countries women were more than twice as likely as men to be responsible for water collection. Again, it was estimated that, women and girls in developing and underdeveloped countries walk six to ten kilometers each day to collect water from dug-wells. Some school going age children were responsible for such activities using time which could be spent in school or at work. More than half of girls who drop out of primary school in sub-Saharan Africa do so because of home chores. A lack of reliable, clean water access also has deep socio-economic impacts. In total,

the World Health Organization estimated that 140 million working hours are spent collecting water each year in Africa, primarily by women and girls (SAHRC, 2014).

Studies have revealed that in Africa alone, women and children collectively spend up to 40 billion hours every year walking for water, at times, in unsafe environments, which also make them vulnerable to danger of sexual assault and accidents. The time spent walking to water resources and the resulting diseases keep some children away from school or work, taking care of their families (SAHRC, 2014)

The report further suggested that safe water in many parts of the world was regarded as the first step in breaking the poverty cycle. In fact, it said that every \$1 invested in improved and clean water supply and proper sanitation can result to \$4 to \$12 for the local economy, depending on the type of project. According to the International Institute for Environment and Development (2017), “No one suffers more from a change in climate than a child”

According to the report provided by Hofmann (2011), rural poor communities get unsafe drinking water in many ways, and they usually depend on more than one source to meet their water needs or demand. As stated earlier, the way in which access to water is today, it is being conceptualised, meaning that, the peri-urban water poor are largely invisible to most formal policy-driven approaches provided by local municipalities or governments. Where the peri-urban poor do have access to the formal system, this is in many cases complemented by other practices, as there are serious issues regarding the regularity and sufficiency of the service (SAHRC, 2014). In all the case studies, it became clear that the piped water network system was unable to meet rural community demands. As a result, the rural poor communities try to satisfy their water requirements by using a variety of practices driven by their needs, for an example, damaging municipal water supply main pipes. Many of needs-driven practices classified as informal and ‘unimproved’ represent the only reliable way for those communities to access some form of clean drinking water. During the water crisis or drought in rural areas, residents rely heavily on water provided through unimproved sources, as well as public and/or private water tankers who usually sell water to the members of communities. Women and children are largely in charge of providing water for their households, and rural poor women need to spend substantial amounts of time hunting water. It is estimated that women and children waist about 2 hours per day fetching

water from dug-well or streams and standpipes, losing precious time needed to do household duties or for a substantial amount an income (SUSTAIN: 2004) A recent incident (23/05/2017) in Nqutu-Ward 13) in Northern KwaZulu-Natal Province which falls under UMzinyathi District Municipality where three souls of young girls were lost while they were trying to cross the road to fetch water in a dug-well is a living testimony that indeed, women and girl children still have a burden of collecting water for their families. (Mavuso, 2017). Furthermore, they were vulnerable to all sorts of dangers.

According to Remigios, (2011) women, water and sanitation is a hand in a glove, that is, the two are not easy to separate because of their critical relationship. For Remigios (2011), women have a relationship with water and sanitation, by virtue of their gender responsibility to perform the tasks necessary for household and for survival, and also as mothers and carers they were often positioned at the centre in the provisioning of water. Remigios, (2011) says that city of Kadoma, in Zimbabwe was reported to have experienced serious water and sanitation problems for over a decade, without water and sanitation supply reaching households. It was reported that Rimuka alone, a highly density suburb in Kadoma, had also experienced water crisis, and as a result of bad sanitary conditions, a number of people were afflicted by cholera, because of using contaminated water. According to Remigios, (2011) people had to understand the situation of women, who have a responsibility of household maintenance and water collection in Rimuka (Zimbabwe) where severe water shortages existed. Therefore, it was recommended that clean drinking water should be accessible and sewage reticulation to meet the needs of the population and these services should be made in consultation with women who shoulder the burden of the local government which at times fails to deliver clean drinking water. According to Paddock (2014), World Health Organization on behalf of UN-Water report, a lot has been achieved in terms of water and sanitation through global funding assistance. But the report goes on to say that funding gaps were a stumbling block to the much needed to water and sanitation programme Paddock (2014).

3.4. Sanitation infrastructure in rural communities

According to Hosek (2013), local municipalities share authority with the district municipalities under which they are. According to (Shah&Shah 2000), local governments play a role among various entities of governments and network to entrench synergy and harness the untapped energies of the broader community for improving the

quality of life of residents. According to van der Waldt (2012), Part B of Schedule 5 of the Constitution of the Republic of South Africa views a local government as the vehicle to execute basic services like water, sanitation, removal of refuse and many other social needs and responsibilities of local citizens (van der Waldt 2012).

According to North (1911), sanitation is regarded as the man's best defence against his surroundings. Therefore, the principle involved in sanitation in rural communities differ in no respect from those of sanitary science in general, and the influx and gathering together of men in squalors in big cities or small towns modifies only the method of applying these principles (North, 1911). According to the (2006 information) as cited by Kahinda et al. (2007), sanitation is an important public health measure which is essential for the prevention of numerous diseases. Further to that, in South Africa, 16 million people (3.9 million households) were without adequate sanitation services. UThungulu/King Cetshwayo District Municipality forms party of South Africa and it also contributes to the figures of the households that do not have access to proper sanitation infrastructure.

According to the Agoramoorthy, G., & Hsu, M. J. (2009), sanitation is an integral part of human ecology and can further be defined as safe handling of excreta in the human environment. According to Mara et al. (2010), sanitation is a complex topic, with links to health and to social and economic development. It affects every individual on the planet, but it is championed by few. According to DWAF (2002) as cited by Madi (2016), basic sanitation services refer to a minimum acceptable standard of sanitation service required by people in a particular area. Further to that, South Africa basic sanitation service entails the provision of appropriate health and hygiene education and it is a toilet which is acceptable to the user's safety, environmentally sound, easy to clean, private, well-ventilated, and which keeps smells to the minimum and prevents disease carrying insects and pests. Therefore, as a complex topic, according the report, those who wrote on toilet habits were often branded as vulgar and because of that, only a few scholarly documentations exist on the toilet issue (Madi, 2016).

According to Sanan and Moulik (2007), sanitation remains one of the biggest development challenges in all underdeveloped and developing countries. For any underdeveloped and developing country improving sanitation would mean achieving one of the health-related Millennium Development Goals (MDGs), that is, to reduce child

mortality and combating disease (Sanan and Moulik 2007). According to (Akter et al.,2014) while it was often reported that there was an increase in households with access to clean drinking water moving towards achieving the Millennium Development Goals (MDGs), but the proportion of those with access to proper sanitation is often said to be lagging behind water supply. For instance, Bangladesh was regarded as a low-income country which according to the researcher resembles the rural community in uThungulu/King Cetshwayo local government in deep rural, where the poverty rate is higher compared to urban areas, so, the use of sanitary latrines over time would also be a challenge.

According to (Langergraber and Muellegger 2005), 2.4 billion people in rural and urban areas do not have access to adequate proper sanitation services. Mara et al. (2010) as cited by Pickering (2015) concurs with the latter findings that there were nearly 2 billion people in the world who still practised open defecation in the veld. One (1) of the 2.5 billion people were reported to be without access to an improved sanitation facility, and almost 70% of them lived in rural areas (Pickering, 2015). Progress in gaining access to improved sanitation has been the slowest in sub-Saharan Africa, where it is reported that sanitation coverage has only increased by 5% between 1990 and 2012. According to the Human Development Report (2006), the lack of proper sanitation killed 3900 children on average daily in Africa and Asia, and a report revealed that about 2.6 billion people recorded from the developing countries did not have access to proper toilets and as such, they were forced to defecate in the open veld. This suggests that as uThungulu/King Cetshwayo Local Government is in South Africa and South Africa is also one of the developing countries, it therefore also contributes to the statistics quoted above (2.6 billion people). Also, according to Clasen et al. (2012), diseases associated with poor sanitation were a cause of a large burden of disease globally. They (Clasen et al. 2012), further say that other common diseases related to poor sanitation were soil-transmitted worm infections, trachoma, etcetera. The outer world was regarded by North (1911), as the medium which contributes immensely to the bacteria which eventually would invade the human body and finally destroy it by growing their colonies of poisonous products. According to Yusuf and Hussain (1990), a report presented by WHO (2004), three quarters of the urban population in developing countries had enough sanitary disposal facilities compared to people in the rural areas. The household

sanitation which is an important determinant of health or in many cases of population disease has been neglected in most developing countries (Yusuf and Hussain 1990).

The lack of adequate and appropriate sanitation affects women and girl children, adversely by impacting to their health and well-being. What does appropriate sanitation mean? It does not only include toilets, but bathing, washing, cleaning and better hygienic facilities. Women face the shame of open defecation, especially to be seen by men while relieving themselves on the open veld in full view of the public (Fisher, 2006 Fisher, J. (2006). Numerous reports have revealed that women and girl children were at a greater risk of being raped or experiencing sexual harassment when travelling to and from bushes for open defecation (OD) (Benjamin, (2000). In most cases it was reported that women often had to wait until it was dark to go out for open defecation and at times go early in the morning, when it was still dark outside, around 4 o'clock before men started going out. If a woman or girl child experienced a stomach upset, at night, that person would be in trouble, fearing for snakes. Communities in the rural areas of the uThungulu/King Cetshwayo Municipalities are likely to face a similar situation, which is OD. As alluded to earlier by Hosek (2013), that local government share the responsibility with the district municipalities under which they fall, delivering on sanitation serves is their mandate. The provisioning of sanitation infrastructure is regarded as a building block to improving quality of life, guaranteeing safe and healthy living conditions for communities, and also the alleviation of poverty (Hosek, 2013). According to a report from Kampala in Uganda in 2012, access to improved sanitation was a key to preventive measure against sanitary-related gastro-enteric diseases like diarrhoea. As Rio in Brazil was preparing for the World Cup and Olympic Games, investing in innumerable highly visible projects that provided a “bang for your buck” for the city’s marketing, sanitation did not fall to the bottom of public priorities as many residents were still suffering from the poorly functioning sanitation systems (Hosek, 2013).

3.5. Danger Posed by Absence of Sanitation Infrastructure in Rural Areas

According to Mara et al. (2010), human excreta, faeces, were the most dangerous thing to health. Studies revealed that nearly one gram of fresh faeces from an infected person contains around 106 viral pathogens, 106–108 bacterial pathogens, 104 protozoan cysts, and about 10–104 helminthic eggs. In 2008, for instance, the then Prime Minister of India was quoted in 1923 as saying, “sanitation is more important than

independence”. Trachoma is endemic found in the world's poorest societies and countries. It is chiefly caused by the bacterium *Chlamydia trachomatis* and it is the world's leading cause of preventable blindness. Further to that, if there is no proper sanitation infrastructure as well as the proper management of human excreta in a particular society, chances are that the number of *Musca sorbentis* flies (the vector for trachoma) caught on children's eyes (Mara et al., 2010).

3.5 Proper toilet uses and hygiene

According to Langergraber Günter and Muellegger Elke (2005), between 1999 and 2000, more than 250 dry toilets had been erected for private households and for the public at large. Private toilets were more accepted than for the public ones. Further to that, the proper use of the toilets increased with the better “know-how” of the technology. Public dry toilets were usually found in bad condition and they were highly misused by members of the community. Langergraber Günter and Muellegger Elke (2005) noticed that according to the research conducted men were often reluctant to sit down for urinating. According to Johansson et al., (2001) as cited by Langergraber and Muellegger (2005), such a practice would lead to a loss of urine and a mixing of urine with faeces. According to Paddock (2014), death among children in underdeveloped and developing countries were still associated with poor sanitation and hygiene facilities. For the public toilet use, it would be monitored and one or more audible messages is produced which instruct users of the toilet regarding next steps in toilet use, that is, for hygiene purposes. According to Henkel, (1999) a significant number of men fail to complete one or more of the steps required to use the toilet properly (Henkel, 1999).

3.7. Importance of Dry Sanitation in Rural Community

According to Barbara (2007), dry forms of sanitation provision could be one potential alternative to address rural sanitation needs. It (DS) could also be part of the solution to water scarcity, water quality deterioration and lack of resources to provide and maintain waterborne sewage systems in rural areas. A number of countries, both developed and developing nations, were facing the problem of increased needs for water supply, dwindling sources of water, shortage of qualified human resources to provide sanitation services to rapidly growing urban and peri-urban populace, public health risks because of inadequate water and sanitation provision. Therefore, dry sanitation (DS) may be part of the solution to water scarcity and a lack of resources to provide or maintain waterborne sewage systems in urban areas (Barbara, 2007). Further to that,

composting and dry toilets urine and faeces could be used as manure in agricultural products (Barbara, 2007).

3.8. Summary

The chapter discussed the significance of water to all, fauna and flora and rural communities. It also discussed a need for the provision of sanitation infrastructure, both in town and in rural dwellers. The issue of water-related diseases, caused by unsafe drinking water and the use of improper sanitation facilities was also discussed. The above chapter also highlighted that the absence of basic needs like safe water and proper sanitation were leading causes of death in most developing countries like South Africa. The next chapter will discuss local governments as agents responsible for the provision of basic needs to communities. This is further guaranteed in the Bill of Rights as well as the constitution of the Republic of South Africa (Act 108 of 1996), and emphasised by the human rights-based theory. And as a result of that, post-apartheid government reconstruction and development plan was premised on a new system of local government and that local government should be a self-conscious effort to re-dress the imbalances of the past which greatly tempered with the human rights (van der Walddt, 2012). The following chapter will discuss municipalities as government's agents for development and provision of basic services to all communities, beyond colour, race or creed, in towns, cities and rural.

CHAPTER FOUR

LOCAL GOVERNMENT FOR SERVICES AND DECENTRALISATION OF POWER

4.0. Introduction

This chapter discusses the local government as the closest sphere of government solely responsible for addressing the needs of the people as perceived by communities. In this study, uThungulu/King Cetshwayo District Municipality (with five local governments under its jurisdiction) should take care of community closest to it. According to van der Waldt (2012), the “word” local when used for government, refers to a particular part of a geographically defined type of area such as a region. Therefore, according to Reddy (1999) as cited by van der Waldt (2012) a local government is the level of government created to bring government to the local populace and to give citizens a sense of belonging and participation in the political processes that influence their daily lives. In other words, a local government is an institution that the central government establishes for the residents of a particular area for close contact for their daily needs.

This can be achieved through municipality programme popularly known as the Integrated Development Plan (IDP). The IDP is a five-year plan which serves as a hub for all activities taking place within a particular municipality. According Reddy (1999) and Brenner, (2004) the local government refers to a relatively small geographically area in which a sense of consciousness was evident. Further to that, it is regarded as a distinct sphere as opposed to tier of government and is thus regarded as an equal sphere central to provincial government (van der Waldt, 2012). According to Vosloo, Kotze and Jeppe (1974) as cited by van der Waldt (2012), the local governments were first established by both Dutch and British colonists in South Africa during the times of the Cape Municipal Ordinance in 1836 (van der Waldt, 2012). As indicated earlier, according to Cross and Mullen, (1987) service delivery is expected in every country after the fall of the colonial government, which in this case should be through local government structures (Cross and Mullen, 1987).

According to Reddy and Biyela (2003), the establishment and development of rural local government structures in the Province of KwaZulu-Natal was a watershed due to the historical and political legacy of the province. The introduction of local government on 5th December 2000 paved a way-out for the Seven Regional Services Councils that had

been established to manage rural areas, predominantly occupied by blacks to transform them into Districts Councils. District Municipalities were facing numerous problems like funding, capacity development, provision of basic infrastructure as well as the politicization of their activities. One other fundamental issue was the blending of local democracy with the traditional leadership, coupled with land demarcation issues. Traditional structures had to transform and become integral part of the local governance process and development processes. This meant that there had to be a strong dovetailing mechanism to deal with local communities, traditional structures and the elected political councillors, at the same time, trying to secure community participation and ensuring legitimacy in the development processes (Reddy and Biyela, 2003).

According to Mgwebi (2010), the South African local governments after 1994 were still in their developmental orientation. This was as a result of a range of structural disadvantages caused by the apartheid, for example, some rural areas still require government intervention for the basic infrastructure development, guided by high levels of skilful engineers. Further to that, local municipalities had a role to play in ensuring that democracy worked for the poor at the grassroots (Mgwebi, 2010).

If Ghana could be used as a yard-stick or crude example, it got its political independence from British colonizers way back in March 1957. However, according to Antwi-Boasiako (2010), there seem to be very little improvement in their political structure. The entire populace in Ghana do not enjoy the fruit of their democracy because the role of the local government which had its discretionary powers at the grassroots, never took off, in spite of what was contained in the government article 240 (2b) which stated measures to be taken to enhance the capacity of local government officials to plan, co-ordinate, manage and execute policies to address matters affecting local people (Antwi-Boasiako, 2010). This suggests that after many years of struggle, people expected nothing else other than service delivery after many years of colonization. Therefore, according Madumo (2015), the system of local government in South Africa was new altogether and thus its sole mandate was to address the developmental dilemmas created by former Apartheid government (Madumo 2015).

In South Africa, the issue of local government emerged at the Cape of Good Hope after the arrival of the Dutch in 1652, and the system was there until the British took over in

1806, that is, according to (Vosloo, Kotze & Jeppe, 1974) as quoted by van der Waladt, (2012). According to Vosloo, Kotze and Jeppe, (1974) as cited by van der Waladt (2012), the British established local government in 1836. According to Graythorne (2003), as cited by van der Waladt (2012), in 1910, South Africa saw its first constitution in the united country which was followed by the 1996 constitution which completely change the face of South Africa (van der Waladt, 2012). According to Madumo (2015), historically, South Africa had municipal boundaries structured according to the racial demographics of the population of a particular jurisdiction. Like in terms of the Group Areas Act of 1959, a specific racial group was not allowed to reside in an area designated for a particular different race, but after the democratisation in South Africa in 1994, other races have moved in to the former white designated areas (Madumo 2015).

According to Madumo (2015), South Africa is a unitary state, of course with some federal elements of self-governance through its municipalities and provincial governments. To both municipalities and provincial governments, the Constitution serves as a guiding thread and a supreme law of the country and that any other legislation or policies that were not consistent with it were regarded as null and void. Therefore, municipalities and provinces had their own limited autonomy as per the Constitution of the Republic of South Africa of 1996, (Act 108 of 1996). Municipalities in South Africa were expected to play a pivotal role in propelling the agenda of development for the national and provincial governments in ensuring the deepening of the democratic culture in communities at the grassroots (Madumo, 2015). Hence, according to (Stytler and De Visser 2007), as cited by Madumo (2015), local governments were regarded as an integral part of the constitutional system of decentralised administration in order to improve services (Madumo, 2015).

4.1. Decentralization of Power

According to Antwi-Boasiko (2010), decentralization is regarded as a process where central government transfers political, fiscal and administrative powers to lower levels, that is, administratively. According to Kreter (2015), the Brazilian government also introduced a system of decentralized water resources and integrated water management strategies for water supply and sanitation in order to meet water demands of communities. When South Africa got its independence from the Apartheid regime in February 1990 resulting to all political parties unbanned, and shortly after that, had its

first non-racial democratic elections in 1994. In 1998, legislation on local government was passed, aiming at empowering local governments to fulfil the constitutional objectives, which were an attempt of addressing the imbalances of the past (apartheid era).

Despite numerous challenges facing local governments in South Africa such as effectiveness and inability to provide services, according to van der Walddt, (2012), decentralization of democratic local government was a reality. The government was now closer to the people. Such a move brought with it the concept of public administration. According to Antwi-Boasiko (2010), public administration refers to an art of managing of the scarce resources, which include financials that should be strategically used in order to maximize their utilization in the interest of the community in the region or district. In order for public administrators to be seen as effective and productive, their area of administration must be politically and clearly defined, including the issue of decentralization. Decentralization, is more likely to encourage and promote not only democracy, but also provides locals with the chance to have control over their own governance. According to Duncan (2007) as cited by Antwi-Boasiko (2010), decentralization is a process where central government transfers political, fiscal and administrative powers to lower levels in an administrative and territorial hierarchy. In a nutshell, it holds regional leaders accountable to their constituents instead of the central government. Normally, political decentralization leads to deconcentration. According to Assibey (2000) as cited by Antwi-Boasiko (2010), deconcentration is regarded as a form of network of central power and sub-state institutions with the elites of those constituencies. Further to that, Assibey (2000) as cited by Antwi-Boasiko (2010), viewed, deconcentration as a power sharing strategy where power is transferred from central operating agencies to districts. In that case both provincial and the central government under such an organizational structure use the local governments to improve efficiency and effectiveness of delivering services (Antwi-Boasiko 2010).

Chapter 7, section 151(3-4) of the constitution of the Republic South Africa warrants local government to govern the affairs of its community subject to national and provincial legislation as approved in the constitution (Act 108 of 1996). According to Antwi-Boasiko (2010), although local governments have that latitude of discretionary powers of independent role of the local governments at the grassroots, measures should be taken

to enhance the capacity of local authorities to plan, initiate, co-ordinate, manage and execute policies in respect of matters affecting local people (Antwi-Boasiko 2010). In South Africa, the transitional local government elections were conducted in 1995 which saw local councils which incorporated rural areas elected. With the involvement of local citizens in electing their leaders, it would be likely for them (elected leaders) to improve government efficiency and ensuring regional accountability where the local leaders have a mandate of the constituents. This suggests that uThungulu/King Cetshwayo District Municipality through its elected officials should deal with issues affecting communities within its jurisdiction. Pimlott, (1951) as cited by van der Walddt, (2012), cautioned that with the modern administration if leaders do not constantly speak to people as individual, and through groups to which they belong, the government could come to a standstill. The public was never involved in crafting the actual implementation plan, and monitoring and evaluation procedures. It was also concluded that service delivery was characterised by lack of clarity on the criteria used for creating the beneficiary list. However, although the community was never satisfied with the lack of clarity on such an important aspect of the delivery of services, the level of infrastructural development, or with the delivery of services itself, but their being continuously informed and consulted by the municipality to reassure them of the municipality's commitment to service provision would be convincing. According to Cele (2015), in her findings while conducting a research in uMhlathuze Local Government for community on delivery meetings, she presented a picture that members of the public were never involved in crafting the actual implementation plan, and monitoring and evaluation procedures. Furthermore, service delivery was at times characterised by lack of clarity on the criteria used for the drafting of the beneficiary lists in any form of the service to be provided to the community. Even if communities were at times not satisfied with the lack of clarity on a certain important aspect of the delivery of services, the level of infrastructural development, or the delivery of services itself, some community members were never informed or consulted by the municipal officials to reassure them of the municipality's commitment to service provision. This can only be achieved with the adherence to objectives and roles of local governments (van der Walddt, 2012). In that way, municipalities become government agencies and mediators that interface daily with the people (Madumo, 2015). However, according to a report provided by Mgwebi (2010), because of municipalities failing to deliver basic needs community members had a general negative perception regarding the overall performance of the municipal

governments and indeed the entire local government system. In conclusion, according to Shah (2006), as cited by Bratton (2011), despite the process of decentralization, local governments in Africa still had rarely attained the spirit of accountability and responsibility, envisaged as the outcomes of winds of reform (Bratton, 2011). For the first time in history, blacks, who were previously disadvantaged were make their mark on the ballot paper to elect the government of their own choice, and also enjoy the privilege of identifying and present their own needs to their own councillor as the Municipal Systems Act suggests (Local government: Municipal Systems Act, No.32 of 2000 and regulations, Chapter 5, section 27 to 30). The main objectives are there to guide local municipalities to execute their responsibilities.

4.2 Objectives and Evolving Roles of Local Governments in General

4.2.1. Objectives

For the South African perspective, local governments, among other things are required:

- (a) To provide democratic accountable government for local communities
- (b) To encourage the involvement of communities and community based Organisations in the affair of their local structures
- (c) To provide sustainable services
- (d) To promote economic development
- (e) To promote safe and healthy environment

It must be understood that uThungulu/King Cetshwayo District would also be expected to abide by the same objectives as encapsulated on Chapter 8 section 73 (1&2) -general duties, in Local Government Municipal Systems Act, No.32 of 2000 and Regulations. The latter document does specify the responsibilities of local governments.

4.2.2. General Roles of Local Governments

According to Madzivhandila and Asha (2012), South Africa's post-apartheid National government entrusted the delivery of services to its local spheres of governance, which are close to communities for contact. According to (Shah & Shah 2009), local governments needed to play a mediator's role among various entities of governments and network to entrench synergy and harness the untapped energies of the broader community for improving the quality of life of residents. In the same vein, van der Waldt

(2012), views Part B of Schedule 5 of the Constitution of the Republic of South Africa local government as the vehicle to execute the following responsibilities, but not limited to:

- (a) Supply of electricity,
- (b) Provision of sewage and sanitation,
- (c) Provision of health services,
- (d) Provision of local transport,
- (e) Provision of abattoirs and fresh food market within the district,
- (f) Supply water for household use,
- (g) Refuse removal, etcetera. to name a few.

However, according to (Ayee, 2008) as cited by Antwi-Boasiko (2010) says, despite the comprehensive decentralization policy of the government since the late 1980s, Ghana still have people trapped in a highly centralized top-down public administrative political system. Therefore, according (Madzivhandila and Asha (2012), the Integrated Development Plan (IDP) was adopted to allow and guide the local municipality's ability to delivery services, with communities identifying their own needs, across the Republic of South Africa. This means that even the previously disadvantage rural communities in uThungulu/King Cetshwayo district should benefit from local government services delivery.

4.3. Rural Governance

According to Goldman and Reynolds (2008), there is no formally agreed definition of 'rural' within the Republic of South Africa. But according to The Rural Development Framework (RDF) of 1997, rural areas are defined as the sparsely populated areas in which people farm or depend on natural resources, including small villages and towns. In addition, these areas include the large settlements in former homelands which were as a result of the Apartheid Regime removing black communities to these arid areas, causing them to depend on migratory labour for their survival (Goldman and Reynolds 2008). This means that such areas can be defined as "rural" where heterogeneous groups live. According to the (Stats SA 2003) these types of areas with highest population were found mainly in Limpopo, constituting (87%) and in the KwaZulu-Natal with (54%). Rural areas were regarded as poor areas. For a fact that the KwaZulu-Natal forms part of the provinces that have a huge number (54%) of populace in rural areas,

which incorporate the uThungulu/King Cetshwayo District Municipality suggests that it is an area that requires attention of the local government for service delivery. The KwaZulu-Natal formed part of 13 presidential nodes that were covered in the 2006 for Integrated Sustainable Rural Development Programme (ISRDP). That survey, (2006) suggested that poverty was much higher in rural areas. Therefore, communities in the province of KwaZulu-Natal should be in a better status in view of its position as it was regarded as one of those areas that were identified as the presidential nodes in 2006.

4.4. Local Municipalities in uThungulu/King Cetshwayo District Municipality

UThungulu/King Cetshwayo District Municipality is located on the North-Eastern region of KZN on the eastern sea-board of South Africa. King Cetshwayo District Municipality is a category C municipality. It covers an area of approximately 8213 square kilometres, from the agricultural town of Gingindlovu in the south, to the UMfolozi River in the north and inland to the mountainous beauty of rural iNkandla. The district is a home to five local municipalities: uMhlathuze, uMlalazi, Mthonjaneni, iNkandla and uMfolozi. UThungulu/King Cetshwayo District Municipality is responsible for the provision of basic services in bulks to all the latter municipalities under its jurisdiction. According to the Constitution of the Republic of South Africa, Act 108 of 1996 as Amended, Chapter 87, Municipal Structures Act, No. 117 of 1998 and Regulations as Amended, and the Municipal Systems act, No.32 of 2000 and Regulations as Amended, the district can only execute its mandate through the implementation of the IDP received from various local municipal councils under its jurisdiction. In turn, municipal councils shall have received lists of priorities from various respective ward councillors. According to the researcher, it is likely that the underlying factor between the service delivery protest and communities or dwellers come from the list of needs which is prepared by municipal councils and then taken down grassroots for discussion, and not visa-versa.

4.5. UTHUNGULU/KING CETSHWAYO DISTRICT MUNICIPALITY MAP-DC-28



Figure: 1 (Local Municipalities falling under uThungulu District Municipality)

uMfolozi (KZ 281) uMhlathuze (KZ 282) iNkandla (KZ 286)
uMlalazi (KZ 284) uMthonjaneni (KZ 285)

4.6. Position of uThungulu/King Cetshwayo District Municipality

UThungulu/King Cetshwayo District Municipality is located on the North-Eastern region of KZN on the eastern sea-board of South Africa. King Cetshwayo District Municipality is a category C municipality. It covers an area of approximately 8213 square kilometres, from the agricultural town of Gingindlovu in the south, to the uMfolozi River in the north and inland to the mountainous beauty of rural iNkandla. The district is a home to five local municipalities: uMhlathuze, uMlalazi, Mthonjaneni, iNkandla and uMfolozi.

4.7. Population size in UThungulu/King Cetshwayo District- 201

KZN Province & KDM- Loc. Govt.	Population size	%KZN	UThungulu population	Square KMs	KZN %	Population Density
KwaZulu-Natal	9937581	100%		93 378	100%	112.5
UThungulu	570529	87	100	8213	88	111.8
UMfolozi	128 241	12	14.0	1208	13	106.2
UMhlathuze	347 429	33	37.8	789	08	440.2
Ntambanana	71660	07	7.8	1084	12	66.1
Umlalazi	213224	20	23.2	2214	24	96.3
Mthonjaneni	47320	05	5.2	1087	12	43.5
Nkandla	110084	10	12.2	1830	20	60.2

4.8. Integrated Development Plan (IDP)

South Africa's post-apartheid government entrusted the delivery of some services to its local spheres of governance, which is close to communities for contact. Municipalities were required to render basic services so as to address existing backlogs created by separate development that was adopted by the Apartheid Regime to ostracize blacks. The Integrated Development Plan (IDP) was crafted and adopted as an instrument to enhance the local municipality's delivery of services. In practice, though, it has become evident that rendering services such as clean water, proper sanitation, electricity, as well as health facilities has remained a major challenge for local municipalities across South Africa. For the majority of local municipalities, the IDP has apparently become business as usual rather than an enabling instrument or document. According to Hungwe (2017), local governments were no longer expected to render community basic services only, but also to serve as an agent of development. Further to that, he

concretised his conviction by referring to the Constitution of the Republic of South Africa 1996 (Act 108 of 1996) as a cornerstone. According to (Madumo 2015), the IDP, a five-year municipal strategic plan (White Paper on Local Government of 1998) was meant for addressing the challenges which include developing sustainable infrastructure and settlements which meet the needs of the people and improving their quality of life, especially the indigent communities. It is through that plan that the municipality would be able to establish a developmental plan for the short, medium and long term. If well crafted (IDP), local democracy becomes nourished and strengthened and this can only be realized by community participation in municipal affairs that affect their daily life. The proper involvement of communities could also:

1. Encourage community organisations in matters of importance to local government.
2. Ensure that the IDP helps municipal officials to use scarce resources effective.
3. Help to speed up service delivery as the plan shows least serviced and the most impoverished areas.
4. Help to attract some additional funds from the national government as well as private sectors that may be willing to invest to municipalities with the clear development plans.
5. Help to overcome the legacy of apartheid with the top-down kind of approach without the involvement of communities.

Municipal resources were used to integrate rural and urban areas and extend service to the poor.

According to the Integrated Development Plan (IDP-road map) therefore, for service delivery in uThungulu district's council, the highest priorities aimed at eradicating rural backlogs in water supply and sanitation, as gauged against Reconstruction and Development Programme (RDP) standards (www.kingcetswhayo.gov.za).

4.9. CHALLENGES FOR MUNICIPALITIES IN PROVIDING WATER AND SANITATION SERVICES

4.9.1. Municipal Challenges in Provisioning of Water Infrastructure

According to Nengwekhulu (2009), whilst the government had performed far much better than the pre-1994 regime (Nationalist Party) government, however, poor quality infrastructure, poverty (high rate of unemployment), poor health services, acute shortage of water infrastructure, falling of education standards, etcetera, still dog the

post 1994 (ANC) government. Madumo (2015), concurs with Nengwekhulu (2009), that since the democratisation of various institutions in South Africa in 1994, the government had taken great strides in ensuring development and the promotion of its economic growth through specific regulations targeted at improving the general wellbeing of its populace, more especially the poor. Surprisingly, according to Madumo (2015), with such good progress recorded to its (government) credit, it became increasingly challenging for the government to accelerate development due to some difficulties, among other things, challenges were associated with corruption, mismanagement, maladministration and so forth. Further to that, Shongwe (2016), reported that the community of eMalahleni, Mpumalanga Province were still complaining about the poor quality of water provided and that such situation had been with them (community) for a long time. According to the 2017/18 to 2019/2020 IDP, about 80% of the population in uThungulu is in rural, and 53% of the entire populace is between 0 and 19 years of age. In this figure (80%), women alone make 53% of the population and there were large disparities in settlement concentrations.

The huge challenge experienced by the uThungulu local government was to provide basic services such as clean drinking water and safe sanitation to the people. The need to address poverty was one of the most challenging issues. King Cetshwayo District allocates almost half of its annual budget to capital infrastructure projects in the local municipalities for the delivery of basic services of residents who live in rural homesteads. The severe drought conditions have led to water sources running dry, thus escalating challenges to water and sanitation service delivery programmes aimed at eradicating rural backlogs for the basic infrastructure (www.kingcetswhayo.gov.za). According to Kreter (2015), since water supply in rural and remote areas is mostly provided by wells and streams free of charge, the financing of water treatment facilities becomes a challenge to allocate responsibilities and costs for infrastructure development and maintenance of water treatment plants. According to van der Waldt (2002), some of the most significant challenges local government usually face were:

1. Limited tax base: a small portion of the local community (farmers) pay for services rendered.
2. Because of non-payment- central government increasingly providing bridging finance to maintain essential services, for example, sewerage and water.
3. Population increase- squalors put further strain on existing limited infrastructure

and staggering service delivery.

4. Bulk tariff increase, for example, electricity and water distribution for districts (van Der Waldt 2002).

According to (Ashton and Haasboek, 2002) as cited by Turpie et al. (2007), South Africa is a chronically water stressed country with between 500 m³ and 1000 m³ of its water available per person per year. Scholes (2001) as cited by Turpie et al., ((2007) revealed that surface water was already heavily committed for usage, and that water was imported from South Africa's neighbouring countries like Lesotho, and that the limited groundwater resources did not offer much reprieve. Therefore, Ashton and Seetal (2002), as cited by Turpie et al. (2007), cautioned that it was necessary for South Africa to explore other solutions and avenues to augment and conserve water supplies. In South Africa, there are not enough fresh water resources available, and it is regarded as the 30th country with scarce water in the Globe. Coupled with that, is the fast growing economy, population growth and a number of other social developmental needs, and the demand for water is definitely expected to rise. According to the statistics released by UNICEF¹² (2013), 768 million people still use unsafe drinking water sources. Although some of the local municipalities in the district of uThungulu showed an increase in the percentage of households with piped water on-site, uMfolozi and Mthonjaneni were still trapped in poverty, respectively, 2004 and 2014 (IDP FOR 2011/12 – 2016/17 FINAL REVIEW 2016/17).

4.9.2. Challenge in Providing Sanitation Infrastructure

Poverty is a condition where people's basic needs were not being met. The lack of basic services like proper sanitation is a key symptom of poverty and under-development. South Africa has well developed and developing districts, but still, about 9.7 million of the people lack proper sanitation services which have resulted to health risk hazards in the society. According to the report provided by the (Department of Water Affairs and Forestry, 1994) the South African government committed itself to provisioning of sanitation services and related free basic services in rural areas. In post-apartheid South Africa, the government of the day is still fighting the legacy of poverty and under-development in rural areas.

4.9.3. Fiscal Challenges in Municipalities

According to the information gathered by the Parliamentary Monitoring Group (PMG)

meeting together with the office of the Auditor General and the Department of Cooperative Governance and Traditional Affairs (COGTA), in 2014 they both quoted Chapter 13 of the Constitution of South Africa (Act 108 of 1996) as a guiding principle on the equitable division of revenue among the three spheres of government and the fiscal powers of provincial and local governments. They further explained that the South African Intergovernmental Fiscal System had been in place for the past 18 years, and that it allocates 9% of national raised revenue to Local Government, 90% was shared between national and provincial government. Over and above that, they gave clarity on the modus operandi of the Medium Term Expenditure Framework (MTEF) for the allocation of funds among the three spheres of government for what they will need to be delivering within the next three years.

The total amount of conditional grants for municipalities within the MTEF was about R130 billion. According to the figures presented at the meeting, Municipal Infrastructure Grant (MIG) receives a lion's share. For the equitable share within the MTEF, R279 billion go to municipalities of South Africa. The distribution amongst provinces, indicates that KZN Province receives the highest due to the formula currently utilised based on the population dynamics of a particular area. All municipalities were supposed to be generating revenue from their own trading services like property rates, electricity, water, waste management, refuse removal and other avenues at their disposal. From the look of things, if one compares revenues generated by municipalities to the transfers that come from national government, it becomes very clear that rural municipalities and their communities were highly dependent upon government transfers (Northern Cape-NCOP, 2014). In uThungulu/King Cetshwayo District Municipality, part of its population is in rural area, which could also make it not possible to collect enough revenue, thus leading to poor service delivery. Some of the expenditure challenges which had been presented were expenditure related. It became clear that a lack of municipal readiness to address extension of basic services to areas where there were no services at all, especially with regards to project prioritisation and the lack of information regarding basic service backlogs per ward in certain municipalities, non-functioning of water schemes which at times result in lack of water supply, outdated infrastructure and poor project preparation to achieve efficiency and attraction of additional or alternative funding were trivial challenges facing local governments. Subsequent to that were challenges of the overloaded waste water treatment works, the deteriorated conditions

of municipal roads, unlicensed landfill sites, and the lack of operations and maintenance plans, couple with that was high levels of vandalism of infrastructure assets as well as high losses of water and electricity due to illegal connections. A lack of implementation of municipal by-laws which could generate thousands of rand was another area of grave concern (Northern Cape- NCOP, 2014).

4.9.4. Debts Owed to Municipalities

At the time of the NCOP in the Northern Cape in 2014, the aggregate municipal consumer debt stood at R93.4 billion, as of 31 March 2014. Due to the lack of enforcing by-laws, municipalities had been unable to collect that money. The largest amount, R57.5 billion was owed by households, R19.3 billion owed by business and R12.5 billion owed by other debtors. Debtors were never listed according to provinces, but interestingly, Gauteng generally assumed to have highest number of employed people was named as the one with the highest total amount outstanding- R40.9 billion (Northern Cape- NCOP, 2014). According to Mshengu (2017), City Press News Paper, edition for 3 December, 2017, Water and Sanitation Ministry threatened to cut off 30 municipalities that still owed the department millions of rand. It should also be mentioned that among those mentioned bellow, towns like Harrismith and Kestell failed to submit to the Auditor-General their financial documents for the 2016/17 financial year (Mshengu, 2017). According to the Zululand Observer for 03December, 2017, Zululand District Municipality (KZN), was going to meet with the Department of Water and Sanitation on Monday, 04 December 2017, on the issue of its debt. With the needs of citizens at heart, members of parliament Portfolio Committee resolved that an amicable alternative should be found and not to cut water service from 8 December as mentioned previously (Myeni, 2017).

Water Debts as at 03 December 2017-South Africa

Municipalities failing to pay for water

Total owed: **R10.7 billion for water supplied**

Water and Sanitation departments' Water Trading Entity: **R3.9 billion**

Various Water Boards: **R6.8 billion**

Gauteng		
Emfuleni local municipality	R270 153 387	
Limpopo		
Vhembe district municipality	R642 876 734	
Mopani district municipality	R274 795 907	
Mpumalanga		
Lekwa local council	R450 200 841	
Msukaligwa local municipality	R384 958 301	
Emalahleni local municipality	R144 654 434	
Mbombela local municipality	R103 031 636	
Dr Pixley ka-serve local municipality	R86 787 181	
Dipaleseng local municipality	R62 604 901	
Eastern Cape		
Amatole district municipality	R50 661 382	
KwaZulu-Natal		
Zululand district municipality	R56 360 784	
North West		
Mahikeng local municipality	R228 855 994	
Dr Ruth Segomotsi Mompati DM (Lekwa - teemane local) municipality	R195 078 429	
Maquassi hills local municipality	R114 632 660	
JB Marks (Potchefstroom) local municipality	R69 551 269	
Ngaka Modiri Molema local municipality	R62 933 833	
Madibeng local municipality	R59 837 027	
Ditsobotla local municipality	R47 064 004	
Northern Cape		
Nama-khoi local municipality	R97 794 551	
Dikgatlong local municipality	R53 464 855	
Tsantsabane local municipality	R24 972 589	
Dikgatlong local municipality	R11 112 246	
Gamagara local municipality	R8 376 736	
Free State		
Matjhabeng local municipality	R1 849 226 784	
Mangaung metro municipality	R349 227 064	
Maluti a Phofung local municipality	R233 925 397	
Kopanong local municipality	R196 689 402	
Mafube local municipality	R159 850 740	
Nala local municipality	R126 954 981	
Ngwathe local municipality	R85 522 099	

Source: Department of Water and Sanitation

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Figure 2: Water Debts as at 03 December 2017

The absence of the uThungulu Municipality on the list of municipalities owing the Department of Water and Sanitation suggests that monies allocated to it was expended to address the needs of communities. Because the Auditor General, was referring to all municipalities uThungulu/King Cetshwayo may be among those owed by its clients and also lacking the skill of enforcing by-laws which is another form of revenue.

4.9.5. Over-bloated Workforce in municipalities

According to Madumo (2015), a number of local governments' failure to deliver services was associated with corruption, mismanagement, maladministration, lack of skills, over-bloated workforce and so forth. To Madumo (2015), these were part of challenges for local governments not to be able to carry out their mandate as enshrined in the Constitution of the republic of South Africa (Act 108 of 1996). In addition to that, according to research conducted in Nigeria by Akinbosade (2016), it became clear that most local governments had more workforces than their carrying capacity and in flagrant disregarding their budgetary provisions. That alone, gives an impression that in such a climate, recruitment and promotions of workforce were never done in consonance with the felt need of government budgetary provisions (Akinbosade 2016).

According to Kloot and Martin (2000), a number of local municipalities were not adhering to the four dimensions of the performance management systems. That refers to the so-called balanced scorecard: financial, community internal businesses and innovation and learning; something would help municipalities to focus on both results and the means of achieving good results (Kloot and Martin, 2000).

4.9.6. Political Relationship between Citizens and Local Governments

According to Bratton (2011), generally, the results show that the perception of citizens out there is that there is very little understanding of local government. Furthermore to that, the limited scope would be as a result of citizens finding faults in the process of making local decisions as well as the substance of development outcomes which were dwindling (Bratton, 2011). There was a narrative which suggested that rural citizens as opposed to their urbanites counter parts had lower expectations of service delivery and therefore were easily satisfied with government performance or service delivery provided. According to Bratton (2011), public employees were at the fore front, together with those appointed in local government offices as well as political leaders who at times have to extract illicit payments from owing citizens.

4.9.7. Natural Threats to Water Supply- Alien Plants

According to Turpie et al. (2007), the main source for the provision of water in South Africa is the conservation of catchment areas, riparian zones, and wetlands. Turpie et al. (2007) further say that most of South Africa's surface water comes from high altitude

grassland areas in the Drakensberg Mountains, Maloti Mountains of Lesotho and in the Cape Mountains, heath-like, Fynbos (Turpie et al., 2007). These sources or base flows were at times intercepted by alien vegetation. In the Drakensberg Mountains for instance, invasion by alien plants such as bramble, has become a huge threat to the shortage of water. In the Cape Mountains and river systems, plants that come from commercial plantations and woodlots on farms, especially the Pinus, Acacia and Eucalyptus species were a course to the reduction of water runoffs, especially from the stream- flows. These alien plants species usually swamp the indigenous vegetation, thus resulting in evapotranspiration. According to (Le Maitre et al., 2000) as cited by Turpie et al.(2007), the Western Cape was the most invaded area, followed by Mpumalanga, KwaZulu-Natal, and Northern Province.). Now, in view of the scale of the existing impact and the increase and density of the invasions, a national control programme was essential if South Africa's water resources were to be protected (Turpie et al. 2007).

4.10. Summary

According to Akinbosade (2016), no institution is insulated from challenges as they also form an integral part of all organizations and at the best, he says, they can only be minimized as its total elimination might quite be very difficult. In other words, Akinbosade (2016) argues that no organisation would ever be entirely harmonious, and not being engulfed by challenges, otherwise, it would be devoid of process or its progress form. Therefore, challenges rather than being dysfunctional were regarded as the ingredients of organizational structure as well as its (organization) continued existence (Akinbosade 2016). The above discussion has shown that communities in uThungulu/King Cetshwayo local government were extremely still trapped in poverty. The huge challenge faced by the uThungulu local government was to provide basic services such as clean drinking water and safe sanitation like all other local governments. Although some parts of the district showed an increase in the percentage of households with piped water on-site, but it became eminent that in uMfolozi and Mthonjaneni municipalities communities were still trapped in poverty. It must be emphasised though that there is no intention to discredit UThungulu/King Cetshwayo District municipality or any of its employees.

The picture painted in uThungulu/ King Cetshwayo District Municipality is against what is stipulated in, Part B of Schedule 5 of the Constitution of the Republic of South Africa where local governments are regarded as the vehicle to execute amongst others, the following responsibilities; supply of electricity, sewage and sanitation, health services, local transport, abattoirs and fresh food market within the district, water for household use, refuse removal, etcetera to name a few (van der Walddt, 2012). According to Bratton, (2012) numerous reports have revealed that citizens in certain African countries complain about a perceived lack of political accountability among local government officials and as such, have expressed dissatisfaction with the service delivery of basic needs. According to Schmitter, (2004), as cited by Bratton (2012), the exposure of local government officials' corruption—where at times communities have to pay a bribe to obtain the required service was undermining confidence in leadership accountability (Bratton, 2012). Failure to provide these basic needs to the communities has led to citizens in most parts of South Africa to regard local councils as weak institutions with limited functions and elected councillors as largely lacking vision and unresponsive (Bratton, 2012). In the same vein, according to Nengwekhulu (2009), two decades after the advent of a new and democratic South Africa, the exuberance that marked the dawn of a new South Africa seem to have been replaced by growing signs of despair by previously disadvantage communities, that is, regarding the inability of local governments to provide the services that the majority of the South Africans waited for. According to Madumo (2015), the inability of local governments to deliver services was associated with corruption, mismanagement, maladministration and so forth. However, according to Akinbosade (2016), it could be admitted without any air of contradiction that challenges were the phenomena that would be found in all institutions and nations of the world, including local governments. To Akinbosade (2016), there should be challenges affecting uThungulu/King Cetshwayo Municipality as they constitute an integral part of its progress. The following chapter will discuss the theoretical framework for this study.

CHAPTER FIVE

THEORETICAL FRAMEWORK

5.0. Introduction

The previous chapter presented and discussed the literature on the provisioning of safe drinking water and safe sanitation infrastructure in the previously disadvantaged rural communities. The aim of this chapter is to discuss the model of development - human rights-based approach. The other theories that were initially believed to be suitable for human development will be reviewed and highlight how they failed to address human needs.

5.1. Human Rights-Based Approach Theory

Human rights-based theory defines and affirms people's humanity. For that reason, human rights exist so as to ensure that human life is respected and honoured by all; prevent any form of injustice that may be applied to an individual's life. There is also a human right to development. Therefore, uThungulu/King Cetshwayo District as an institution will be required to abide by these human rights policies. Human rights are coded in the Universal Declaration of Human Rights which include Regional Charters, National Constitutions and Laws, Conventions, Covenants, etcetera. Above all, it also covers- the right to be 'human' to observe the application of these human rights, the spotlight will be on rural community residing in uThungulu/King Cetshwayo District Municipality. For the rural community to benefit from government, the Constitution of the Republic of South Africa, Act 108 of 1996 requires local government to act as the vehicle to provide basic services like electricity, sewage and sanitation, water, etcetera. If these human rights are upheld, they automatically safeguard both human dignity and human identity. For the purposes of conformity to these human rights, the uThungulu/King Cetshwayo local government is therefore expected to implement the content of the three important pillars of legislation, the Constitution of the Republic of South Africa, Act 108 of 1996 as Amended, Chapter 87; Municipal Structures Act, No. 117 of 1998 and Regulations as Amended and the Municipal Systems act, No.32 of 2000 and Regulations as Amended. Both the Municipal Structures Act No. 117 of 1998 and Regulations as Amended and the Municipal Systems Act, No.32 of 2000 and Regulations as Amended stipulate that communities must be provided with basic

services through the means of a document known as Integrated Development Plan, to be produced by all stakeholders.

Participatory Human Rights-based is very crucial in this regard, allowing communities to exercise their freedom and be part of their own development process. As indicated earlier, uThungulu/King Cetshwayo District Municipality has a number of its community residing in the rural areas. Therefore, if the human rights-based approach is applied, it should allow community participation in decision making which is the backbone of the entire process leading to the drafting of the IDP. The adoption of a Human rights –based approach is important because it assists policy-makers and citizens to understand the power of the dynamic of the developmental processes. Above all else, it is said that grievances and conflicts arising through developmental processes are resolved at a project level and also help for the prioritising of the needs of the communities that were previously marginalised and vulnerable. Since the researcher targeted the rural community of uThungulu District Municipality to investigate whether or not water and sanitation has been provided was because rural communities are also human beings and are entitle to their human rights without being discriminated in any form as explained by human rights treaty bodies. The human rights-based approach takes into account the interest of human beings before the financial gains. Other development theories have a different view to the human rights-based approach.

5.2. General Perception about Human Development

According to Summers, (1986) rural community development could take place by tracing its historical origins, that is, reviewing its status within sociology, contrasting development of the community with development in the community, and reviewing its three basic strategies of rural community development which are authoritative intervention, client-centered intervention, and of poor quality. According to this theory, traditional societies produced poor quality produce because of poor methods of cultivation and primitive nature of its technology. Clearly, from Rostow's point of view, very little that can be achieved by societies residing in countryside (Offiong, 1980). Deducing from Rostow's conviction concerning rural dwellers, it is clear that extended functions of municipality would radical reform (Summers, 1986). In this case, a special reference was made to development of rural community in uThungulu/King Cetshwayo District Municipality. The South African Demarcation Board allowed territories or

boarders to incorporate rural areas so as to share resources that were previously enjoyed by people leaving in cities or towns and townships. According to Summer (1986), the federal intervention policies created complex interdependencies among the local government and federal governments, the private sector, and communities; and that of rural community development requires a sociology that maps good relationships and thus provide explanations for changes in rural communities. According to Mumford (1895), the phenomenon of development for Western countries is embedded on technological process and economic growth. The kind of development takes interest in profit making more than human rights. As a result, Western countries would always want to offer that kind of assistance to the Third World countries. According to Hustedde and Ganowicz (2009), there are three concerns that encompass community development practice; namely structure, power and shared meaning. To Hustedde and Ganowicz (2009), these concerns are related to three classical theoretical frameworks which are structural functionalism, conflict theory, and finally the symbolic interactionism). A theory on development by a renowned iconoclast popularly known as Andre Gunder Frank (1974) formed the bases of all development issues during its glorious days. It said that throughout his lifetime work, he had been trying to explain what development really meant and what it should be. In 1966 (Frank 1966), had stated that Third World societies might be originally undeveloped, but never underdeveloped, and that the root cause can be attributed to the structure of external relations in which those societies were enmeshed. To him, (Frank), such a structural relationship generated the domination of their economies by the core countries and the poor countries' subordination of their socio-economic and political growth to the interest of their higher-ups. What Andre Gunder Frank wrote about in terms of world development is refreshing, especially in light of current transformations in the so-called dependent countries like South Africa, Brazil, India (Brics) etcetera. Countries outside the core zones were now looking for alternate views of explaining world development. Such a claim concretizes (Cross and Mullen, 1987) conviction that service delivery is expected in every country after the fall of the colonial government. However, in this study, rural development will be viewed in relation to the provision of water and sanitation in previously disadvantaged rural areas. Most of rural communities stay in peril-urban of UThungulu/King Cetshwayo District Municipality rural community in KwaZulu-Natal. These communities will be used as a focus area for the study. By-far, to black South Africans, rural areas are celebrated as wilderness and as a bucolic idyll, whilst to others it is perceived as backward and under developed and

in need of modernization (Woods, 2011). This is so because of basic services like water and electricity. According to Bunce (1994), as cited by (Woods, 2011) the beauty of the rural idyll is regarded as the 'armchair countryside' if imaged and appreciated from the urban and suburban sitting room point of view (Woods, 2011). Therefore, modernized rural development should aim at sustaining economic growth and improve living conditions, bring rural areas to the national standard of development and ensuring that rural areas are attractive places to live and fulfil all human needs. This is what the human right-based approach is advocating for. Nearly 80% of the uThungulu/King Cetshwayo Municipality population lives in rural areas and in dire need of government development services. According to Gelderblom et al. (1994), Immanuel Wallerstein with his view on World's System theory, shared the same sentiment as Andre Gunder Frank that the so-called 'third world countries' were reduced to the lowest level through the level of their economy, political status, cheap labour, etcetera by the 'First World' (core) countries who gained their status through the exploitation and oppression of periphery countries, that is as Wallerstein (1981), as cited by (Gelderblom et al., 1994).

According to (Preston, 2000), development Theory by itself has very little value to assist human kind unless if it is applied, and translates into results, that is to improve lives of human beings. The Theories of Development were as a result of the situation in the mid-20th century when decolonisation manifested itself and the economic disparity between countries in European and underdeveloped nations became a reality. The popular development theories are Modernisation Theory, World Systems, Dependency Theory, Globalisation Theory and Community Development Theory. For this study, Rostow's stages of development, Theory, Andre Gunder Frank's Dependency Theory as well as Community Development Theory will be re-visited, trying to understand how they were crafted to address social welfare of underdeveloped communities.

5.3. Other Theories Human of Development

5.3.1. Walt Whitman Rostow's Stages of Development

Rostow on his sociology of development had a view that it was possible to identify all societies in their economic dimensions. Rostow's stages of growth model are the most well-known examples of the linear stages of growth model. He identified five stages through which developing and underdeveloped countries had to pass to reach an

advanced economy status: traditional society, preconditions for take-off, take-off, drive to maturity and age of high mass consumption. His perceived all developing and underdeveloped societies to be similar.

(a) Traditional society:

Rostow's traditional society is peasant based without economic growth. It is an economy mainly meant for family subsistence with very little which is traded. Therefore, whatever remained could be only sold in domestic markets, because be measured in terms of capitalism and that they use primitive methods of cultivating the soil, and so they lack significant economic growth. However, this would be against the constitutional right as it appears in government gazette of local government, Chapter 4 16(1) (b) and (c) respectively. According to those sub-sections it is the responsibility of the either the district or local municipality to build the capacity of a community falling under its jurisdiction (Local Government: Municipal Structures Act No.117 of 1998, Amendment Act 1 of 2003.). This therefore goes without saying that it is the responsibility of uThungulu/King Cetshwayo District to also develop areas falling under its jurisdiction, especially those that were previously disadvantaged by the apartheid government.

Nagpal and Radin (2014), argue that clean fresh drinking water is essential to human and animal life alike, necessary for all kinds of agriculture and equally important to the world of economy and further to that, it also functions as a universal solvent. The former Secretary-General of the United Nations, Ban-Kin Moon once said that, "every dollar invested in water and sanitation leads to \$4 in economic returns", suggesting that poor toilet infrastructure could result in poor health system which could even lead to absenteeism, a decrease in company productivity. According to the United Nations General Secretary, investing in appropriate toilet infrastructure was crucial, especially for women and girls, so that they could have private, clean and safe facilities, and would be able to manage menstruation or pregnancy period safely (WRC, 2016). According to van der Waldt (2012), Part B of Schedule 5 of the Constitution of the Republic of South Africa views a local government as the only vehicle to execute basic services like water, sanitation local citizens (van der Waldt 2012). Indeed, uThungulu/King Cetshwayo District Municipality is expected to provide communities with water. According to Rostow, after the traditional society stage should be followed by pre-conditions for take-off.

(b) Pre-conditions for take-off

Here, Rostow is convinced that for any society to develop age this stage agriculture becomes very crucial and it is more mechanised and surplus is traded. This is a stage where more time is needed to transform a traditional society and introduce modern scientific methods of producing commodities. This means that change is seen to be possible and economic modernization is desirable. The stage requires more attention in order to address the needs of the traditional societies. Again according to Rostow, this is the stage where more funds should be generated in order to turn a particular society to modern scientific mode enjoying interest of money spent on development. As (Offiong, 1980) puts it, the common denominator of this type of development focuses on profits rather than the infrastructure required by rural communities. Such a notion concretises Mumford (1895), view that to the Western countries the phenomenon of community development attaches technological processes and capital gains (growth) to those who invest their money in the project. As a result, Western countries would always want to offer that kind of assistance to the Third World countries (Mumford (1895). Clearly, for rural communities such a kind of development cannot assist poverty stricken areas. In uThungulu/King Cetshwayo District Municipality has only one town/City of (uMhlathuze) which can reflect that kind of a stage which is as regarded; Pre-conditions for take-off. Rostow also writes about a stage labelled as the take-off.

(c) Take-off stage

Here, Rostow perceive members of the society being part of the changes modern technology brought by development. The society reflects signs of adaption to modern technology and it becomes its normal condition. Manufacturing sectors experience a rate of growth. The emergence of political social and institutional framework which exploits the impulses leads to expansion. Everything is institutionalized in the take off stage. Such a stage lasts for about twenty years and it usually followed by a drive to maturity stage. As indicated earlier, such a stage reflects characteristics of the UMhlathuze City which has a number of industries.

(d) Drive to maturity Stage

The drive to maturity stage demonstrates booming of the economy and show the technological and entrepreneurial will to grow. Societies become aware of its growth and it will lead to the point of high mass-m consumption (Offiong, 1980).

The high mass-consumption stage

This indicates that the level of income to the society moving –up the ladder. The community enjoys the production from the nearby manufacturing industries and commodities like television sets, clothing of high quality, automobiles, shelter, and etcetera interest society. These are all town and urban characteristics and not for the rural dwellers. In uThungulu /King Cetshwayo District, many families still do not have automobiles or television sets, especially those who are in peripheral of the urban areas. Out the five local municipalities falling under the jurisdiction uThungulu/ King Cetshwayo District, only UMhlathuze City matches the fifth high mass-consumption as it shows growing levels of output as well as the expansion of a middle class of consumers. Therefore, Rostow's developing countries need to undergo the same stages can be a one size fits all.

This theory assumes that development can be achieved through a basic sequence of stages which must be the same for all countries. This model measures development solely by means of the increase of GDP per capita and does not identify the causal factors which lead to development. As such, it neglects the social structures that have to be present to foster development, amongst which could be water and sanitation development.

Immanuel Wallerstein criticizes the notion that all nations have to undergo the same stages in order to develop (Roman and Sarakinsky, 1994). According to (Wallerstein 1981& Sunkel, 1973) as cited by Graaff (1994), the World capitalist system is differentiated into horizontal and vertical structures, therefore, since the study focuses on community development, a claim that development needs to go through the five stages does not hold water.

5.3.2. Wallerstein's World System of Development

Wallerstein in World-system had a concern that there were unequal opportunities on development across the nations. On the issue of horizontal, he argues that the world-system was divided into a core, a semi-periphery and a periphery. Such a linear structure speaks to the spheres of local government, namely metropolitan, local and district government. The researcher views the Metro and District municipalities as well resourced compared to a local municipality. In this study, the District municipality and

the Metro are responsible for the rendering of services to the most vulnerable local municipality, especially those in rural areas. The researcher is of the view that communities in rural areas move to towns to seek employment where they develop urban areas' economy and stay in well-resourced industrial areas, water and sanitation infrastructure found within the premises. These people are usually paid low wages because of their unskilfulness which was also done deliberately in order to further exploit them. Most of these areas are occupied by poor black communities who were coercively removed from land with the fertile soil for self-sustainable subsistence to arid areas like Ntambanana alongside R34 West of Empangeni town in KwaZulu-Natal by the apartheid regime. In other words, in South Africa exploitation took a different turn as it also included the land confiscation from South African natives. At Mandlazini (along the sea) near Richard Bay in KwaZulu-Natal is a living testimony, where people were removed for industrial development space.

The Mandlazini area falls under the jurisdiction of uThungulu/King Cetshwayo District Municipality. And when these proletariats go back to the countryside, water and sanitation infrastructure become a utopia, yet during municipal election period they become a target to all political parties. According to (Wallerstein, 1981 and Sunkel, 1973) as cited by Graaff (1994), suggest that peripheral countries are the poorest countries of the world, such as Brazil and some mostly found in Africa, whilst core countries include United States of America, Japan and Germany. Wallerstein and Sunkel argue that the core countries exploit the peripheral through cheap labour, raw material and markets. Such an idea vindicates the researcher's view that poor rural (peripheral) societies are exploited or robbed of their labour by developed areas (urban) as they work long hours for little wages.

In the same vein, Andre Gunder Frank, (1971), as cited by Thompson, (2015), argues that the developing nations have failed to develop, not because of their own internal barriers to development as some modernization theorists suggest, but because of the developed Western countries who have systematically underdeveloped them, so that the Third World countries shall always depend on core countries (Thompson, 2015).

5.3.3. Dependency Theory by Andre Gunder Frank

Dependency theory is a sociological theory which holds a view that economic events in history have encouraged developing countries to depend upon the support of more advanced nations. Andre Gunder Frank, (1967) as cited by (Uwazie et. al, 2015), argues that, Rostow's stages of development cannot be regarded as "one size fits all", which means he (Frank) and his dependency theory disputes Rostow's claim which suggests that all societies progress through similar stages of development.

Dependency theory states that poor nations provide natural resources and cheap labour for developed nations, without which the developed nations could have not established the standard of living which they enjoy today (Uwazie et. al, 2015). This notion paints a picture that the lack of development in the Third World countries was as a result of Western nations who have purposely under-developed them. Frank (1967) also viewed the emergence of multinational companies and the reliance of less-developed countries on Western aid as the source of deprivation of the poorest nations.

Therefore, it is essentially a follow up to the structuralists thinking. Frank's contribution to this theory and the study of development and underdevelopment had emphasis on its implication on Third World country's development. The study exposes the inequality in the pace of socio-economic wellbeing of the people of various societies of the world which led social scientists to call those societies whose socio-economic development is considerably low "backward nations". It said that they later abandoned this expression as it was considered derogatory, and adopted instead, the expressions "underdeveloped societies," "less-developed societies" or "developing nations". Dependency thinking starts from the notion which says that resources flow from the 'periphery' of poor and underdeveloped states to a 'core' of wealthy countries, which leads to accumulation of wealth in the rich states at the expense of the poor states. Dependency theory states that not all society's progress through similar stages of development. Periphery states have unique features, structures and institutions. They are considered weaker with regards to the world economy . Dependency theory states that poor nations provide natural resources and cheap labour for developed nations, without which the developed nations could not have the standard of living which they enjoy. When underdeveloped countries try to remove the Core's influence, the developed countries hinder their attempts to keep control. This means that poverty of

developing nations is not the result of the disintegration of these countries in the world system, but because of the way in which they are integrated into this system. Dependency theorists argue that underdeveloped countries remain economically vulnerable unless they reduce their connections to the world market. The Dependency theorists argue that underdeveloped countries shall remain economically vulnerable unless they wean themselves from first world countries or reduce their connections to the world market like the International Monetary Fund (Uwazie et. al, 2015). This notion paints a picture that the lack of development in the Third World countries was as a result of Western nations who have purposely under-developed them. Frank also viewed the emergence of multinational companies and the reliance of less-developed countries on Western aid as the source of deprivation of the poorest nations. A.G. Frank (1969) proposed that the underdeveloped nations/ communities must start to develop their own internal economic growth.

5.3.4. Community Development Theory

Development Theory is the most practical framework for rural dwellers seeking lasting change for individuals and the communities and societies in which they live. According to (Tan, 2009), community Development Theory should be regarded as a legitimate and modern lasting solution. He further suggests that it is a way of strengthening civil society by prioritising the needs of communities, and their perspectives in the development of social life. This is contrary to the notion of Rostow and his stages of development because it addresses the needs of communities in their own settings rather than the ‘top down’ services which concentrate to economic and other related spheres of development. It focuses on the centrality of oppressed people in the process of overcoming externally imposed social problems (Tan, 2009). This theory is community development work because by the mere fact of the definition it speaks for itself. Good community development is action that helps people to recognise and develop their ability and potential and organise themselves to respond to problems and needs which they share. It supports the establishment of strong communities that control and use assets to promote social justice and help improve the quality of community life. It also enables community and public agencies to work together to improve the quality of government (Tan, 2009). In this case, this refers to the local governments which have been entrusted with the responsibility of providing water and sanitation services to communities.

5.4. Rural Community Infrastructure Development Review

“What is community rural development?” By rural community development according to Sanders and Lewi (1976), meant development in areas that were relatively small in size, no-metropolitan. For the US Census Bureau conducted by Joubert J. et al. (2008), rural is defined as a term referring to exclusion. It is regarded as an unurbanised area is defined as an adjacent densely settled census block groups which also does not meet minimum population density requirements of a population of at least 50 000 people. Other areas not meeting such criteria were then defined as rural. Matarrita (2011), defines a community as” a locality comprised by people residing in a geographical area; and the resources of such people require to subsist and progress; and the processes in which such individuals engage to distribute and exchange such resources to fulfil local needs and wants”. According to Taylor, (2007) as cited by Matarrita (2011), communities need a wide range of resources, and such resources are considered as the “building blocks” for community life. Community resources are, thus, essential for communities to function, as they allow localities to emerge and evolve by fulfilling locally required needs and wants in their day-to-day activities. According to Bhattacharyya (2009), community development is the pursuit of solidarity among the members of the community and agency by adhering to the principles of felt needs and participation. This wants to suggest that the uThungulu/King Cetshwayo District fits into an area that is rural as well as excluded, and the researcher wishes to establish the perception of citizens to local government with regard to service delivery in the new dispensation- post 1990.

According to Harande (2009), development cannot be achieved without the development of the rural communities. Harande (2009) says that about 80% of the people in developing countries stay in the rural areas. Therefore, development should target both urban and rural dwellers. Prosperity, progress, and development of any nation depend upon the nation's ability to, access services and information. Accessing the information is also critical in letting people know their entitlements to services, welfare benefits and other sources of support to overcome social exclusion and poverty (Harande, 2009). In other words, neglecting rural communities could have negative consequences such as rural dwellers moving to urban areas, thus leading to problems of crimes, prostitution, child labour, insecurity, bribery, squalors, spread of diseases, and the accumulation of the infrastructures in the urban areas. In Nigeria for instance, the country had its independence many years ago, and with good policies on

development of rural communities, but rural communities were still not well developed and the quality of life of people in the rural areas continue to be hazardous throughout all tiers of government (Harande, 2009).

5.5. Rural development and community participation

According to Netswera (2008), the principle of community participation was for the first time in South African history placed at the very heart of local government after 1994 local government elections. He refers to Chapter 4 of the Municipal Structures Act 117 of 1998 which talks about the establishment of ward committees through which members of communities could participate in activities that affect their lives. Further to that, Municipal Systems Act 32 of 2000 requires municipalities to devise mechanisms that would lead to the participation of communities. That would cause communities to make constructive decisions on matters that affect their lives (Netswera 2008). On the other hand, Sanders and Lewis (1976), views rural meant areas that were relatively small in size, and according to census definition of rural, with the population of 2500 or less– nonmetropolitan, whilst rural development would accord Harande (2009), mean the condition of rural dwellers in Nigeria and other developing countries is very pathetic. Harande says that traces of abject poverty and discomfort could be noticed conspicuously. Generally speaking, in rural areas, there was an acute shortage of information about services for communities. The lack of information in rural community makes it very difficult to them to associate with other communities and to make progress in life. Harande (2009) argues that a high rate of illiteracy in the rural community was the major contributing factor to their demise and that people in rural areas lag behind in accessing crucial services and other valuable information to attain their goals. Clearly, the protests in most parts of the country, South Africa were in townships, towns and cities; and very rare in rural areas. Protests and loss of lives based on lack of basic services took place in towns like Vicksburg, Standerton, Ermelo and other parts of the country for the failure of the South African government local governments to delivery essential services (clean drinking water and proper dignified sanitation). Such protests do not take place in rural communities.

According to Issa (1998) as cited by Harande (2009), observed that rural populace suffered from acute low productivity, economic retrogression due mainly to ignorance (Harande, 2009). According to Cavaye (2001), rural community development vitality

hinges on communities maintaining adequate infrastructure, and also having access to other forms of services. Furthermore, he suggests that focus should be on service provision, discrete initiatives, and also deal with information dissemination and provision of resources for communities to realize their perceived needs (Cavaye, 2001). For Cavaye (2001), rural community development fundamentally involves a series of actions and decisions that could improve the situation of a community, not just economically, but also as a strong functioning community on its own. It is through action, participation and proper contact that could course the community to be more vital, abler to manage change with organisational ability, skills, and passion. In implementing any programme there shall always be challenges for anyone who steers that process. The normal challenges according to Cavaye (2011), would be a greater recognition of community values, unusual forms of participation, adapting to community perceptions, trying to foster community confidence and changes to the role of government. However, anyone faced with such challenges need to know the key drivers of rural and regional development which are the passion and motivation of people, talking to attitudes of self-help, and effective organisation and focusing on action. According to Dongier et al, (2003), participatory development has a need that there should be inclusion of everyone concerned in the decision making that enables the utilization of all ideas and experiences especially of the poor in rural communities and to let them have influence in the decision making process Alkire (2003). Such a statement is in line with what Briscoe and Ferranti (1988) said, as they emphasized the fact that members of the community themselves were the primary decision makers, maintainers, organizers, as well as overseers, rather than to rely on governmental agencies (Briscoe and Ferranti 1988). This is also confirmed by what Makwakwa (2017) uMlalazi local Municipality Mayor, the Honourable Zulu did when introduced the contractor and consultants responsible for the construction to the members of the community. He (Zulu) went further to say that such a project would create a sense of place and will improve mobility for commuters and motorists (Makwakwa, 2017). Aside from job opportunities to be created by the project for the community, the involvement of the community members from the start of a project will boost a sense of belonging. According to the 1979 World Conference on Agrarian Reform and Rural Development in 1988, participation was viewed as a way of transferring of power and empowering of communities as it is accepted and understood in development. The dominant interpretation of participation in development programmes in the Third World regard participation as the other forms

of contribution by rural communities. According to Netswera (2008), the involvement of community members (constituencies) feel being a subject rather than to feel as objects by government in any form of development designed to assist them. For example, the water supply infrastructure development in an area with community members hired in the project could be seen as a way of contribution and fundamental to success. Rural development projects like water and sanitation provision are profiled to past experiences with the participatory approach. An act of stealing electrical cable from a Desalination Plant in Richards Bay, Eastern North of KZN Province in South Africa, leaves much to be upheld (TNA Reporter 2017). It paints a picture that the community in that vicinity did not own the project- lack of sense of ownership. Therefore, according to Cele (2015), allowing public to participate in service delivery processes was paramount, just to see specifically at what level and nature of participation in service delivery processes, and also to observe perceptions communities have with regards to the type of services rendered by municipality or NGOs (Cele, 2015).

Furthermore, according to Cele (2015), a concern over continuous protests over service delivery issues at local government level all-over the country since 2006, around the provision of services was a clear indication that local government did not meet the expectations of residents as the government clients. To other residents, the municipal officials were perceived to be self-serving and neglectful of community needs. In many cases where community members were consulted and informed they were never involved in decision-making about neither level of the service provision nor creation of the beneficiary lists (Cele 2015). At times, other services such as water and sanitation and houses were provided to rural communities where there were concerns regarding access and distribution of some of the resources, maybe because of political alignment.

According to de Faria, (2012), in the State of Ceará in Brazil for instance, a decision was taken to implement the model labelled as 'Integrated Rural Water Supply and Sanitation System' for the purposes of illustrating that the most crucial component of attaining sustainable management should be user participation. This model consists of a federation of community associations established specifically with the purpose of self-managing the local infrastructure and all other systems, and the State would provide with technical support. User participation is the most important factor of sustainability of rural water supply.

Effective participation is seen as a means of assuring that community needs are addressed (de Faria, 2012). According to the TNA Reporter (2017), a cable was stolen from a recently installed desalination plant in Richards Bay, Eastern North of KZN Province (TNA Reporter, 2017).

According to Uphoff, et al. (1979), major concern with rural development programmes earmarked for local community participation was a challenge of knowing who has what – in terms of a particular skill to participating in the project, and with what effect (Uphoff, et al. (1979). The depreciation of the equipment is at times ignored and water users have always been expected form water committees to manage the up-keep of their communal water facilities and at times even collect money to pay for maintenance if need be.

5.6. Water Infrastructure Development Strategies

In the past years, there was a method and equipment whereby windmills were used to directly propel water pumps to lift water from a lower elevation body of water to a nearby higher elevation body of water, where it would be stored as potential energy (Youssef, 2000). That windmill could be of the vertical-axis or horizontal make, and a rotational shaft coupled directly to water pump to rotate said water pump thus acting as a prime mover for said water pump. These wind energies had been used in different parts of the world for centuries to pump underground water and these wind machines were in existence in Pursia way back before the birth of Christ. In the same period, windmills appeared in other countries like France, England, and the Netherland. According to Muljadi, E., Flowers, L., Green, J., & Bergey, M. (1996), wind turbine technology had been there to pump water since ancient history.

According to De Laet Mol (2000), the Zimbabwe Bush Pump `B' type pump device was an appropriate type technology, lately called the `fluidity' of the pump. It was regarded, as an object that was not too rigorously bounded, and did not impose itself but tries to serve the community (Mol, 2000). For uThungulu/King Cetshwayo District Municipality a lesson can learn from what Mol (2000) labels as a' fluidity' rather than to have one size fits all type of service delivery.

According to Byars et al. (2009), the implementation of the rights-based approach to International Development had offered new challenges to sectors that are working for

the water and sanitation in developing countries. As a result, states and other non-state actors working in the field with communities decided to overhaul the existing needs based methods. Byars et al. (2009) are of an idea that the engineering solutions and technology currently used failed to address the complex requirements of the recipients, mostly rural communities. It was felt that an integrated engineering approach that would be capable of responding accurately to the requirements of the beneficiary was now required, an 'integrated method', which was a way of combining technology, with community participation as well as education (Byars et al. (2009).

According to Bhattacharyya (2009), effective community development requires micro-macro coordination. Further to that, according to Mathie & Cunningham,(2010) this type of development involves exploring the theory and practice of appreciative inquiry while the concept of social capital as an asset for community development is also considered; the theory of community economic development; and some lessons drawn from the links between participatory development, citizenship and the entire society (Mathie & Cunningham, 2010). According to Carter et al. (1999), any strategies for water supply and sanitation programmes in developing and underdeveloped countries to take place, an actor must have; an understanding of the existing problems in that community, the beneficial impacts achievable, as well as factors which could determine sustainability. In many instances, water and sanitation programmes were usually found wanting, with systems breaking down and abandoned before completion because of unforeseen circumstances. Very few impacts stand a chance of being achievable in a short space of time without some additional costs. If one can use the South African Department of Water and Sanitation as a case study, it was discovered that the lack of strategic thinking and implementation were regarded as the main stumbling block to service delivery (Seward, Xu & Turton, 2015). This refers to what Seward, Xu & Turton (2015), called, "back-casting". Back-casting is defined as 'a vision of a desirable future and then analyse the actions required to realize that vision'. South Africa is viewed from that perspective when it comes to exploring ways of improving management of ground water.

5.7 Summary

According to Mukheibir (2008), countries need to work on development of a framework for strategy considerations for water resources management in South Africa to meet the Millennium Development Goals by municipalities. To him, a North Western part of South

Africa was experiencing severe drought and according to the climate change projections, that part of the country would be mostly vulnerable to future climate induced water supply stress. Therefore, series of potential adaptation strategies suitable for conditions to come should be in advance, supply and demand side strategies, at local municipal and community levels (Mukheibir, 2007). Bergey (2001), talked about old methods that were used for families to draw water from the ground. During those days (ancient times), wind turbine technology was used to pump water. These wind energies had been used in different parts of the world for centuries to pump underground water and these wind machines were in existence in Persia way back before the birth of Christ (Bergey 2001).

In the same period (Ancient), windmills were still appearing in other countries like France, England, and the Netherland. According to Bergey (2001), wind turbine technology had been there to pump water since ancient history. Mukheibir (2007) encouraged that obstacles and many other challenges, including human and financial resource should not be above these strategies set at local municipal and community levels in implementing these strategies. The uMhlathuze Newsletter for the month of June 2017, falling under the jurisdiction of uThungulu/King Cetshwayo District Local Government, a Councillor, warned that water tankers for areas affected by drought were temporary measures and a lasting solution was required. He also insisted that strategies set for the development of the City of uMhlathuze should benefit all (UMhlathuze Newsletter for the month of June 2017).

According to the Constitution of the Republic of South Africa, Act 108 of 1996, Section 27(1) (b), by virtue, “everyone must have an access to sufficient food and water”. Since the research is about the evaluation of the status of the provision of water and sanitation, it is imperative that the human rights are taken care of by municipalities. Therefore, the implementation of the Rights-based Municipal Development Strategies must prevail in order to achieve its main objective. For an example, according to Sarwary (2016), who used the human rights-based approach (HRBA) in Afghanistan, he argues that this approach offers a framework which puts people at the centre of the whole scenario. He regards the human rights-based approach as a linking to local governments as duty bearers and communities as rights holders.

One of the main objectives of local municipalities is to provide water and sewage systems in communities which are part of the human rights of the human beings. The following chapter will discuss the method of collecting data which will be used to cement the literature discussed in the previous chapter.

CHAPTER SIX

RESEARCH DESIGN AND METHODOLOGY

6.0. Introduction

This chapter explains and describes the method and the process or procedure which was followed for the data collected. It describes the design of the study, technique of sampling and how the data was collected and analysed. The researcher collected the data using questionnaires to be sure of reliability and scientific procedure during data collection. According to Moser & Kalton 1989, as cited by Kumar (2014), the concept reliability is in relation to the research instrument that yields the same results as in initial conditions in that test assessment and provides the same result every time it is performed for it to be deemed reliable. Again this was done to make some clarifications in case respondents could not understand some questions in the questionnaires. The questionnaires were administered by the researcher. The idea here was to obtain sufficient valid and reliable statistical data that could be transformed into meaningful information.

6.1. Area of Study (uThungulu/King Cetshwayo District Municipality (Local Government) and Geographical Position/ Location

uThungulu/King Cetshwayo District Municipality is one of the 11 District Municipalities in KwaZulu-Natal Province- South Africa. It is located in the North-Eastern region of the KwaZulu-Natal Province on the Eastern sea boarder of South Africa. There are five Local Municipalities which fall under the jurisdiction of uThungulu/King Cetshwayo District Municipality. These Local Municipalities are uMhlathuze, uMlalazi, iNkandla, uMfolozi, and uMthonjaneni. The uThungulu/King Cetshwayo District Municipality is currently the third highest population municipality in the Province after the eThekweni Metropolitan Municipality and the uMgungundlovu District Municipality. It stretches from the town of KwaGingindlovu (Gingindlovu) in the south, to the uMfolozi River in the north, and inland to Nkandla in the region of the KwaZulu-Natal province. It covers an area of approximately 8213 square kilometres. The N2 highway links the district to other significant economic centres such as Durban and Johannesburg. The town iNkandla, Melmoth, Kwa-Mbonambi, Eshowe and Richards Bay are other administrative nodes in the district. The National Road (N2) highway links the district in Richards Bay Harbour to the economic hubs like Durban, Dube Trade Port and King Shaka International Air

Port (Web: www.uthungulu.org.za). UThungulu/King Cetshwayo District Municipality is a category C municipality, whilst five local municipalities within it are labelled as category B.

UTHUNGULU/KING CETSHWAYO DISTRICT MUNICIPALITY MAP-DC-28 (FIVE LOCAL MUNICIPALITIES UNDER ITS JURISDICTION)



Figure 3: (Local Municipalities falling under uThungulu District Municipality)

uMfolozi (KZ 281) uMhlathuze (KZ 282) iNkandla (KZ 286)
uMlalazi (KZ 284) uMthonjaneni (KZ 285)

6.2. Research Design

According to de Vaus (2005), a research design refers to plan on how to do a particular study from identifying a topic to the interpreting of results. Research design is interpreted as a process of prospective the purpose of a particular study (de Vos et al. 2011). The purpose of a research design is to reduce the ambiguity of research evidence. The architect would always need to know the purpose of the building before designing it, so would the social researchers be clear about their research question before developing a research design (de Vaus, (2005). According to Kerlinger (1986), as cited by Kumar,

(2014), the research design shows how the researcher will collect the information from respondents, how respondents will be selected, how the information collected will be analysed and how findings of the project will be communicated (Kumar, 2014). A research design is viewed by Thyer, (1993) in (Kumar, 2014) as a blueprint for how a research study is to be completed, in other words operationalizing variables so they can be measured, selecting a sample of interest to study, collecting data to be used for testing the research questions or hypotheses and thereafter analysing the data. It also talks to the methods to be used and procedures to be followed during the research process. The researcher has identified the King Cetshwayo District Municipality where the research was conducted to investigate in various community institutions whether water and sanitation had been provided.

The quantitative method was used in this research study. According to Maxwell, (2013) as cited by Kumar (2014), quantitative study designs are specific, well structured, have been tested for their validity and reliability, and can be explicitly defined. The emphasis made by Kumar (2014) in this regard is that in quantitative research, the measurement and requirements of the information to be gathered requires that study designs are structured, rigid, fixed and predetermined to ensure validity and reliability of the information. Furthermore, quantitative study designs have more clarity and distinction between designs and methods of data collection. The quantitative design is different from its twin, qualitative because in quantitative research findings are easier to the extent of variation and diversity, whereas in qualitative research findings are appropriate for exploring the variation and diversity in any aspect of life (Kumar, 2014). The quantitative design strategy was selected to get more clarity on the issue of water and sanitation provision in rural communities which were previously disadvantaged by the then apartheid regime municipalities.

According to Maree and Pietersen (2007) as cited by de Vos et al. (2011), quantitative research designs can be classified into two categories, namely experimental and non-experimental designs. The non-experimental designs are used in descriptive studies where units have been selected to take part in the research are measured on all variables at a specific time without manipulation. According to them this method can be used in surveys. But according to Punch, (2007) as cited by de Vos, et al. (2011) both non-quantitative and qualitative are on a continuum, interpreted as true experiment are

on the left-hand end, and the right-hand end, respectively and the quasi-experiment in between (de Vos, et al.2011). The researcher in this study has used the quantitative method so as to solicit the results that will be authentic in all respects. According to Maree and Pietersen in Creswell et al., (2010), “quantitative research is a process that is systematic and objective in its ways of using numerical data from only a selected subgroup of a population to generalize the findings to the universe that is being studied” However what is emphasized in this definition is the fact that using quantitative research method requires one to consider three important elements, namely objectivity, numerical data and generalizability.

6.3. Types of Research Design

According to Punch (2005), in de Vos et al. (2011) there are two types of quantitative research designs, namely experimental designs and non-experimental designs. Both of these research designs were explained in the latter part of this chapter and how they operate in a research project when a researcher wants to collect appropriate data for investigating the specific research questions. Briefly, Creswell, et al. (2010), also say that in:

- (a) Experimental designs: there are three important characteristics that distinguish it from other designs, namely manipulation, control and randomisation of participants.
- (b) Non-experimental designs are mainly used in descriptive research studies where units that have been selected to take part in the research processes are measured on all the variables at the specific time. What is critical with non-experimental designs is that it uses surveys (Creswell, et al. (2010).

6.3.1. Function of a research design

According to Kumar, (2014) a research design serves as a springboard from which a project will take off. It can safely be regarded as a guiding thread to both the researcher and any reader. The research design is important for the researcher to conceptualize his or her ideas. It shows the development of procedures and logistical arrangements that are there to undertake a study. A research design is also there to ensure validity, objectivity and accuracy of the study. It must allow any individual who wants to action the research plan, and to do so without the person who drew the plan. In this regard, the researcher in this project has clearly provided all steps necessary for the project to take off (Kumar, 2014).

6.4. Source of Data (Target Population)

Sarantakos (2000) as quoted in de Vos et al., (2011) argues that the major reason for sampling is the feasibility, which is the complete coverage of the total population, which is not possible in the research project. The researcher will use purposive sampling, which is based entirely on the judgement of the researcher whereby a sample is composed of elements which contain the most characteristic, representative or typical attributes of the population which serve the purpose of the study best. This will be achieved through the use of questionnaires. The following will be in order to solicit data for this study:

6.5. Sample Technique and Sample Size

Target: municipal Officials	Target: Consumers
Senior manager =3	Councillors: Tribal/Municipal =10
Senior Develop. Manager =3	Health Centre (clinic) =10
Senior Water Superintendent =3	Education Centre =10
Senior Technical Manager =3	Library =10
Other (Specify) WSSA =3	Families =45
Municipal Officials =15	Respondents=85

According to Kumar, (2014) sampling refers to the process of selecting a few items from the bigger group as the basis for predicting the prevalence of an unknown situation concerning the bigger group. Kumar (2014) goes on to say that the process of selecting a sample has advantages and disadvantages. According to Creswell et al. (2010) sampling is used simply because it is impossible to include the entire population or

group just because of two main restrictions, which is money and time. It means that a researcher can take a few from many to represent the majority in order to get the information required for the project to avoid costs and then draw conclusion about the results of the intended information.

The permission was obtained from the uThungulu/King Cetshwayo District Municipality to investigate in five (5) Local Municipalities which constitute the district municipality. Out of the local municipalities some institutions like schools, clinics, libraries, etcetera were randomly selected from which data would be collected. Political or tribal councillors and indunas were also selected because of some defining characteristics that make them to be holders of the information (data) needed for the study (Creswell et al. 2014) Purposive sampling was used by a researcher here. Purposive sampling simply means that participants are selected because of a defining characteristic that qualifies them to be the best holders of the data needed for a study. There were five local municipalities from which twenty participants were drawn to represent the entire uThungulu/King Cetshwayo District Municipality. In all, one hundred (100) respondents participated in the research. Furthermore, all the respondents or participants were from the previously disadvantaged rural communities. Rural communities were chosen simply because the researcher was interested in digging the information that would speak to service delivery of water and sanitation provisioning in rural areas (Creswell et al., 2014).

6.6. Method of Data Collection

A structured questionnaire was used as a suitable instrument to collect data. Part 1 of the questionnaire contained demographic information. Part 2 of the questionnaire was about the strategies on the provisioning of water, and strategies on the provisioning of sanitation infrastructure. The questionnaire was on a Likert scale of 1 - 5, where (1= strongly agree, 2=agree, 3=neutral 4=disagree and 5=strongly disagree. Part 3 of the questionnaire was on the participation of communities in water delivery meetings and on sanitation meetings. Part 4 of the questionnaire was on effectiveness of uThungulu/King Cetshwayo District Municipality on the provision of water in rural areas and effectiveness in the provision of sanitation in rural areas.

Part 4 of the questionnaire was on challenges experienced by communities without water and sanitation in rural areas. The questionnaires were hand delivered by the

researcher to the participants for the collection of the data so as to provide guidance where necessary.

6.7. Pilot Study (Pre-testing data collection)

It all started with pre-testing of data collection instrument before the actual data collection. According to du Plooy-Ciliers et al. (2016:15), the pre-testing of the instrument before the actual collection of data is crucial. In the case of a questionnaire, it is suggested that the researcher needs to test the instrument in a small group of respondents just to check whether the questions were well understood and also to find out whether the questionnaire does provide the information required for the project. Kumar (2014:191) confirms that it is important for the respondent to be willing to share the information with the researcher. The information collected during this phase was never used for the actual collection of data (Kumar, 2014:191). The administration of the pilot test helped the researcher to re-phrase some of the questions that were not in good order as suggested by (du Plooy-Ciliers et al. 2016). However, the researcher noted that during the actual collection of data some members of the community had pinned their hopes to the project for job opportunities in the area and they were disappointed and frustrated when they learnt that there were no job opportunities in the process.

The questionnaire was constructed using the Likert scale, also known as the summated scale (a five-point scale) to collect data for the study. According to du Plooy-Ciliers et al. (2016), in this type of scale, the respondent is required to indicate the degree of agreement or disagreement with a number of statements related to an object. For an example; Item:

UTHUNGULU/King Cetshwayo District Municipality does not provide clean drinking water.

1	2	3	4	5
Strongly agree	Agree	Undecided	Disagree	Strongly disagree

It must be noted that if this type of scale is used, it could either provide a negative or positive response. If the positive answer is provided, a reverse sequence of responses would be provided (du Plooy-Ciliers et al. 2016:159).

According to de Vos et al. (2011) the choice of data collection methods for a researcher working from a quantitative approach can be categorised into structured observation schedules, structured interviews, checklists, questionnaires, indexes and scales. He goes on to say that quantitative data-collection usually employs measuring instruments, referring to the latter different approaches. De Vos et al., (2011), define different approaches in quantitative data collection as follows:

6.8. Administration of Research Instrument

According to Babbie & Mouton (2007) as cited by de Vos et al. (2011) the questionnaires are the most generally used instruments in research projects. The researcher will deliver the questionnaires to respondents by hand. Other items needed in research will be discussed in this chapter.

6.8.1. Ethical Consideration

According to Creswell et al. (2010:41), ethical consideration is very important in research. Ethical consideration is regarded as an aspect issue of confidentiality of the results and findings of the study as well as the protection of the respondents' identities. To Kumar (2014:282-283), ethical practice refers to the principles of conduct that governs professionals the way they carry out research. These may refer to causing harm to respondents, breaching confidentiality, using the information improperly, and etcetera. The researcher explained to the participants that their participation in the research project was voluntary and that the information provided would be kept confidential. The researcher further explained to the participants that under no circumstances would individual responses be identified by name in documents. For this study, an ethical clearance certificate was sought and it was issued to the researcher by the University of Zululand Ethics Committee as a document that guarantees the ethical behaviour throughout the research project to avoid any penalties which are usually imposed on persons who do research without ethical clear certificate and a number and also not adhering to agreed procedures (de Vos, 2011: 127). In some instances, the researcher had to abide by the prescripts of the ethical conditions, as one

traditional leader (induna) completely refused to participate telling the researcher that he deals with issues coming through Inkosi, and no one else.

6.8.2. Sampling

Sarantakos (2000) as quoted in de Vos et al. (2011) argues that the major reason for sampling is that of feasibility which is in the complete coverage of the total population which is seldom possible. In this study, the researcher used purposive sampling. In this type of method, the researcher has purposefully chosen the elements that meet the purpose of the study (du Plooy-Ciliers et al. 2016). The following group of people were used in order to solicit data for this study:

(a) King Cetshwayo Water Services Authorities,

- i. King Cetshwayo Technical Infrastructure manager,
- ii. Community leaders-councillors indunas and community,
- iii. Health centres – for example, clinics,
- iv. Public libraries
- v. Community members in the area- residents,
- vi. Community/public schools.
- vii. One hundred (100) respondents will be visited to collect the information for the study

(b) A letter was written to the King Cetshwayo District Municipality Manager to request for permission to conduct a study as participants would involve municipal officials and councillors in various local municipalities falling in the jurisdiction of the district municipality.

- i. A permission to conduct research was received from uThungulu/ King Cetshwayo District Municipality Manager.
- ii. A permission letter from the municipal manager was then attached to all questionnaires distributed to five (5) Local Municipal officials and other respondents.

6.8.3. Providing incentives

According to Kumar (2014:285), providing of incentives hinges on a researcher's generosity. To Kumar (2014), giving incentives in the form of tokens to participants who shall have wasted their time giving information is not unethical, but warns that giving of incentives before collecting data would be unethical. Furthermore, de Vos et al.

(2017:121), finds no sin in reimbursing participants for the costs incurred like time away from work or during lunch time, but they argued that it would be ambiguous if large sums of money were to be expended in compensating clients. However, it must be noted that no tokens were dished out to participants as a form of compensation in this research project.

6.8.4. Questionnaires

According to Babbie (2007:246) as cited by de Vos et al. (2011), defines a questionnaire as a “document containing questions and or other types of items designed to solicit information appropriate for analysis, “Babbie & Mouton (2007) say that questionnaires are the most generally used instruments of all. The term ‘questionnaire’ according them, may suggest a collection of questions and it can contain as many statements as questions, especially if the researcher wishes to determine the extent to which respondents hold a particular perspective. Questionnaires according to (Vos et al., 2011) may be redefined during the research project to meet what they were meant for and even be become the basis of a future scale. There are different types of questionnaires, namely mailed questionnaires, telephonic questionnaires; questionnaires delivered by hand, self-administered questionnaires, group-administered questionnaires and electronic questionnaires (Vos et al., 2011).

As indicated earlier, in this study, the researcher delivered questionnaires by hand so that respondents could complete them in the presence of the researcher. During distribution of questionnaires the researcher would always start by introducing himself to each and every respondent and explained what the purpose of the study was and that all the information gathered would be kept confidential. The researcher also showed respondents some sections where each one of them was supposed to provide the information. Each respondent had to make: x/√ in an appropriate box for part one (I) and two (II) and the rest of the questions were in a categorical scale. These research questionnaires were in two sets, that is, English and IsiZulu. That was done to benefit English and IsiZulu speakers evenly.

6.8.5. Statistical Analysis

Social sciences are often referred to, of course, quite unfairly, as the study of the obvious. But in this study, the SPSS (scientific) programme which is mostly used in a number of social sciences research projects was used. The information was collected

and captured on the computer as raw data. It all started with the descriptive statistics to organize and summarise data in a meaningful of the properties of data. According to Creswell et al. (2010), the descriptive data can be divided into two ways of describing data, that is, graphical and numerical ways. Furthermore, they emphasize that different data types require different ways of describing their properties, that is, in qualitative and quantitative. On the computer the data was organised according different variable as in the questionnaire itself. The quantitative data has a list of numerical values for each respondent distributed across a range of values. Values were described in terms of location, variation and shapes. All the information was described in a way in which the quantitative data is analysed and it was followed by the discussion and standardized scores (Creswell et al., 2010:183).

6.9. Problem of Encountered

A number of unemployed young people in one municipality were very upset to be told that the project was about the academic pursue and not for money earning. A huge number of questionnaires were returned back to the researcher uncompleted. In another local municipality traditional leader chased the researcher away because he believed that questionnaires were to be delivered to them (community) through the tribal leaders. Two government officials (DWSSA) did not participate in the research because they expected the questionnaires to be delivered to them by their own supervisors, and not the researcher. Other related challenges were as follows:

- (a) Some respondents never returned the questionnaires;
- (b) Some respondents never completed the questionnaire in full;
- (c) Some respondents left some sections of the questionnaire because of visual capacity.

6.10. Limitations of the Study

1. Municipal officials who were on leaves did not return questionnaires.
2. Some of the respondents did not answer all the questions in the questionnaire, deliberately.
3. In one municipality the respondents refused to participate fearing for victimisation if they divulge on municipality information.
4. The researcher used his own transport to collect data, therefore, fuel consumption hindered the researcher to stretch the project too far to solicit more information.

6.11. Summary

This chapter presented the methodology followed by the researcher in soliciting the necessary information needed to investigate the research problem as well as other methods used in research projects. Devos et al. (2011) argued that quantitative research necessitates that data collected be stated in numbers or quantified. The method used in conducting this research is quantitative. It is self-explanatory, as it involves the systematic collection of quantifiable information. Furthermore, it indicated how the researcher progressed with the process of the whole research (Devos et al., 2011). The chapter presented the research design, the sampling method, the tool used for data collection and the significance of validity and reliability in this study. Data collected will be presented and discussed in the following chapter.

CHAPTER SEVEN

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

7.0. Introduction

The current chapter presents the data from the survey conducted as well as the social demographic profiles of the samples selected. These social demographic factors are significant since they portray the perception of the community on service delivery in the rural area of uThungulu/King Cetshwayo District Municipality. The chapter also presents the results of analysis for the research project, trying to answer the research questions of the study. These include the result of Principal Components Analysis (PCA) conducted for the construction of the dependent variable; the Community participation and cooperation for the provision of service (COPAWP), the perceived effectiveness of the municipality in provision of water and sanitation (PEWAP) and the faced challenges by community without water and sanitation (FAEWAS), the perceived strategies on water and sanitation provision (PERSTRA) focusing on rural communities in uThungulu/King Cetshwayo District Municipality

PART I

Socio- demographic Data of Respondents

7.1 Distribution of Respondents by Gender

Table: 7.1.Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	37	50.7	51.4	51.4
	Female	35	47.9	48.6	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Field of study: 2017

Table: 7.1 above shows that out of the number of respondents interviewed in the field in 2017, 51.4% (N=37) of them were males while 48.6% (N=35) were females. This could suggest that maybe more questionnaires were received by males over females or

females were reluctant to participate. One respondent seems to have not completed the section that talks to gender. If that could be the case, then Kumar (2014:282-283), would be vindicated in the sense that respondents were not forced to complete the questionnaire and if forced that would be the violation of ethical practice and the principles of conduct that governs professionals the way they carry out research.

With regard to the issue of 51.4% (N=37) of males participating in the research process as opposed to 48.6% (N=35) females can be associated with a number of issues. To cite one or two crude examples, because of job opportunities that males chase out daily, they would always want to cease any opportunity that come their way in order to put bread on the table for their families. Many times, male respondents became angry to the researcher when they realised that the process was just for a research purpose and not offering job opportunities for them and they thus found themselves completing the form. Some men would always associate a new comer in their place for tender entrepreneurship. There is case of water project pipe supply in Limpopo Province in South Africa in Mopani District Municipality according to a report by Masondo (2017), where because of tender dispute, pipes have been lying there since 2010 to 2017. According to Masondo (2017), the reason for the water project coming to a halt was as a result of a dispute between two companies, contesting for the R200m job.

That project would supply water from Nandoni Dam outside Thohoyandou to Nsani Dam in Giyani (Limpopo Province). Furthermore, such a project would have benefited residents of Giyani and about 90 surrounding villages to access to fresh water. The area in question (Giyani) falls under the jurisdiction of Mopani District Municipality, (Masondo, 2010). Instances of that nature could discourage females in participating in any event that relates to water because of broken promises by the municipality.

According to the report provided by SAHRC in 2014, in most African countries, women were more than twice as likely as men to be responsible for water collection. Further to that, some school going age children were responsible for such activities using time which could be spent in school. This goes on to paint a picture that shows more than half of girls who drop out of primary school in sub-Saharan Africa do so because of home chores (SAHRC in 2014). Van der Waladt (2012) refers to Part B of Schedule 5 of the Constitution of the Republic of South Africa as charging local government to serve

as a vehicle to execute the responsibility of supplying water for domestic use. UThungulu/King Cetshwayo District Municipality cannot be exonerated, that is, it is also expected to provide water for all the five local municipalities under its jurisdiction for citizens. According to Ashton and Haasbroek (2002), water is regarded as a critical issue for rural communities where shortages of water, food, and energy are closely linked with poverty and other social disorders in society.

7.2. Distribution of Respondents by Level of Education

Table: 7.2. Education

	Frequency	Percent	Valid %	Cumulative Percent
Valid No formal Education	28	38.4	39.4	39.4
Matric	18	24.7	25.4	64.8
Diploma	13	17.8	18.3	83.1
Degree	8	11.0	11.3	94.4
Post grad	4	5.5	5.6	100.0
Total	71	97.3	100.0	
Missing System	2	2.7		
Total	73	100.0		

Field of study: 2017

Table: 7.2 above shows the level of education of all the respondents interviewed. The table shows that 39.4% (N=28) had no formal education, 25.4% (N=18) possessed matriculation certificates, 18.3% (N=13) Possessed Diplomas, 11.3% (N=8) had degree qualifications and 5.6% (N=4) had various unspecified qualifications. The statistics does not differentiate the respondents in terms of their gender between males and females. But deducing from the fact that women and children are largely in charge of providing

water for their households, and it is usually rural poor girl children who need to spend substantial amounts of time hunting water, it is expected that girl children constitute the highest percentage. A report presented by SAHRC in (2014), also showed that more than half of girls drop out at primary school level in sub-Saharan Africa because of home chores they perform, amongst them, travelling long distances to collect water. One could associate women with 39.4% (N=28), showing respondents interviewed as less than thirty-three (33) years of age were without formal education. An incident in Nqutu-Ward 13, (25/05/2017) in Northern KwaZulu-Natal Province which falls under UMzinyathi District Municipality where three souls of young girls were lost while they were trying to cross the road to fetch water in a dug-well is a living testimony, that indeed, girl children do have a burden of collecting water for their families (Mavuso, 2017). These young women were also vulnerable to other forms of dangers other than to be knocked down by cars. According to a report presented by (SAHRC, 2014), women and children were largely in charge of providing water for their households, and the report further says that rural poor women need to spend substantial amounts of time hunting for water in dug-wells and other sources (SAHRC, 2014).

7.3. Distribution of Respondents by Age

Table: 7.3. Age Group		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bellow 33	11	15.1	15.3	15.3
	Age 33-43	30	41.1	41.7	56.9
	Age 44-53	18	24.7	25.0	81.9
	Age 54-63	12	16.4	16.7	98.6
	Age 64 & above	1	1.4	1.4	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
	Total	73	100.0		

Field of study: 2017

Table: 7.3 above presents the respondents years in age. It shows that 15.3%(N=11) were below 33years, 41.7%(N=30) were between 33-43 years, 25%(N=18)were between 44-53years, 16.7%(=12) were between 54-63 years and 1.4%(N=1) respondent was in the range of 64 years and above.

7.4. Distribution of respondents by race group

Table 7.4. Race Group		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Black	69	94.5	95.8	95.8
	Coloured	2	2.7	2.8	98.6
	Indian	1	1.4	1.4	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Field of study: 2017

Table: 7.4 above presents the race groups of the respondents interviewed. The table shows that 95.8% (N=69) were blacks (Africans), 2.8% (N=2) were Coloureds and 1.4% (N=1) was an Indian. Since the research was conducted in rural communities, 95.8% is a true and correct reflection of black community members residing in the previously disadvantaged rural communities. According to Tewari, (2005), long before the arrival of the Whites (Settlers) in South Africa in 1652, led by Jan van Riebeeck, water rights were governed by the African indigenous laws and those laws were observed by all. According to Davis (1989) as cited by Tewari (2005), at that time, those precious commodities like water and land were free, although a feudal system was there for land

tenure. The chief or king controlled those commodities, but he did not condone private ownership. Tewari, 2005 paint a picture that a colonial community was beginning to align commercial terms and brought its own foreign values to some community commodities like water and land, as opposed to the native community that was subsistence-inclined and brought with them ownership of resources that were entrusted to the chief's control without an individual ownership. Tewari, (2005) argue that such a move led to a dual system of land ownership and of water rights within one place, as such, a dual system of land ownership and water rights developed. Any farmer who had invested money and labour in a water supply, definitely, that became a private resource for the exclusive use by that farmer who developed it for his personal use Tewari, (2005) Further to that, South African black communities were completely subdued by Settlers (White regime) and in that way, Black communities were impoverished of their land and water resources and exploited by the Whites (Tewari, 2005). For the history of South Africa, the Whites enjoyed access to water and it was available for them alone (Tewari, 2005). In that way, water regulations were in the interest of economic heavyweights, agriculture, mining and industry. The Water Act of 1956 was promulgated, and these arrangements specifically singled out whites and totally excluded rural black communities up to 1994. It was against that background that the researcher investigated strides that could have been made by the democratic government in uThungulu District Municipality to reverse the ills of the apartheid White regime after twenty (20) of democracy. According to Cross and Mullen (1987), the establishment of local and district municipalities or governments was an attempt of addressing the imbalances of the past and as a result, in 1998, a legislation on local government was passed, aiming at empowering local governments to fulfil the constitutional objectives, service delivery was expected after the fall of the colonial government Cross and Mullen.7.5.

Distribution of respondents by position held in community

Table 7.5 Position held community		Frequency	Percent	Valid %	Cumulative %
Valid	Municipal worker	19	26.0	27.5	27.5
	Community member	31	42.5	44.9	72.5
	Community leader/Induna	3	4.1	4.3	76.8
	Municipal/Tribal councillor	4	5.5	5.8	82.6
	Other	12	16.4	17.4	100.0
	Total	69	94.5	100.0	
MissingSystem		4	5.5		
	Total	73	100.0		

Field of study: 2017

Table: 7.5 above shows a position held by individual respondents interviewed. There were 27.5% (N=19) of the municipal workers, 44.5% (N=31) were community members, 4.3% (N=3) were the community leaders (indunas), 5.8% (N=4) were either municipal or tribal councillor whilst 17.4% (N=12) were DWSSA workers. Yannopoulos et al. (2015), regard water as an absolutely necessary element for all human beings in life, suggesting that no man can survive without it. According to Heymans and Totëmeyer (1988) the main function of local government is to supply 'water', and water is regarded as a national concern hence Water Act 156 prescribes water requirement to be met by all municipalities. Therefore, according to Olivier (2017), a consulted for geohydrology's groundwater, it was crucial to involve community members in general, as well as their leaders to be the owners and co-workers of the water project.

Figure 8: Public participation for groundwater project- community leaders (Indunas and councillors)

The riots that usually take place in previously disadvantaged communities were an outcry on non-delivery of essential services like water and sanitation infrastructure. The figure 45.5% and 4.3% represent community leaders respectively, yearning for essential services. When a researcher came into contact with the uThungulu District community for the information on water delivery in the area, these community leaders will quickly

vent their frustration on these scarce resources, water and sanitation in the area as well as false promises made by politicians after every five years towards the run-up to local government elections. The former president of Republic of South Africa Thabo Mbeki made a promise in his State of the Nation Address in May 2004 and said, “All households will have running water within five years.” To concretise that, in 2011 run-up to local government elections, the Commission received two complaints about municipalities that had built toilets without enclosures in their local community. One complaint was received at the end of 2009 from the Western Cape (Makhaza, Khayelitsha) resident, near the City of Cape Town Metropolitan Municipality led by the official opposition, the Democratic Alliance. The second complaint was launched by Rammulotsi in the Free State Province against the Moqhaka Local Municipality, led by the ruling party, the African National Congress. Finally, the Commission investigated the allegations and it ruled that both municipalities had violated the residents’ right to dignity, privacy and clean or conducive environment (Bill of Rights, 27(1-3).

7.6. Distribution of respondent by their positions in municipality

Table: 7.6. Position in municipality		Frequency	Percent	Valid %	Cumulative%
Valid	Senior manager	4	5.5	28.6	28.6
	Sen. Water Superintendent	1	1.4	7.1	35.7
	Sen. Tech, Manager	2	2.7	14.3	50.0
	Other	7	9.6	50.0	100.0
	Total	14	19.2	100.0	
Missing	System	59	80.8		
	Total	73	100.0		

Field of study: 2017

Table: 7.6 above present the respondents' position in the municipality. It shows that 28.6% (N=4) were senior managers, 7.1% (N=1) was a senior superintendent, 14.3% (N=2) were senior technical managers, and 50.0% (N=7) constitute the majority workers who performed support to the decision-makers to the provision of services in the municipality. All in all, the figures above give a reflection to senior positions occupied by a few, and the majority forming the bottom layer of municipal workers. Whilst there were numerous other challenges for municipalities to deliver services, Madumo (2015) argues that the issue of over-bloated workforce in most municipalities were a contributory factor to the shortage of funds to execute their responsibility as it is enshrined in the Constitution of the Republic of South Africa (Act 108 of 1996) (Madumo, 2015). Therefore, such a situation was also confirmed by Akinbosade (2016), who conducted a research in Nigerian local governments and discovered that most local government had more workforces than their carrying capacity and disregarding their budgetary provisions (Akinbosade, 2016). Gauging from the exorbitant of R10.7 billion owed by municipalities to the Department of Water and Sanitation one could easily conclude that mismanagement and over-bloated workforce should have a bearing in their failure to meet their obligation, paying their debtors (Mshengu, 2017). Kloot and Martin (2000) were of the view that a number of local governments were totally not considering the four dimensions of the performance systems that require them to focus on both the results and the means achieving good results (Kloot and Martin, 2000) In this regard, uThungulu/King Cetshwayo District Municipality could fail to carry-out its constitutional mandate in rural areas because of funds constraint.

7.7. Distribution of officials according to Departments of Water or Sanitation

Table: 7.7.Dept. water/sanitation		Frequency	Percent	Valid %	Cumulative%
Valid	Water	7	9.6	43.8	43.8
	Sanitation	1	1.4	6.3	50.0
	Other	6	8.2	37.5	87.5
	4	1	1.4	6.3	93.8
	5	1	1.4	6.3	100.0
	Total	16	21.9	100.0	
Missing	System	57	78.1		
Total		73	100.0		

Field of study: 2017

Table: 7.7 above present figures showing employees in water and sanitation units interviewed. The table shows that 43% (N=7) represent the employees for water section, 6.3% (N=1) represent employees for sanitation, while 37.5% (N=6), and 6.3% (N=1) stand for 4 and 5 respectively. Once again, Akinbosade (2016) remains vindicated in this regard, that is, when he says, some municipalities or local governments had more workforces than their carrying capacity and by so doing, disregarding their budgetary provisions. Figures shown above reflect huge numbers of people working for the two sections, water and sanitation also has fat budget which goes to salaries.

PART II

DATA OF RESPONDENTS OF THE STUDY

7.8. COMMUNITY PARTICIPATION IN WATER PROVISIONING DECISIONS

The study intended to determine whether or not the community members do participate or attend meetings convened to discuss service delivery issues, including water related issues in the uThungulu/King Cetshwayo District Municipality.

Table: 7.8. COPAWP

7.8. KMO and Bartlett's Test for COPAWP		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.707
Bartlett's Test of Sphericity	Approx. Chi-Square	243.748
	Df	36
	Sig.	.000

Table: 7.8 above shows that the variable known as COPAWP was electronically computed through PCA from the list of items. The PCA showed that KMO.707, $\chi^2=243.748$ (DF=36) $p<0.05$ indicating that the sample was adequate for the factor extraction. The PCA extracted named COPAWP shows 37.751% of variance shown in table 7.10. The study also sought to determine the level of community participation not only in water but also in other service delivery meetings. The Scree plot shows that other factors became irrelevant for extraction purposes once the variable COPAWP has been extracted.

7.9. Descriptive statistics for COPAWP

	Mean	Std. Deviation	Extraction
Municipal holds developmental meetings	3.10	1.512	.735
Community members attend meetings	2.83	1.353	.737
Females attending outnumber males	2.19	1.043	.760
Community participate in developmental meeting	2.72	1.302	.751
Community members attend sanitation meeting	2.44	1.174	.644
High quality material for toilet building	3.04	1.551	.748
Community participate in digging t/holes	1.96	.863	.694
Sanitary meetings have impact to community		1.002	.677
Municipality provides hygiene lessons to community	3.35	1.386	.760

Field of study: 2017

Table: 7.9 above indicates that “*Municipality provides hygiene lessons to community*” mean=3.35, SD= 1.386. The mean implies average, and it is the sum of a set of data divided by the number of data. In both cases, that is for water and sanitation, the mean dropped. The results show that uThungulu/King Cetshwayo District Municipality provides hygiene lessons to rural communities. Also a report on WASH interventions in 1991 revealed that water and sanitation supply coupled with lessons on hygiene showed great reductions in diarrhoeal disease. This is further supported by Dawn et al. (2015) when suggesting that the high rate of mortality was associated with cholera outbreaks and that water quality education programmes would be significant in affected areas. It is alleged that Cholera usually spread easily in conditions where drinking water is contaminated (Remigios, 2011). Therefore, proper hygiene lessons for communities would prevent person-to-person transmission of various diseases.

Since rural communities fetch drinking water from streams and roof-gutters, it is important for municipalities to provide lessons for innovative methods of water purification or treating water before consumption. This is also supported by Kahinda et

al. (2007) who say that even domestic rain water harvesting should be done with caution because there was no guarantee that the water storage tank is clean for water quality. Kahinda et al. (2007), emphasize that where rooftop has been used as water catchment, addition of a disinfectant such as chlorine to the water tank (Jojo) should be deposited to kill bacteria that might be harmful to consumers. They also caution that communities must be vigilant that microbial chemicals do not exceed international guidelines of drinking water. In a National Water Week 18-24 March 2017, which was held in uThungulu/King Cetshwayo District Municipality, the National government officials were in attendance to assist local government officials in educating the community on how to clean, manage and conserve water. The theme was “Access to Safe Water by 2010-2030 Possible through Nature” (www.allianceforwaterefficiency.org).

An organisation called WWF-SA (2016) once said, that delivering SDG 6 was possible, however to succeed in that, companies and government, individuals and communities at large were expected to step up and embed the reality, and think about opportunities of a water secure for future, and improve on policy decision making (WWF-SA (2017)). The afore said notion concurs with what the researcher had advocated in this research that it was likely that communities were not afforded an opportunity to air their views (IDP) in the decision making. The local government should convene community meetings to give a talk on water conservation for domestic use. Further to that communities should be allowed to participate constructively at such meetings.

According to World Health Organisation (2014), local government would be expected to educate and to provide chlorine to an individual or every family to put in water containers. Further to that, government mobile clinics were to attend to all areas, providing lessons on minimum standards of good hygiene to reduce morbidity by providing talking about health promotion to affected community. Education on health issues became part of the interventions implemented at the affected areas (WHO, 2014). According to Jones as cited by Freeman (2015) the health care system should include water, sanitation and hygiene interventions and programmes for the prevention of mother to child transmission of disease (PMTCT) clinics, vaccination, nutrition programmes The means that the investigation conducted in uThungulu/King Cetshwayo

District Municipality revealed that health related issues lessons were offered in the area, which suggests that the spread of numerous diseases were in good control.

7.10. Total variance Explained for COPAWP

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.398	37.751	37.751	3.398	37.751	37.751
2	1.711	19.010	56.760	1.711	19.010	56.760
3	1.399	15.540	72.300	1.399	15.540	72.300
4	.637	7.082	79.382			
5	.605	6.721	86.103			
6	.424	4.709	90.811			
7	.324	3.601	94.413			
8	.291	3.232	97.645			
9	.212	2.355	100.000			

Extraction Method: Principal Component Analysis.

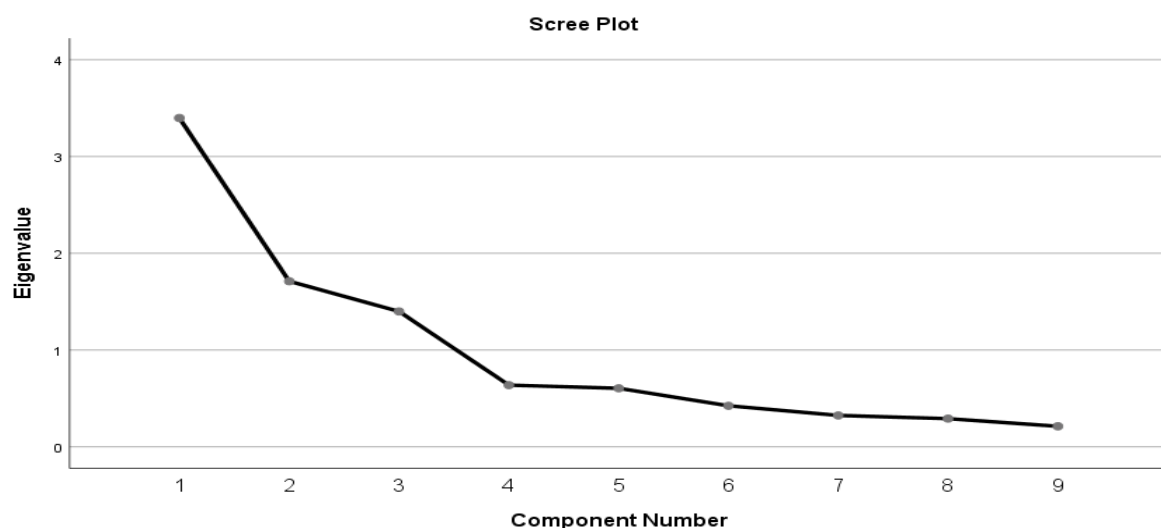


Figure 4:7.1 Scree Plot for COPAWAP

7.9 PERCEPTION ABOUT WATER PRVISIONING

The study intended to assess community 's perception on service delivery by municipalities and other service providers in rural communities.

Table: 7. 9 PEWAP

7.9 KMO and Bartlett's Test for PEWAP		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.868
Bartlett's Test of Sphericity	Approx. Chi-Square	262.349
	Df	28
	Sig.	.000

The above table shows that the variable known as PEWAP was electronically computed through PCA from the list of items. The PCA showed that KMO=.868, BTS, X²= 262.349, (DF=28), $p < 0, 5$ indicating that the sample was adequate for factor reduction. PCA extracted named PEWAP depicts 56.043% of variance shown in table (6.12). The scree plot shows that other factors became irrelevant for extraction purposes once the variable PEWAP has been extracted.

7.10. Disruptive statistics for PEWAP

	Mean	Deviation Std.	Extraction
Municipality provides bore-holes in rural areas	3.66	1.378	.329
Municipality provides quality water in rural community	3.10	1.376	.710
Municipality provides water during drought seasons	3.05	1.498	.791
Municipality provides piped water in rural area	2.58	1.563	.479
Municipality provides good pit toilet in rural areas	2.94	1.514	.724
Municipality uses high quality material for toilet building	3.19	1.566	.796
Municipality gets enough funding for toilet building	2.89	.851	.139
Municipality have innovative methods of handling night soil	3.52	1.004	.514

Field of study: 2017

Table: 7.10 above indicated that, *community is satisfied with the used by "uThungulu/The King Cetshwayo District Municipality providing bore-holes in rural*

communities”, with mean=3.66, SD=1.378. The mean is the sum of a set of scores divided by the number of scores. Yannopoulos et al. (2015), presents a traditional method of collecting water used by Danus of Alexandria in 1485 BC through dug-wells of Argus on the coast of Peloponessus and he installed the Egyptian chain-o-pots as means of pumps, in place of the “atmospheric” pump’. According to the World Bank Research Observer (1993), governments were expected to up the quality of water supplies, especially for rural development in all developing countries. Jorgensen et al. (2009) concretized that by saying that the population increase, water pollution, urban development, climate change and drought have caused disparities between the availability of clean drinking water sources and the demand for human consumption. In uThungulu/King Cetshwayo District Municipality, the National government stretched a helping hand to community as that was confirmed by a visit by the president of the Republic of South Africa. The district was allocated with the sum of R23 million specifically earmarked the provision of 32 new water bore-holes because of the approval of business plan by the Department of Water and Sanitation (Moody et al. 2015). So, indeed, the uThungulu/King Cetshwayo District Municipality does provide water bore-holes in rural communities.

The report provided by uThungulu/King Cetshwayo District Municipality’s effectiveness and commitment in the provisioning of water. The uMhlathuze Water Board together with uMhlathuze Local Municipality on 3rd and 4th of May 2017 (www.umhlathuze.gov.za) appointed a Transaction Advisor to conduct a feasibility study for the water project in uThungulu/King Cetshwayo District Municipality. Further to that, a call to the restriction to water usage by local municipalities falling under uThungulu/King Cetshwayo district indicate that the district was committed and very effective in an effort to continue providing water to all municipalities falling under its jurisdiction despite a challenge of water shortage in the country (www.umhlathuze.gov.za). To concretize its uThungulu/King Cetshwayo District Municipality) commitment, according to Eyethu Bay Watch Local News of August 23, 2017, water tanks (Jojo tanks) were delivered to uMfolozi Local Municipality for rain water harvesting. The latter mentioned local municipality falls under the jurisdiction of uThungulu/King Cetshwayo district Municipality.

On the issue of sanitation, the handling of night soil, the former Secretary-General of the United Nations, Ban-Kin Moon emphasized that investing in appropriate toilet infrastructure was very crucial, especially for girl children and women who need a private space, clean and safe facilities so that they could manage their menstruation or pregnancy period safely as they feel shameful to be seen by men relieving themselves on the open fields.

The study also examined the perception of communities on the issue of sanitation provision. And since coming to power in South Africa in 1994, the African National Congress realised the importance of improving sanitation in black communities as part of its larger programme, increasing access to basic services. When it emerged that 42 percent of the South African population did not have access to basic sanitation at the start of the noughties, the government initiated a series of high-profile voter-pleasing promises to tackle the problem. The ANC-led government declared that it would provide free basic service to all residents. The same political party promised to eradicate the hated bucket system throughout the country. Where there were no toilets at all, the democratic government promised to build some.

Further to that, Fisher, 2006 talks about women and children running the risk of being raped or experience sexual harassment when going to or from veld for open defecation in the dark, raising the importance and availability of toilets. Benjamin (2000) confirms that by referring to cases where women and children would experience the stomach upset at night, and he suggests that the person would be in trouble, fearing snakes outside in the dark. A scenario of unsafe pit toilet at school and died in Limpopo Province in South Africa is an example of children at early age were vulnerable to danger. Therefore, a call by Hosek (2013), for local government to execute their mandate of providing proper infrastructure for all communities within their jurisdiction remains intact (Hosek 2013). King District Cetshwayo Municipality as the provider of bulk infrastructure was also expected to be effective in providing basic infrastructure to communities following the discomfort women and girls of school going age experience in the absent of toilets. The community in King Cetshwayo District Municipality responded positively indicating that high quality material was used for toilet building.

7.13. Total Variance Explained for PEWAP

TABLE: 7.13				Extraction Sums of Squared Loadings		
Component	Initial Eigenvalues					
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.483	56.043	56.043	4.483	56.043	56.043
2	.930	11.630	67.673			
3	.762	9.528	77.202			
4	.633	7.913	85.115			
5	.473	5.918	91.032			
6	.365	4.557	95.589			
7	.209	2.618	98.207			
8	.143	1.793	100.000			

Extraction Method: Principal Component Analysis.

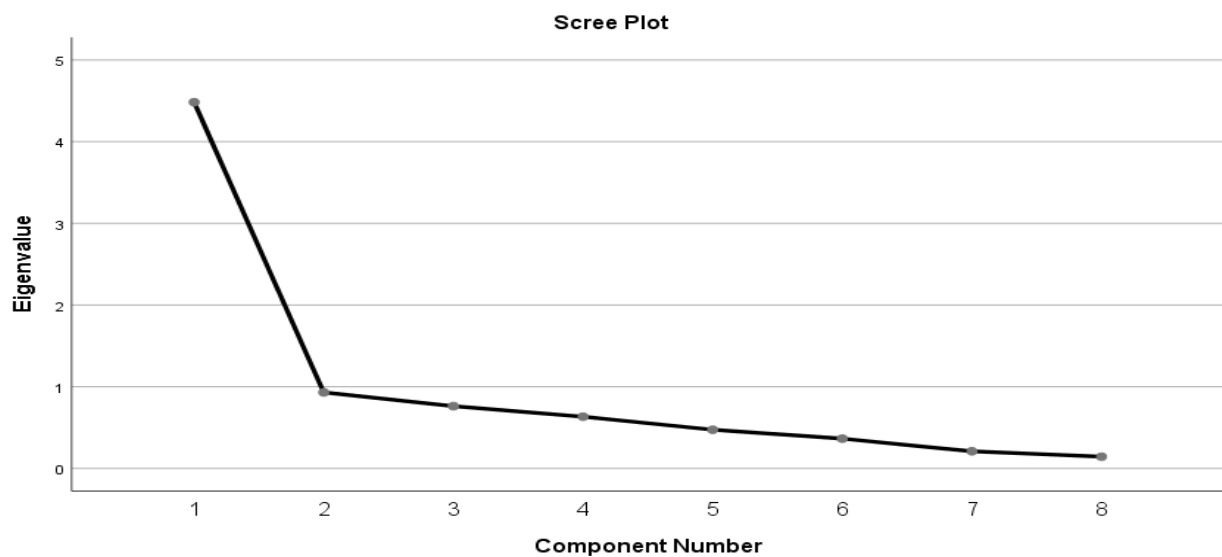


Figure 5: 7.2 Scree Plot for PEWAP

7. 11. FACED EXPERIENCES ABOUT WATER SHORTAGES

The study also evaluated the challenges experience by communities if water was temporarily cut for a day or so, or sporadically available or not available at all in their vicinity.

TABLE: 7.11. FAEWAS

7.11. KMO and Bartlett's Test for FAEWAS		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.706
Bartlett's Test of Sphericity	Approx. Chi-Square	117.854
	Df	28
	Sig.	.000

The study also sought to find out about the challenges that communities without water experience. The table above shows that the variable known as FAEWAS was electronically computed through PCA from the list of items. The PCA showed that KMO =0.706, BTS, X²= 117.854, (DF=28), p< 0, 5 indicating that the sample was adequate for factor reduction. PCA extracted named FEAWS depicts 62.242 of variance shown in table (7.22). The scree plot shows that other factors became irrelevant for extraction purposes once the variable FAEWAS has been extracted.

TABLE: 7.11.1 Descriptive statistics for FAEWAS

	Mean	Std. Deviation	Extraction
Streams/dug-wells water full of impurities	1.93	1.262	.703
Women and children fetch water at dawn	1.90	1.095	.714
Both livestock and human depends on water	1.63	.976	.705
Water supplied by water tankers is never enough	1.81	.918	.545
Some community still do not have toilets	2.41	2.661	.509
Municipality does provide toilet of high quality	2.93	1.469	.558
Human excreta and poor toilet infrastructure cause disease	2.56	.853	.697
Sanitation infrastructure in schools, clinics, libraries are not enough	2.82	1.221	.704

Field of study: 2017

Table 7.15 above indicated that, “*In terms of sanitation, the municipality provides toilet of high quality*” $mean=2.93$, $SD=1469$. The mean is the sum of a set of scores divided by the number of scores. The government was applauded for the high quality of toilets provided. According to DWAF (2002) as cited by Madi (2016), basic sanitation service refers to a minimum acceptable standard of sanitation required by people in a particular area. Further to that, Mara et al. (2010), also, view sanitation as a complex topic, which links to health and to social and economic development, and further say that it affects every individual on the planet, but it is championed by few (Mara et al., 2010). As a complex topic, Madi (2016), concurs with Mara et al. in saying that according to the reports available, those who wrote on toilet habits were often branded as vulgar, and as a result of that, only a few scholarly documentations exist on the toilet issue. Further to that, the provision of high quality sanitation infrastructure is regarded as building blocks to improving quality of life as well as guaranteeing healthy living conditions for the community as well as the alleviation of poverty (Hosek, 2013). According to Hosek (2013), local government share the responsibility with the district municipality under which they fall, delivering on sanitation service is their mandate. According to van der Waladt (2012), Part B of Schedule 5 of the Constitution of the Republic of South Africa views local governments as a vehicle to provide sewage and sanitation to communities (van der Waladt, 2012).

As mentioned earlier, table 7.15 indicated that, “uThungulu/The King Cetshwayo District Municipality does provide toilet of high quality communities”. According to Harande (2009), development cannot be achieved without the development in rural communities. Nearly 80% of the populace in developing countries live in rural areas (Harande, 2009). Furthermore, for South Africa, the basic sanitation service entails the provision of appropriate health and hygiene education. It is also a toilet which is acceptable to the user’s safety, environmentally sound, easy to clean, private, well-ventilated. It must be a toilet which keeps smell to the minimum and prevents disease carrying insects like flies and many other pests (Madi, 2016).

According to the 2011 census figures, access to sanitation increased from 83% in 2001 to 91% in 2011, including shared and individual pit latrines as well as chemical toilets. The uThungulu/King Cetshwayo District was aware of a backlog of water and sanitation

service delivery within its five local municipalities. (STATE OF THE DISTRICT ADDRESS 2019)

According Mvlisi, (2013) in all schools, there were toilet infrastructure, but a lot of them were broken and filthy, and as result of that state, learners would prefer to go to bushes than to dilapidated toilets. Where there were proper toilet structures, there were no toilet papers and hand-washing basin for learners to clean their hands after using the toilet (Mvlisi, 2013). In a meeting of school principals in Ulundi, Zululand District Municipality principals unanimously complained about the condition of toilets in schools. In one case, a Minister for Human Settlement complained that some ‘municipalities’ do not prioritise the issue of sanitation from the grant they received from the government. It is said that in another study conducted in Nepal, about 53% of the young girls (scholars) responded that they would absent themselves form school during their menstruation time because there were no proper facilities available in their schools (Mvlisi, 2013).

Table: 7.16. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.814	35.177	35.177	2.814	35.177	35.177
2	1.276	15.951	51.128	1.276	15.951	51.128
3	1.046	13.076	64.205	1.046	13.076	64.205
4	.856	10.700	74.905			
5	.789	9.861	84.766			
6	.540	6.745	91.511			
7	.373	4.664	96.175			
8	.306	3.825	100.000			

Extraction Method: Principal Component Analysis.

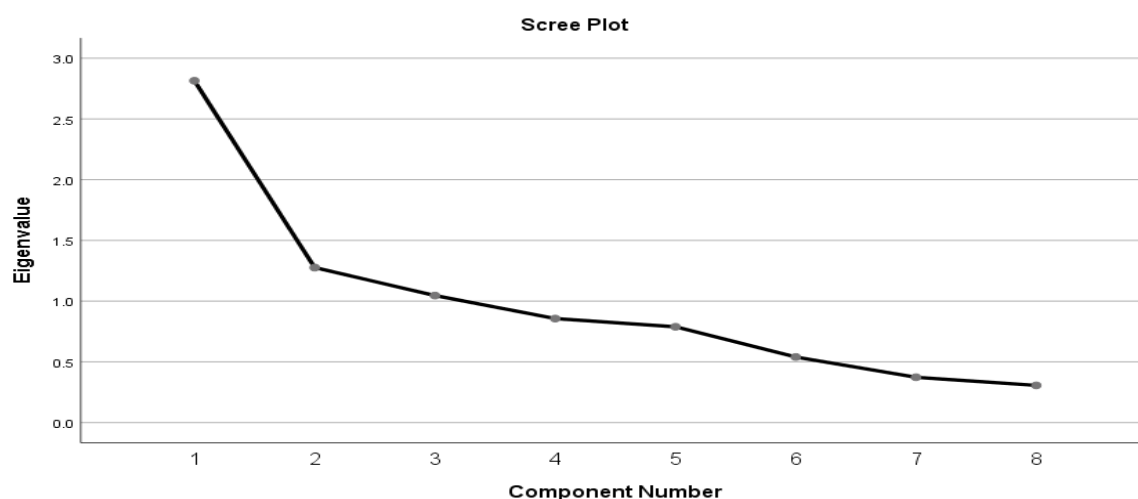


Figure 6: 7.3 Scree Plot for FAEWAS

7.12 PERCEIVEDSTRATEGIES FOR WATER PROVISIONING

The study intends to evaluate the strategies that municipalities and other service providers have in place to provide rural communities with water and sanitation.

Table: 7.12 PERSTRA

7.12 KMO and Bartlett's Test for PERSTRA

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.715
Bartlett's Test of Sphericity	Approx. Chi-Square	379.875
	Df	55
	Sig.	.000

The table above shows that the variable known as PERSTRA was electronically computed through PCA from the list of items. The PCA showed that KMO =0.715, BTS, $X^2=379.875$ (DF=55), $p < 0, 5$ indicating that the sample was adequate for factor reduction. PCA extracted named PERSTRA depicts 36.166% of variance shown in table (5.6) The scree plot shows that other factors became irrelevant for extraction purposes once the variable PERSTRA has been extracted.

Table 7.12.1: Descriptive statistics for PERSTRA

	Mean	Std. Deviation	Extraction
District Municipality water support strategies	2.99	1.099	.651
Municipalities are well-funded	3.18	.880	.620
Water infrastructure is protected against vandalism	3.71	1.404	.758
Less contaminated drinking water	3.44	1.111	.748
UThungulu Municipality met MDG-7	3.00	1.065	.533
Communities harvesting rain water for home use	3.22	1.314	.684
Municipality fight water borne disease	3.13	1.884	.685
Municipality helps with sanitation infrastructure	2.84	1.551	.804
Municipal communities helps dislodge night soil	2.75	1.530	.867
Material of high quality is used for toilet build	3.09	1.618	.795
Municipality met MDG-6 by 2015	3.16	1.154	.768

Field of study: 2017

Table 7.12.1 above indicated that, “*uThungulu/The King Cetshwayo District Municipality is doing enough to guard against the vandalizing of water infrastructure provided by the government in rural areas*”, $mean=3,71$ $SD= 1.404$. The mean is the sum of a set of scores divided by the number of scores. The NCOP meeting held in Northern Cape-NCOP (2014), had some delegates who reported that there was vandalism of infrastructure assets and high losses of water and electricity due to the illegal connections done by members of the community. However, according to the results for the research conducted in uThungulu/King Cetshwayo District Municipality it became clear that for the variable known as PERSTRA, the municipality was doing enough to guard against the vandalism of the infrastructure provided by the government in rural areas. If the results indicate that, then for a report provided by the (TNA 2017), about the stealing of a cable in the desalination plant in Richards Bay was a rare case. According to Starkey (2017), KZN Provincial Director of the Department of Water and Sanitation reported vandalism and theft of water infrastructure in South Africa was a concern. He further suggested that courts were supposed to use Section 4 (2) of the Constitution of the Republic of South Africa, 1996 signed into Law of the Criminal Matters Amended Act 2015, which suggests that any person found guilty of any

infrastructure related offences could be sentenced to imprisonment (Starkey, 2017). To him, the stealing of the infrastructure would leave communities without water for many days if not weeks. This means that uThungulu/King Cetshwayo District Municipality was free of vandalism to government property.

According to Madzivndila and Asha (2012), they suggested that post-apartheid era, in South Africa, the democratically National Government has entrusted its responsibility of service delivery to the local spheres of government to play a mediatory role to provide essential services to its local community and improve the quality of life of the residents. Further to that, according to Chen et al., (2005); Marsden and Pickering, (2006); Kenney et al., (2008) as cited by Jorgensen et al. (2009), government and other water service providers were introducing water management strategies to assist municipalities to provide sufficient water even to the previously disadvantaged communities. It was therefore evident that the municipal management was in the fore-front to come up with water management strategies (Jorgensen et al., 2009). According to Mukheibir (2007), concretises that there was a need for countries and municipalities to come-up with a framework for water strategies, especially because of drought that was threatening to sweep water on the surface of the earth. Therefore, for countries like South Africa were running a risk of running short of drinking water, if so, many countries, many of these countries may not meet their obligation of halving communities without safe drinking by 2015. Therefore, series of potential adaption strategies by municipalities suitable for conditions to come should be well in advance (Mukheibir, 2007).

With regard to sanitation, uThungulu/King Cetshwayo District Municipality met MDG-6: halving previously disadvantaged rural communities without proper sanitation by 2015. According to (Carr 2011: 5), the Millennium Development Goals especially goal number seven (MDG.6), stipulates that all countries were expected to have halved the proportion of communities without safe drinking water and safe sanitation by 2015. South Africa is one of the few countries in the world that talk about the basic right to sufficient water in its Constitution, Act 108 of 1996, which states that "Everyone has the right to have access to sufficient food and water".

The 2012 the WHO/UNICEF reported that about 70% of the population in the Sub-Saharan Africa were still using unimproved toilet facilities or had resorted to open

defecation. It said that in 2008 the then Prime Minister of India quoted Mahatma Ghandi in 1923 saying “sanitation is more important than independence” (Mara et al. 2010). In the picture painted by the King Cetshwayo District that concurs with the implementation of Goal-6 of the United Nations on Sustainable Development Goals (SDGs) which state that countries of the world should provide clean water and sanitation for all (WRC, 2013). According to Mvlisi (2013), in some parts of South Africa certain schools never had proper toilets and thus depriving learners with the right to formal basic education. In the State of the Nation Address in May 2004, the then president of Republic of South Africa, Thabo Mbeki made a promise that “all households will have running water within five years”, (Mbeki, 2004).

With the development of South Africa’s Sanitation Policy, new national and international development imperatives have been taken into consideration, which includes the country’s National Development Plan (NDP) target for all South Africans to have affordable access to hygienic sanitation before 2030. These targets include the 2015 international SDGs, which aim to achieve access to adequate and equitable sanitation and hygiene for all South Africans, particularly women and girls. In a meeting dealing with issue sanitation a representative of eThekweni Municipality, Mr Malakwane reported that South Africa has placed focus on the reduction of the sanitation backlog by ensuring universal access to sanitation, and he further said that such an action has resulted in the country advancing in addressing the sanitation backlog (Pillay, 2019).

7.13. Total Variance Explained for PERSTRA

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.978	36.166	36.166	3.978	36.166	36.166
2	2.774	25.220	61.386	2.774	25.220	61.386
3	1.160	10.542	71.928	1.160	10.542	71.928
4	.710	6.452	78.380			
5	.592	5.380	83.760			
6	.489	4.448	88.208			
7	.355	3.225	91.433			
8	.329	2.989	94.422			
9	.257	2.338	96.760			
10	.230	2.092	98.852			
11	.126	1.148	100.000			

Extraction Method: Principal Component Analysis.

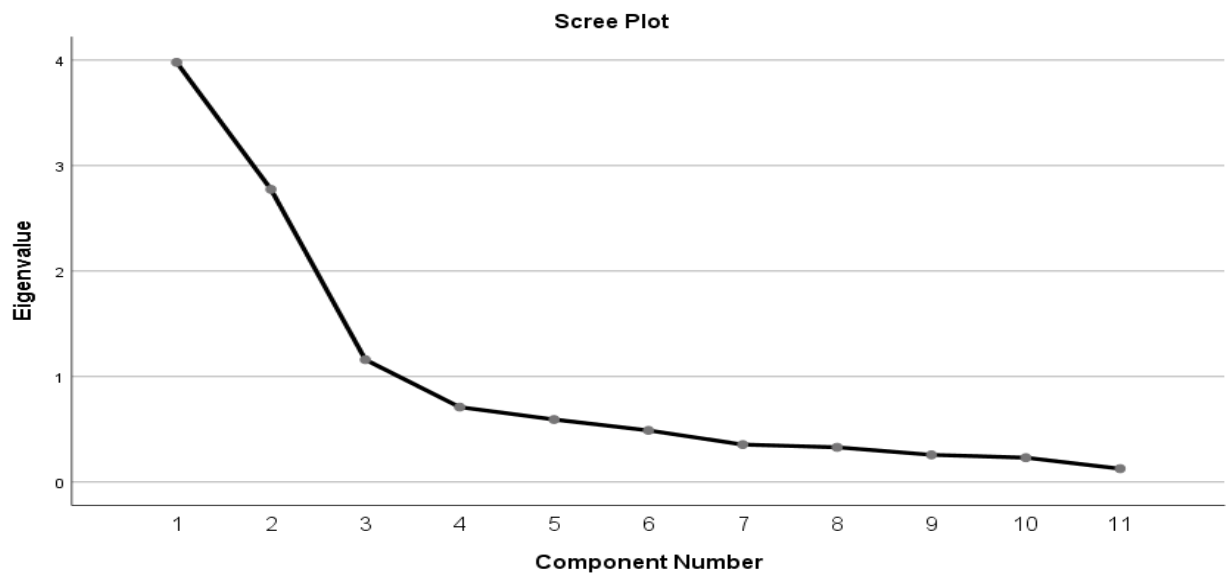


Figure 7: 7.4 Scree Plot for PERSTRA

CORRELATION: Table 7.20

Correlations		PEWAP	COPAWP	PERSTRA	FAEWAS
PEWAP	Pearson Correlation	1	-.108	.374**	-.190
	Sig. (2-tailed)		.380	.004	.130
	N	68	68	59	65
COPAWP	Pearson Correlation	-.108	1	-.288*	-.002
	Sig. (2-tailed)	.380		.023	.989
	N	68	72	62	68
PERSTRA	Pearson Correlation	.374**	-.288*	1	-.498**
	Sig. (2-tailed)	.004	.023		.000
	N	59	62	62	58
FAEWAS	Pearson Correlation	-.190	-.002	-.498**	1
	Sig. (2-tailed)	.130	.989	.000	
	N	65	68	58	68

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

7.14 Correlations

The study sought to evaluate the relationship between four (4) variables, PEWAP, COPAWP, PERSTRA and FAEWAS. The results show that (i) PEWAP and PERSTRA are correlated, $r=.374$, $p<0.01$ (2tailed), which means null, hypothesis is rejected. (ii) COPAWP and PERSTRA negatively correlated, $r=-.288$, $p<0.01$ (2tailed), which means

hypothesis 2 rejected. (iii) FAEWAS and PERSTRA and (IV) PEWAP and FAEWAS were also negatively correlated, $r=-.498$, $p<0.01$ (2tailed), which means that hypothesis 4 was rejected.

According to the results shown above, PEWAP and PERSTRA are correlated, $r=.374$, $p<0.01$ (2tailed), which means hypothesis 1 accepted. The results show that there is a relationship between the perception about water provisioning and the perceived strategies on water provisioning. That indicates that communities are satisfied with manner in which uThungulu/King Cetshwayo is providing the water bore-holes in the rural areas. According to Reddy and Biyela (2003), when local municipalities were introduced in December 2000, they were facing numerous problems, especially when it came to funding. In that way, it was not easy for the municipalities to pursue their mandate like to provide water in rural areas. Local municipalities had a responsibility to transform what was known as the Regional Services Councils that were there to provide services to Black communities to usher in District Municipalities that were to service rural communities with water and other social needs (Reddy and Biyela, 2003). The other major obstacle was to try to blend traditional leadership with local democracy and the two had to become an integral part of local governance. According to Mgwebi (2010), there was lot of structural disadvantages that were caused by apartheid that needed to be removed and allow local municipalities to play their role in ensuring that democracy work for the poor communities (Mgwebi, 2010) Therefore nowadays, according to Stytler and De Visser (2007) as cited by Morumo (2015), local government should be regarded as tool of the constitutional system of decentralised administration meant to improve services. The above results depict what the local municipalities were designed for, and such communities perceived that municipalities were providing water in rural areas and also support the strategies currently in place to provide water in rural areas previously neglected by the regime government (Antwi-Boasiko, 2010).

In the same vein, as we say “water is life” and “sanitation is dignity” the idea is that while water is highly regarded as “life”, we also need to regard sanitation as “dignity” and equally important to human kind (WHO, 2008). Remigios, (2011) had a strong view that women, water and sanitation is a hand in a glove, that is, the two are not easy to separate because of their critical relationship. Again in this study the results also show that the district municipality provide good pit toilets in rural areas built with high quality material.

These results support a notion that says provisioning of sanitation infrastructure is part of improving quality of life, and thus guaranteeing safe and healthy living conditions for communities. Further to that, sanitation is also part of poverty alleviation (Hosek, 2013).

In terms of strategies, Mukheibir (2007), was of the view that there was a need for municipalities to come-up with a framework for water and sanitation strategies, as waves of drought were threatening to sweep water available on the surface of the earth. Therefore, communities in uThungulu/King Cetshwayo District Municipality perceived the strategies in place for future development of the district as utmost important.

7.15 SOCIO-DEMOGRAPHIC DATA OF ALL RESPONDENTS

(a) Table 7.2.1 shows that out of the number of respondents interviewed in the field in 2017, 51.4% (N=37) of them were males while 48.6% (N=35) were females. One respondent seems to have not completed the section that relates to gender.

(b) Table: 7.2.2 shows the level of education of all the respondents interviewed in the field in 2017. It shows that 39.4% (N=28) had no formal education, 25.4% (N=18) possessed matriculation certificates, 18.3% (N=13) Possessed Diplomas, 11.3% (N=8) had degree qualifications and 5.6% (N=4) had various unspecified qualifications. The statistics does not differentiate the respondents in terms of their gender, between males and females.

(c) Table 7.2.3 presents the respondents years in age interview in the field in 2017. It shows that 15.3%(N=11) were below 33years, 41.7%(N=30) were between 33-43 years, 25%(N=18) were between 44-53years, 16.7%(=12) were between 54-63 years and 1.4%(N=1) respondent was in the range of 64 years and above.

(d) Table 7.2.4 presents the race groups of the respondents interviewed in the field in 2017. The table shows that 95.8% (N=69) were blacks (Africans), 2.8% (N=2) were Coloureds and 1.4% (N=1) was an Indian. Since the research was conducted in rural communities, 95.8% is a true and correct reflection of black community members residing in the previously disadvantaged rural communities.

(e) Table 7.2.5 shows a position held by individual respondents interviewed in the field in 2017. There were 27.5% (N=19) of the municipal workers, 44.5% (N=31) were

community members, 4.3% (N=3) were the community leaders (indunas), 5.8% (N=4) were either municipal or tribal councillor whilst 17.4% (N=12) were DWSSA workers.

(f) Table 7.2.6 presents the respondents' position in the municipality. It shows that 28.6% (N=4) were senior managers, 7.1% (N=1) was a senior superintendent, 14.3% (N=2) were senior technical managers, and 50.0% (N=7) constitute the majority workers who support the decision-makers to the provision of services in the municipality. The figures give a reflection to senior positions occupied by a few, and the majority forming the bottom layer of municipal workers.

(g) Table 7.2.7 presents figures showing employees in water and sanitation units interviewed in 2017. The table shows that 43% (N=7) represent the employees for water section, 6.3% (N=1) represent employees for sanitation, while 37.5% (N=6), and 6.3% (N=1) stand for 4 and 5 respectively.

7.16 PRESENTATION OF DATA OF THE RESPONDENTS

(a) Level of community participation in meetings convened for water and sanitation

Table: 7.9 indicated that *Municipality provides hygiene lessons to community* mean=3.35, SD= 1.386. The results showed that there is a correlation between position in municipality and COPAWP $r=.356$, $p<0.05$ (1tailed). The correlation between COPAWP and all other variables fell below the significant level when correlated with COPAWP

(b) There were also other factors that were contributing towards poor service delivery of water and sanitation in previously disadvantaged rural communities in uThungulu/King Cetshwayo Municipality. Table: 7.12 above indicated that, "The uThungulu/King District Municipality provides water bore-holes in rural communities" mean=3.66, SD=1.368. The results showed that PEWAP is correlated with gender, $r=0.254$, $p<0.05$ (1tailed), age group, $r=0.220$, $p<0.05$, position in municipality, $r=.141$, $p<0.05$. All other demographic variables fell below significant level when correlated with PEWAP.

(c) Challenges faced by communities without water and sanitation infrastructure

Table: 7.15 indicated that, "Women and children wake-up at dawn to fetch water from streams, dug-wells and communal water taps", mean=2.93, SD=1.469. The results also

show that FAEWAS is correlated with educational qualification, $r=.192$, $p<0.05$ (1tailed), position held, $r=.234$, $p<0.05$, position in municipality, $r=.451$, $p<0.05$).

(d) Strategies/ solutions for the provision of water and sanitation

Table: 7.18 indicated that, “The uThungulu/King Cetshwayo District is doing well *In the provisioning of toilet of high quality, still schools*”, $mean=2.93$, $SD=1469$. According to the results for the research conducted in uThungulu/King District Municipality, the variable known as PERSTRA, show that the municipality was doing enough to guard against the vandalism of the infrastructure provided by the government in rural areas.

7.17 DISCUSSION:

7.17.1. Socio-demographics of the study

The highest number (48.6%) of females as compared to males who participated on the survey conducted in uThungulu/King Cetshwayo District Municipality suggests the desperation of women when it comes to the availability of water in the household. This confirms the overwhelming view that women and children are in charge of providing water, and that they spend substantial amounts of time hunting water for their families. The study has revealed that out of all the respondents interviewed, 39.4% had no formal education, 18.3% possessed diplomas and only 11.3% had degree qualifications. The study showed that 15.3% of the respondents were below 33years of age. In terms of race groups, 95.8% of the respondents interviewed, were black. This is a true reflection of the number of black communities residing in the previously disadvantaged rural areas. Again, the above figures may translate to school going age population which is responsible for the home chores such as the fetching of water, at times absenting themselves from school for the sake of getting water for their families.

The results also showed the involvement of all prominent stake-holders in the provisioning of basic services. The municipal managers, ward councillors, DWSSA workers, indunas and other tribal authorities, community members at large and all those who would be the decision-makers in the provision of the basic services. On the issue of the socio-demographics, only 43% represent the employees for water section, whilst 6.3% represent employees for sanitation. A large percentage of the population falls on the side of the members of the community who need these basic services. The largest

number falls on the society- preciously disadvantaged that should be serviced. According to the researcher, it is these masses who should take their needs – priority list (IDP) to municipal officials for implementation, and not the visa versa of the current situation. The following discussion will be based to the results on various variables of the study.

7.17.2 Data of the respondents of the study

While the study sought to investigate the level of participation in water and sanitation meetings, it became evident that communities were more interested to the meetings that were convened for other areas of interest; like their personal development. The results show that the municipality do hold meetings for water and sanitation, but communities chose to attend developmental meetings rather than meetings scheduled for water and sanitation. The reason for the neglecting of water and sanitation could be perpetuated by previous meetings for the delivery of water and sanitation that could not bear tangible results, instead frustrated communities who had pinned their hopes for better life.

The study also intended to investigate the effectiveness of the uThungulu/King Cetshwayo District Municipality in providing safe drinking water in rural communities. The results proved that the municipality was supplying water to rural communities of uThungulu/King Cetshwayo District Municipality. This was correctly in relation to what is suggested by Angko, (2013) that local municipalities were expected to provide domestic and environmental hygiene conducive to human kind. Further to that, according to that, according to the WHO (2008) municipalities were expected to adapt their systems of water, sanitation, and hygiene to the community's changing needs since that was regarded as the developmental way of life. In terms of WHO (2008), providing the environment that is conducive to the modern ways of life was important that it would make communities to practice new methods of handling the human excreta instead of open defecation.

According to Moe and Rheingans (2006), a number of studies indicate that there is a practice of indiscriminate disposal of human excreta on open dump sites and under the bushes. For the WHO the poor methods of handling human excreta would also lead to high risks of water related diseases. Diseases like diarrhoea were mostly affecting children under the age of five years. Such diseases were common in the previously

disadvantaged rural communities like those found in uThungulu/King Cetshwayo District Municipalities. The uThungulu/King Cetshwayo was found to be encouraging communities with safe methods of handling the night soil. This concurs with Hosek, (2013) who is also of the idea that local municipalities should share the same sentiment as the district municipality in playing a pivotal role in addressing the needs of communities that fall under their jurisdiction. In the same vein, van der Waladt (2012) shares the same view that the Constitution of the Republic of South Africa regards local municipalities as the only vehicle responsible for the provision of the basic services like water, sanitation, removal of refuse and other humanly related needs.

The results have indicated that women and children were responsible for the collection of water for their families and they have to do that during the early hours of the day. But coupled with that, are dangers into which they find themselves exposed to. At times young school going children have to cross roads to fetch water from streams and wells. An incident of that nature once occurred in uMzinyathi (Northern KwaZulu-Natal Province) where two girls were knocked down by a vehicle while trying to cross the road to fetch water (Mavuso, 2017). Aside from such dangers, the little children could be bitten by dangerous snakes while going to collect water. Local governments have been in existence for more than fifteen years now, however, it was still engulfed with numerous violent protests for the non-delivery of essential services. According to the researcher the situation calls for the change of order; where IDPs should be drafted by communities themselves and prioritise activities according to their needs and not municipal councils taking the IDPs for to communities for their approval. In uThungulu/King Cetshwayo district, some areas like Buchanana, community still protest for the lack of supply of water (Harry, 2020) Such a scenario could be averted if IDPs were prepared and provided by communities to municipalities for implementation; and not the municipal councils. For this reason many a times, ward councillors and their families find themselves being the victims of violent service delivery protest taking place in most of the South African local municipalities (von Holdt, 2013).

With regards to the provision of toilets, the results have indicated that the uThungulu District Municipality was proving toilets of high quality material. In other words, the uThungulu/King Cetshwayo District Municipality was successful in implementing Goal-6 of the United Nations on Sustainable Development Goals (SDGs). According to that

pledge, countries of the world were required to provide safe sanitation for all (WRC, 2013). Aside from meeting SDG-6, uThungulu/King Cetshwayo District Municipality, managed to meet and to address the desired service of the community. Further to that, the provision of toilets of high quality material tallies with the requirements as suggested by DWAF (2002) as cited by Madi (2016). The use of high quality material vindicates Madi (2016) who says that proper sanitation services refer to the acceptable standard required by people in a particular area. Further to that, proper sanitation is linked to good health and hygiene and safety to the user, also easy to clean, keeps smells to the minimum and finally prevents disease carrying insects.

In spite of all the difficulties which the uThungulu/King Cetshwayo District Municipality, has gone through, Akinbosade (2016) argues that they should be there since according to him, no organisation would ever be entirely harmonious, and he regards challenges as part of any organisation. In his view, challenges rather than being dysfunctional were regarded as the ingredients of any organization and were important for its continued existence. According to Akinbosade (2016) challenges should be there as the building blocks for future development and new strategies.

Communities in uThungulu/King Cetshwayo District Municipality indicated that the municipality was protecting its water infrastructure against vandalism. While the issue was around the strategies for future provision of water in uThungulu District Municipality, communities indicated that water infrastructure was well taken care of. It means that the stealing of a cable in the desalination water purification plant in Richards Bay was a town related issue, and not for rural communities. This is in spite of Starkey's, (2017) concern that there was vandalism and theft of water infrastructure in South Africa. Further to that uThungulu/King Cetshwayo District Municipality was providing clean drinking water, and also encouraging communities with the harvesting of rain water.

7.18. Summary

This chapter presented and discussed the results of the biographical information as well as the results of all the research respondents. The next chapter will summarise the study by presenting findings of the study, contribution to new the knowledge and then make recommendations for the future research of the study.

CHAPTER EIGHT

SUMMARY, CONCLUSION AND RECOMMENDATIONS

8.0. Introduction

This chapter concludes by using the data collected by the researcher to present the findings of the study, contribution to the body of knowledge and then makes recommendations based on the findings thereof. The principal aim of the study was to investigate the status of household water and sanitation infrastructure in rural communities falling under the jurisdiction of uThungulu/King Cetshwayo District Municipality. The study was necessitated by the continuous violent protests over service delivery at local government levels that have been noticed since 2006, as well as the reports that kept on surfacing about the poor state for the provision of basic services (Morudu, 2017). Further to that, the recent service protest in uThungulu/King Cetshwayo District Municipality (Buchanana) where rural community in uMhlathuze local municipality were complaining among other things about the unavailability of clean drinking water (Harry, 2020). Again to this date, the South African Government, through its representatives (politicians), still make promises that provoke the anger of communities because they do not deliver according to promise. In the Orange Free State Province for example, the government promised to eradicate the bucket system sewage, but still communities are using the bucket system toilets. The Department of Water and Sanitation Ministry made a promise that by end of April 2020 it shall have completed the toilet project (NDP, 2030). Such acts are a clear indication that politicians and policy-makers have not established underlying relationship between the level of service delivery and these widespread of violent service delivery protests.

The scorching sun and heat waves are a worrying factor throughout the world, coupled with famine, was also a matter of grave concern. Drought is often linked to famine in semi-arid areas of Sub-Saharan Africa where agro-pastoralists are badly affected (Muchuru et al., 2017). The adoption of the Millennium Development Goals by 166 countries, and subsequently the Sustainable Development Goals, and their commitment in achieving some of these goals by 2015 made the researcher to investigate the amount of work that has been done by the uThungulu/King Cetshwayo District Municipality in addressing items mentioned in goal number 7, which relates to the halving the communities without clean drinking water and proper sanitation by 2015

(Kahinda et al., 2007). At times, communities perceive the municipal officials to be self-serving and neglectful of their (communities) needs as the rural dwellers, while some municipalities were reportedly even put under the provincial administration because of their failure to deliver services (Cele, 2015). The other worrying factor is the current status quo which allows municipalities to deliver services according to the dictates of their priority lists (availability of funds), and not according to the needs and wishes of communities, hence communities will vent their anger by waging violent protests if their wishes are never met. This also usually creates a rift between the dwellers and municipalities. Communities should be afforded an opportunity to draw their wish list and submit the same to the ward councillor for further transmission to the municipal council for implementation.

However, according to the 2016 report, about 74.4% of households in South Africa had access to safe water, and 80% of households had an access to the proper, adequate and required standard sanitation (CS 2016/Statistics South Africa, 2016). The latter conviction was also confirmed by the findings of this study.

8.1. Findings

The findings of the study have indicated that women were responsible for the provision of water for their families. The results of the study have also revealed that out of all the respondents interviewed, 39.4 % of them had no formal education and that 69% of them were blacks. This confirms the findings presented by a number of scholars that the school going age children were responsible for the collection of water for their families, and thus depriving them the right to education. The highest number of the research respondents recorded showed that 95% of them were black. Again, this shows that black communities were still trapped in poverty. This is despite the fact that National Government of South Africa entrusted the delivery of basic services to local governments which according Madzivhandila and Asha (2012), were the closest structure to the communities for their daily needs. The study has also shown that 43% of the respondents were employees for water section in uThungulu/King Cetshwayo District Municipality. This clearly indicates that Water and Sanitation officials fully participated in the study.

According to the data collected from five local municipalities (uMhlathuze, uMfolozi, uMlalazi, uMthonjaneni and iNkandla which constitute the uThungulu/King Cetshwayo

District Municipality, it was evident that efforts have been made to provide clean drinking water for communities, especially in those areas adjacent to towns. The study has revealed that the municipality, specifically uThungulu/King Cetshwayo Municipality does hold meetings for water and sanitation. Further to that, uThungulu/King Cetshwayo District Municipality does provide water bore-holes for rural communities. Since the study intended also to investigate the effectiveness of the uThungulu/King Cetshwayo District Municipality in providing safe drinking water in rural communities, the findings of this study indicated that the municipality was effective in providing safe drinkable water. In other words, the uThungulu/King Cetshwayo Municipality does sub-scribe to its constitutional mandate of providing safe drinking water and sewage and sanitation to communities (van der Waladt, 2012). According to the researcher, the bone of contention might be around the drawing and implementation of the Integrated Development Plan (a five-year plan) which acts as a guiding thread for all municipalities and communities alike to achieve the set developmental goals. Such a view is affirmed by Madumo (2015), who views the IDP as a cornerstone for all forms of development in municipalities. Therefore, sufficient consultation is needed to have all stakeholders on board before auctioning the content of an IDP. With regard to the challenges that are faced by some communities within the district, there should be strategies and interventions to resolves such challenges amicably. With regard to the provision of toilet infrastructure, the results have shown that uThungulu/King Cetshwayo Municipality provided toilets of high quality material. The results have shown that the municipality did convened meetings for the education in new methods of handling night soil.

To address the challenges of water and sanitation provision infrastructure as well as the protection of property, the results have shown that the municipality was doing enough to guard against the vandalism of municipal property. Although, there were rare cases of mismanagement and stealing of material, but that was at low scale. However, there were recommendations made for future study.

8.2. Recommendations

(a) Since communities do attend meetings scheduled by municipal officials to present to them the IDP, people should be allowed to list or prioritise of their own needs rather than to be decide for. There should be enough consultation (stakeholders) when the

IDP is drawn. This might narrow chances of community violent service delivery protests within municipalities.

(b) Worldwide, parity is (gender equality) on top of every agenda, be at workplace or in any other corporate world, males and females should be on equal footing. The issue of women and girl children responsible for collecting water should be minimised

(c) Government should spend more money on the previously disadvantaged rural Black Communities since they (blacks) were coerced by the White regime to these subserviced arid areas.

(d) National Development Plan (NDP 2030) should be honoured by the South African Government following the time frame and commitment made by the DWS, to say, bucket toilet system would be eradicated in David Kruiper Local Municipality, Northern Cape, Kouga and Senqu Local Municipalities in the Eastern Cape (City Press, 09/02/ 2020).

(e) Traditional leaders (amaKhosi) should also be given certain roles guaranteed in the Municipal Systems Act which speak to the community developmental programmes (as indigenous leaders). Over the current status quo, they only enjoy a seat in municipal councils with no powerful voice on matters affecting their subjects. Furthermore, there was still a gap between the tribal-heads or (Traditional Councillors) and Local Government Officials and /or Political Party Councillors). Both parties need to iron-out those differences if any for the smooth rural local governance to take place.

(f) There must be political accountability among local government officials. Government officials should refrain from corruption activities as it is said that there were times where communities have to pay a bribe to obtain the required service because that may undermine confidence in leadership accountability. Furthermore, such a practice makes citizens to cast a doubt to municipal councils and regard them as weak institutions with limited functions. The elected councillors may be considered as lacking vision and unresponsive in their dealings (Bratton, 2012).

8.3. Contribution to the body of knowledge

Municipal councils prepare the Integrated Development Plan (IDP) for communities to inform them about what the government intends to provide. In reality, communities (in

their respective wards) should submit the priority list of their needs to municipal councils. The current status quo allows municipalities to deliver services according to the dictates of their priority list based on the affordability (availability of state funds), and not according to the needs of communities, hence communities will at the end vent their frustration by waging service delivery violent protests. The politicians need to re-visit the: Local Government- Municipal Structures Act, No.117 of 1998 and Regulations, Chapter 5, section 84, subsection (b) to(c) together with Local Government: Municipal Systems Act, No.32 of 2000 and regulations, Chapter 5, section 27 to 30 with all subsections of the mentioned sections. Communities need to feel accommodated in the service delivery plan (IDP) which according to van der Walddt, (2012) makes the community to benefit from democratically elected government. Further to that, democracy according to Briscoe and Ferranti (1988) confirm that local people should be allowed to be the decision makers, maintainers and also overseers of all projects delivered in their area instead of local government delivering on their own accord. Communities were unlikely to revolt against their own voice of reason.

8.4. Recommendations for further research

“Do communities revolt against their own voice of reason?” The answer is, “NO”. Therefore, communities need to be afforded an opportunity to present their own priority lists (IDP) to municipal councils, and not the visa-versa. The role of municipal councils in the provisioning of service delivery needs to be explored further in conjunction with the drawing of an IDP. Municipal councils need to be guided by the content of the three important documents that guide politicians (councillors at local government); (a) The Constitution of the Republic of South Africa, Act No.108 of 1996 as Amended, Chapter 87, (b) Municipal Structures Act, No. 117 of 1998 and Regulations as Amended, and (c) Municipal Systems act, No.32 of 2000 and Regulations as Amended. According to Anthony Giddens’, in his argument about “World Systems Theory”, if the system fails its intended results, it can only be corrected by reconstructing the structure. Therefore, politicians need to re-visit the Municipal Structures Act No.117 of 98 and the Municipal Systems Acts No. 32 of 2000, respectively to minimise violent service delivery protests in South Africa.

8.5. Conclusion

This study concludes by noting that despite the challenges here and there, it became evident that post-apartheid era, from 1994, South Africa has become a better place to live in. Of course, there have been challenges as a result of a huge debt that the democratic government inherited from the colonial government, but many strides have been made in community development. It was also noted that municipalities within the MTEF (Municipal Infrastructure Grant) R279 billion received per year by provinces, the KwaZulu-Natal Province receives the lion's share of that amount due to the formula currently utilised based on the population dynamics of its area (PMG, 2014). But it was also crucial for politicians to give communities a space to enjoy the benefits of democracy by allowing the members of the community to draw their own IDP. According to Lehohla (2017), the former South African Government Statistician, the basic services like electricity, water and sanitation were the fundamental building blocks of improving quality of life (Lehohla, 2017). It is encouraging though that the "Better life for All" currently viewed as a Utopia to rural communities, will someday finally be attained.

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ANNEXURES A

- A. LETTERS: REQUESTS & RESPONSES
- B. UTHUNGULU/KING CETSHWAYO DISTRICT MAP
- C. MILLENNIUM DEVELOPMENT GOALS (MDGs)
- D. WATER AND SANITATION POSTERS



UNIVERSITY OF ZULULAND

UHLAKA LWEMIBUZO

ISIHLOKO

UHLAKA LOKUQOQA ULWAZI MAYELANA NEZINHLELO

ZOKULETHWA KWAMANZI NOKUQOQWA KWETSHE LENTABA

3	Izinga lemfundo Imfundo nje yangasese Matekuletsheni(Matric) Diploma yaseKolishi lamakhono Iqhuzu lemfundo yakwaNgqondonkulu(University Degree) Iqhuzu elevile emfundweni yakwaNgqondonkulu(Post Graduate)	<div></div> <div></div> <div></div> <div></div> <div></div>
4	Uhlanga olumele Owomdabu waseAfrica (Black) Ikhiladi (Coloured) Owomdabu wase-Ndiya (Indian) OmHlophe (White)	<div></div> <div></div> <div></div> <div></div>

5	<p>Khetha uhlangothi olumele noma oyilo</p> <p>Umsebenzi wakwaMasipala</p> <p>Iskhamuzi sendawo</p> <p>Umholi womphakathi (Tribal councillor)</p> <p>Umholi womphakathi (Political councillor)</p> <p>Chaza uma wehlukile kulabo abangenhla</p>	<div></div> <div></div> <div></div> <div></div> <div></div> <div></div>
<p>QAPHELA: IMIBUZO EMBILI ELANDELAYO IQONDENE NABASEBENZI BAKAHULUMENI WASEKHAYA (NOMBOLO 6 NONOMBOLO 7)</p>		
6	<p>Khetha uhlangothi lukaMasipala olumele lapha emsebenzini?</p> <p>Induna enkuklu (Senior manager)</p> <p>Induna ebhekele ezentuthuko (Senior Development Manager)</p> <p>(Induna ebheke ezobuchwepheshe besimanjemanje</p> <p>Chaza uma wehlukile kulabo abangenhla.</p>	<div></div> <div></div> <div></div> <div></div> <div></div>
7	<p>Khetha inxenye obambe kuyo iqhaza kulezi ezilandelayo</p> <p>Umnyango waManzini</p> <p>Umnyango Wokuqoqwa kwetshe lentaba</p> <p>Uma wehlukile kokungenhla chaza</p>	<div></div> <div></div> <div></div> <div></div>

INGXENYE YESIBILI (PART II) KUQONDENE NEZIPHATHI-MANDLA
ZOMKHANDLU KUPHELA

(i) Isu-ngqangi lokunikezela ngamanzi: Water Supply Strategies

<i>Sebenzisa uphawu u-X- ukuveza umbono wakho maqondana nenombolo echaza ukuthi :1=Ngiyavuma, 2=Impela ngiyavuma, 3=Angivumj futhi angiphiki, 4=Ngiyaphika, 5=Ngiphika ngima ngentaba.</i>		1	2	3	4	5
1	Uhulumeni Wesifunda sasOthungulu usezenzile izinhlelo zokunikezela ngamanzi ahlanzekile kubantu abasezabelweni ababencishwe amathuba ngesikhathi sencindezelo'					
2	Uhulumeni Wesifunda sasOthungulu uthola isabelo-mali esanele ukuze uzohlinzeka imiphakathi ngamanzi ahlanzekileyo					
3	Uhulumeni Wesifunda sasOthungulu unezinhlelo zokuvikela ukulinyazwa kwezinsiza zikahulumeni ezinikezela ngamanzi kubantu abasezabelweni					
4	Uhulumeni Wesifunda sasOthungulu ulethela imiphakathi amanzi ahlanzekile njalo nje.					
5	Uhulumeni Wesifunda sasOthungulu ukwazile ukuhlangabezana nemigomo yamazwe omhlaba (MDG-7) othi ingxenye yemiphakathi ayibe seyiwatholile amanzi ahlanzekile ngonyaka wezi-2015.					
6	Uhulumeni Wesifunda sasOthungulu ugqugquzela imiphakathi ukuba yenze konke engakwenza ukukhongozela amanzi emvula ukuze kusizakale imindeninyawo'					

	Isu-ngqangi lokukhucululwa kwetshe lentaba: (Strategies for removal of Sanitation.					
<i>Sebenzisa uphawu u-X- ukuveza umbono wakho maqondana nenombolo echaza ukuthi :</i>						
1=Ngiyavuma, 2=Impela ngiyavuma, 3=Angivumj futhi angiphiki, 4=Ngiyaphika, 5=Ngiphika ngima ngentaba		1	2	3	4	
1	Uhulumeni Wesifunda sasOthungulu ulekelela imiphakathi ukuba ilwisane nezifo ezidalwa ukusebenzisa amanzi angahlanzekile, njengohudo, uginqigonqo, ikholela, nezinye ezifuzelezo.					
2	Uhulumeni Wesifunda-nkantolo sasOthungulu onikezela kumiphakathi ngezindlu zangasese.					
3	Uhulumeni Wesifunda-nkantolo sasOthungulu uyake uhambe umuzi nomuzi ukumpompa indle kuleyo migodi esuke seyigcwele kakhulu					
4	Uhulumeni Wesifunda-nkantolo sasOthungulu usebenzisa izinto zokwakha zohlobo olukulungele nokluqinile ekwkhenin izindlu zangasese.					
5	Uhulumeni Wesifunda-nkantolo ukwazile ukuhlangabezana nemigomo yenhlangano yeZizwe (MDG-7) ethi, inxenye yemiphakathi mayibe seyinzazo izindlu zangasese ngonyaka we- 2015.					
<i>Iqhaza elibanjwa umphakathi ezimbizweni ezimayelana nokulethwa kwamanzi</i>						

<p><i>Sebenzisa uphawu u-X- ukuveza umbono wakho maqondana nenombolo echaza ukuthi :</i></p> <p>1=Ngiyavuma, 2=Impela ngiyavuma, 3=Angivumj futhi angiphiki, 4=Ngiyaphika, 5=Ngiphika ngima ngentaba</p>		1	2	3	4	5
1	Uhulumeni Wesifunda-nkantolo sasOthungulu uyake umeme yonke imiphakathi ezimbizweni zentuthuko.					
2	Amalungu omphakathi eza ngobuningi bawo kulezi zimbizo ezimayelana nentuthuko.					
3	Inani labesifazane abahambela lezi zimbizo liba ngaphezulu kunabesilisa.					
4	Amalungu omphakathi abambe elikhuluni iqhaza ngemibono ababanayo uma kunezimbizo zentuthuko ezindaweni abahlala kuzo.					
Iqhaza lomphakathi ngodaba lokwakhiwa kwezindlu zangasese						
<p><i>Sebenzisa uphawu u-X- ukuveza umbono wakho maqondana nenombolo echaza ukuthi :</i></p> <p>1=Ngiyavuma, 2=Impela ngiyavuma, 3=Angivumj futhi angiphiki, 4=Ngiyaphika, 5=Ngiphika ngima ngentaba</p>						
		1	2	3	4	5
1	Amalungu omphakathi eza ngobuningi bawo uma kuzokhulunywa ngezindlela zokukhucululwa kwetshe lentaba ezindaweni ehlala kuzo.					
2	Izimpahla ezisetshenziswayo uma kwakhiwa izindlu zangasese ngezeqophelo eliphezulu kakhulu.					

3	Amalungu omphakathi kusifunda-nkantolo sasOthungulu abamba elikhulu iqhaqaza uma kwakhiwa izindlu zangasese ngokulekelela ngokumba imigodi okwakhiwa kuyo lezi zindlu.					
4	Amalungu omphakathi kusifunda-nkantolo sasOthungulu abamba elikhulu iqhaqaza uma kwakhiwa izindlu zangasese ngokulekelela ngokumba imigodi okwakhiwa kuyo lezi zindlu.					
5	Uhulumeni Wesifunda-nkantolo sasOthungulu uyaye ufundise imiphakathi yasezabelweni ngezifundo zezempilo					

INGXENYE YESITHATHU (PART III) IQONDENE NABALETHELWA IZIDINGO-NQGANGI/ INTUTHUKO, e.g. ISIKOLE, INKULISA, UMTHOLA-MPILO, UMNDENI, UMTAPO WOLWAZI, etc

Izinhlelo zikahulumeni wesifunda sasOthungulu zokulethwa kwamanzi emiphakathini

Amanzi

<i>Sebenzisa uphawu u-X- ukuveza umbono wakho maqondana nenombolo echaza ukuthi :</i> 1=Ngiyavuma, 2=Impela ngiyavuma, 3=Angivumj futhi angiphiki, 4=Ngiyaphika, 5=Ngiphika ngima ngentaba.		1	2	3	4	5
1	Uhulumeni Wesifunda sasOthungulu umba nemithombo yamanzi (bohe-holes) ukusiza imiphakathi.					
2	Uhulumeni wasOthungulu unikezela ngamanzi ahlanzekile emiphakathini.					
3	Uhulumeni unakekela umphakathi wsOthungulu ngolethwa kwamanzi ngesikhathi sesomiso.					

4	Uhulumeni wasOthungulu usebenzisa amapayipi ukuletha amanzi emphakathini owakhele le ndawo yasOthungulu					
---	---	--	--	--	--	--

Izinhlelo zikahulumeni mayelana nodabba lokuqoqwa kwetshe lentaba

Izinhlaka zokuqoqwa kwetshe lentaba

Sebenzisa uphawu u-X- ukuveza umbono wakho maqondana nenombolo:		1	2	3	4	5
1=Ngiyavuma, 2=Impela ngiyavuma, 3=Angivumj futhi angiphiki, 4=Ngiyaphika, 5=Ngiphika ngima ngentaba.						
1	Liphezulu kakhulu izinga lokwakhiwa noma ukunikezela izindlu zangasese kumphakathi wakule ndawo yasOthungulu.					
2	Liseqophelweni eliphezulu izinga lempamahla esetshenziwa uma kwakhiwa izindlu zangasese.					
4	Uhulumeni wasOthungulu ugqugquzela umphakathi ngokuqoqeka ngendlela efanele kwetshe lentaba.					

INGXENYE YESINE (PART IV) IZINGQINAMBA EZIBHEKANA NOPHAKATHI KANYE NEZIKHUNGO ZOMPAKATHI NGOKUNGABIKHO KWA:-

AMANZI

Sebenzisa uphawu u-X- ukuveza umbono wakho maqondana nenombolo:1=Ngiyavuma, 2=Impela ngiyavuma, 3=Angivumj futhi angiphiki, 4=Ngiyaphika, 5=Ngiphika ngima ngentaba.						
		1	2	3	4	5
1	Amanzi atholakala ezihosheni asuke engcolile futhi egcwele izibhidi					

2	Kubangamakhosikazi nezingane zamantombazane abavuka intathakusa beyokha amanzi ezihosheni nasemaxhaphosini.					
3	Njengoba izilwane nabantu impilo benempilo encike emanzini, kuyenzeka kufe izilwane eziningi uma kunesomiso.					
4	Amanzi alethwa izinqola ezithwala amanzi kuvamisile ukuba angabaneli bonke abantu kuleso sigodi					

IZNKinga EZIBHEKANA NOMP hakathi NEZIKHUNGO ZEMIPhakathiUMA
IZIDINGO-NGQANGI, e.g. IZINDLU ZANGASESE ZINGEKHO

IZINDLU ZANGASESE

<i>Sebenzisa uphawu u-X- ukuveza umbono wakho maqondana nenombolo:</i> 1=Ngiyavuma, 2=Impela ngiyavuma, 3=Angivumj futhi angiphiki, 4=Ngiyaphika, 5=Ngiphika ngima ngentaba.		1	2	3	4	5
1	Kukhona izindawo noma imizi engakabi nazo izindlela ezifanele zokuqoqeka kwetshe lentaba.					
2	Kuleyo miphakathi esezakhiwe khona lezi zindlu zangasese kule ndawo yasOthungulu zibukeka ziqinile futhi zinhle.					
3	Kungenzeka ukuthi ukubheduka kwezifo ezinjengomalaleveva, uhudo, nezinye izifo ezifuze lezi kudalwa ukungaqoqeki ngendlela kwetshe lentaba.					
4	Uhulumeni uzishaya isifuba ngokuhlinzeka ngezindlu zangasese ezindaweni zasemakhaya.					

Ngiyabonga



UNIVERSITY OF ZULULAND

APPENDIX

THE QUESTIONNAIRE GUIDE

Title

THE QUESTIONNAIRE GUIDE FOR THE USE WITH MUNICIPAL OFFICIALS,
COMMUNITY LEADERS AND OTHER RELEVANT STACKHOLDERS

My name is Elijah Ncube and I am a doctoral candidate at the University of Zululand in the Faculty of Arts. I am in the process of gathering data for my study titled: The Provision of Water and Sanitation in Previously Disadvantaged Rural Communities: A Study of UThungulu/King Cetshwayo District Municipality

Please feel free to express your opinions openly and honestly. I will treat all information collected from this questionnaire confidentially. Under no circumstances will individual responses be identified by name in formal or informal meetings or documents.

Select an appropriate response by putting an (x/√) next to it.

PART 1: GENERAL INFORMATION (FOR ALL PARTICIPANTS)

NO.	STATEMEMNT
1	<div>Gender</div> <div><div>Male</div><div>Female</div></div> <div><input type="checkbox"/> <input type="checkbox"/></div>

2	<p>Age Group</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>Bellow33</p> <p>34-43</p> <p>44-53</p> <p>54-63</p> <p>64 and above</p> </div> <div> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> </div> </div>
3	<p>Educational qualification</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>No formal Education</p> <p>Matric</p> <p>Diploma</p> <p>Degree</p> <p>Post graduate</p> </div> <div> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> </div> </div>
4	<p>Race group</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>Black</p> <p>Coloured</p> <p>Indian</p> <p>White</p> </div> <div> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 25px; border: 1px solid black;" type="text"/> </div> </div>
5	<p>Please identify the category that suits you the most</p> <p>What position do you hold/occupy?</p>

	<div> <div>Municipal official</div> <div>Resident/ Community member</div> <div>Community leader:-Induna</div> <div>Municipal/Tribal councillor</div> <div>Other (Specify)</div> </div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>
	<p>Please note that questions 6 and 7 are meant for municipal officials only.</p> <p>Community leaders, councillors, residents and other stakeholders should skip questions 6 and 7.</p>
6	<p>In case you a municipal official, what position do you hold in the municipality?</p> <div> <div>Senior manager</div> <div>Senior Development manager</div> <div>Senior Water Superintendent</div> <div>Senior Technical Manager</div> <div>Other (Specify)</div> </div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>
7	<p>If you are a municipal official, to which Department (Water / Sanitation) do you belong?</p> <div> <div>Water</div> <div>Sanitation</div> <div>Other (Specify)</div> </div> <div> <div></div> <div></div> <div></div> </div>

PART 11

(i) Strategies (Water)

Tick next to the appropriate response to indicate the following: 1= Strongly agree, =2 Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree		1	2	3	4	5
1.	The uThungulu/King District Municipality have strategies to provide the previously disadvantaged rural communities with clean water.					
2.	The uThungulu municipality is well-funded for the provisioning of clean drinking water.					
3.	The uThungulu District Municipality is doing enough to guard against the vandalizing of water infrastructure provided by the government in rural communities.					
4.	The uThungulu District Municipality provides less contaminated drinking water to the communities.					
5.	The uThungulu District Municipality met the Millennium Development Goal (MDG-7):-halving communities without safe drinking water by 2015.					
6.	The uThungulu/King Cetshwayo District Municipality encourages communities to harvest rain water for domestic use.					

(ii) Strategies (Sanitation)

Tick next to the appropriate response to indicate the following: 1=Never, 2=Rarely, 3= No idea, 4=Often, 5=Always		1	2	3	4	5

1.	The uThungulu/King Cetshwayo District Municipality assists communities in fighting the water-borne disease, e.g. Cholera					
2.	The uThungulu/King Cetshwayo District Municipality helps communities with the sanitation infrastructure					
3.	The uThungulu/King Cetshwayo District Municipality helps communities with the dislodging of night soil.					
4.	The building material used by uThungulu/King Cetshwayo District Municipality (contractors) to build toilets in rural communities is of high quality.					
5.	The uThungulu/King District Municipality met the Millennium Development Goal (MDG-7) – halving previously disadvantaged rural communities without safe water and proper sanitation by 2015.					

(II). Community Participation in water delivery service meetings

(i) Water meetings

Tick next to the appropriate response to indicate the following:						
	1=Often, 2=Very often, 3=Never, 4=Rarely, 5=Very rare	1	2	3	4	5
1.	UThungulu/King Cetshwayo District Municipality holds developmental meetings					
2.	Members of the community attend development meetings in their numbers					

Community Participation in building/providing of pit toilets/lavatories

(ii) Sanitation meetings

Tick next to the appropriate response to indicate the following:						
1= Strongly agree, =2 Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree						
		1	2	3	4	5
1.	Community members attend sanitary provisioning meetings					
2	The building material used for the toilet building /structure is of high quality.					
3.	Community members in uThungulu/King District Cetshwayo Municipality participate in digging of holes in preparation for the erection of toilet structures voluntarily.					
4.	Such meetings (sanitary) have an impact on community members					
5.	The uThungulu/King Cetshwayo District Municipality usually provides hygiene lessons to rural communities.					
3.	Females attending meetings usually out number males.					
4.	Community members participate in service delivery meetings.					

PART III

Effectiveness of uThungulu/King Cetshwayo District Municipality in the provisioning of water in the rural area

(i) Effectiveness -Water

	<p><i>Tick next to the appropriate response to indicate the following:</i></p> <p>1= Strongly agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree</p>	1	2	3	4	5
1	The uThungulu/King Cetshwayo District Municipality provides water bore-holes in all rural communities.					
2	The uThungulu/King Cetshwayo District Municipality provides quality water to the rural communities.					
3	The uThungulu/King Cetshwayo District Municipality provides water during the drought season/period.					
4	The uThungulu/King Cetshwayo District Municipality has managed to provide clean piped water in some parts of rural areas.					

Effectiveness of government in providing Sanitation Infrastructure in the rural area

(ii) Effectiveness-Sanitation Infrastructure

	<p><i>A tick next to the appropriate response will be used</i></p> <p>1= Strongly agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree</p>	1	2	3	4	5
1	The uThungulu/King Cetshwayo District Municipality provides good pit toilets in the rural communities.					
2	The uThungulu King Cetshwayo District Municipality uses quality material for the building of toilets (lavatories) in rural communities.					

3	All local governments get enough funding from the Provincial or National government for the sanitation projects.					
4	The uThungulu/King Cetshwayo District Municipality informs communities in the rural area about innovative methods of handling night soil.					

PART IV

Challenges experienced by communities if there is no water in the area

(i) Challenges-Water

	<i>A tick next to the appropriate response will be used</i> 1=Agree, 2=Strongly agree, 3=Neutral, 4=Disagree, 5=Strongly disagree	1	2	3	4	5
1	Water collected from streams and dug-wells is usually dirty and full of impurities.					
2	Women and children wake-up at dawn to fetch water from streams, dug-wells and communal water taps.					
3	Both the livestock and human beings depend on water for their daily survival and therefore livestock dies during the drought season.					
4	Water supplied by water tanker trucks is sometimes not enough for all families in the area.					

Challenges experienced by communities or families who are without proper sanitation infrastructure

(ii) Challenges-Sanitation Infrastructure

	<i>A tick next to the appropriate response will be used</i> 1=Agree, 2=Strongly agree, 3=Neutral, 4=Disagree, 5=Strongly disagree	1	2	3	4	5
1	Some communities in uThungulu/King Cetshwayo District Municipality still do not have proper toilets (lavatories).					
2	The uThungulu municipality does not provide toilets (lavatories) of high quality in all rural communities.					
3	The break-out of disease, like cholera, typhoid, diarrhoea, etc. is as a result of the mishandling of human excreta and poor toilet infrastructure					
4	The government is not doing enough to provide sanitation infrastructure in schools, clinics, libraries, etc. in the rural areas.					

Thank you

ANNEXURE B

LETTERS: REQUESTS & RESPONSES

1. ETHICAL CLEARANCE CERTIFICATE TO CONDUCT RESEARCH
2. REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN
UTHUNGULU/ KING CETSHWAYO DISTRICT MUNICIPALITY
3. PERMISSION TO CONDUCT RESEARCH IN UTHUNGULU/
KING CETSHWAYO DISTRICT MUNICIPALITY

1. Ethical Clearance Certificate

**UNIVERSITY OF ZULULAND
RESEARCH ETHICS COMMITTEE**
(Reg No: UZREC 171110-030)



RESEARCH & INNOVATION

Website: <http://www.unizulu.ac.za>
Private Bag X1001
KwaDlangezwa 3886
Tel: 035 902 6887
Fax: 035 902 6222
Email: MangeleS@unizulu.ac.za

ETHICAL CLEARANCE CERTIFICATE

Certificate Number	UZREC 171110-030 PGD 2016/143						
Project Title	The provision of water and sanitation in previously disadvantaged rural communities: A case of uThungulu District Municipality						
Principal Researcher/ Investigator	ES Ncube						
Supervisor and Co-supervisor	Dr NG Tshabalala						
Department	Sociology						
Nature of Project	Honours/4 th Year		Master's		Doctoral	x	Departmental

The University of Zululand's Research Ethics Committee (UZREC) hereby gives ethical approval in respect of the undertakings contained in the above-mentioned project proposal and the documents listed on page 2 of this Certificate.

Special conditions:

- (1) This certificate is valid for 3 years from the date of issue.
- (2) Principal researcher must provide an annual report to the UZREC in the prescribed format [due date-31 August 2017]
- (3) Principal researcher must submit a report at the end of project in respect of ethical compliance.

The Researcher may therefore commence with the research as from the date of this Certificate, using the reference number indicated above, but may not conduct any data collection using research instruments that are yet to be approved.

Please note that the UZREC must be informed immediately of

- Any material change in the conditions or undertakings mentioned in the documents that were presented to the UZREC
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

ES Ncube - PGD 2016/143

Page 1 of 2

Classification:

Data collection	Animals	Human Health	Children	Vulnerable pp.	Other
X					
Low Risk		Medium Risk		High Risk	
		X			

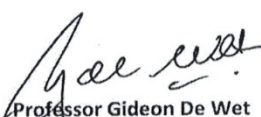
The table below indicates which documents the UZREC considered in granting this Certificate and which documents, if any, still require ethical clearance. (Please note that this is not a closed list and should new instruments be developed, these would require approval.)

Documents	Considered	To be submitted	Not required
Faculty Research Ethics Committee recommendation	X		
Animal Research Ethics Committee recommendation			X
Health Research Ethics Committee recommendation			X
Ethical clearance application form	X		
Project registration proposal	X		
Informed consent from participants	X		
Informed consent from parent/guardian			X
Permission for access to sites/information/participants	X		
Permission to use documents/copyright clearance			X
Data collection/survey instrument/questionnaire	X		X
Data collection instrument in appropriate language		Only if necessary	
Other data collection instruments		Only if used	

The UZREC retains the right to

- Withdraw or amend this Certificate if
 - Any unethical principles or practices are revealed or suspected
 - Relevant information has been withheld or misrepresented
 - Regulatory changes of whatsoever nature so require
 - The conditions contained in this Certificate have not been adhered to
- Request access to any information or data at any time during the course or after completion of the project

The UZREC wishes the researcher well in conducting the research


 Professor Gideon De Wet

Chairperson: University Research Ethics Committee
 Deputy Vice-Chancellor: Research & Innovation
 21 November 2016

ES Ncube - PGM 2016/143



Page 2 of 2

2. Request for permission to conduct research

**UNIVERSITY OF
ZULULAND**



**DEPARTMENT OF
SOCIOLOGY**

Website: www.unizulu.ac.za

Private Bag X1001

KWADLANGEZWA

3886

South Africa

Tel: 035 9026671

Fax: (035) 9026283

E-mail: TshabalalaN@unizulu.ac.za

07 February 2017

The Manager

UThungulu/King Cetshwayo District Municipality

Dear Sir / Madam

**REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN UTHUNGULU/ KING CETSHWAYO
DISTRICT MUNICIPALITY**

I wish to request your permission for Mr E.S. Ncube, a doctoral student in Sociology at the University of Zululand to carry out an academic research in the 'Provision of Water and Sanitation in Previously Disadvantaged Rural Communities' A case of uThungulu/King Cetshwayo District Municipality.

The study will be conducted in local municipalities falling under uThungulu District Municipality. The results of this research will assist the researcher to fulfil departmental requirements for a doctoral degree. In addition, the results may assist the uThungulu District Municipality to assess its own position in service delivery.

Thank you.

Sincerely yours

A handwritten signature in black ink, appearing to read 'N. G. Tshabalala'.

Dr N. G. Tshabalala

Sociology Head of Department/Supervisor

3. Permission to conduct research

Kcdm/mm13 - 23/02/17



KING CETSHWAYO

23 February 2017

To whom it may concern

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH:

The King Cetshwayo District Municipality is a category C municipality on the north coast of KwaZulu-Natal. It is home to five local municipalities, i.e.

- uMfolozi Municipality
- City of uMhlathuze
- uMlalazi Municipality
- Mthonjaneni Municipality
- Nkandla Municipality

Mr ES Ncube has requested permission to conduct research within the district for his doctoral studies in the "Provision of Water and Sanitation in Previously Disadvantaged Rural Communities – A case of uThungulu/King Cetshwayo District Municipality."

The King Cetshwayo District Municipality hereby grants consent for such research to take place and further requests that a copy of the results of the study be made available to the municipality, once the research has been concluded.

Yours in service delivery

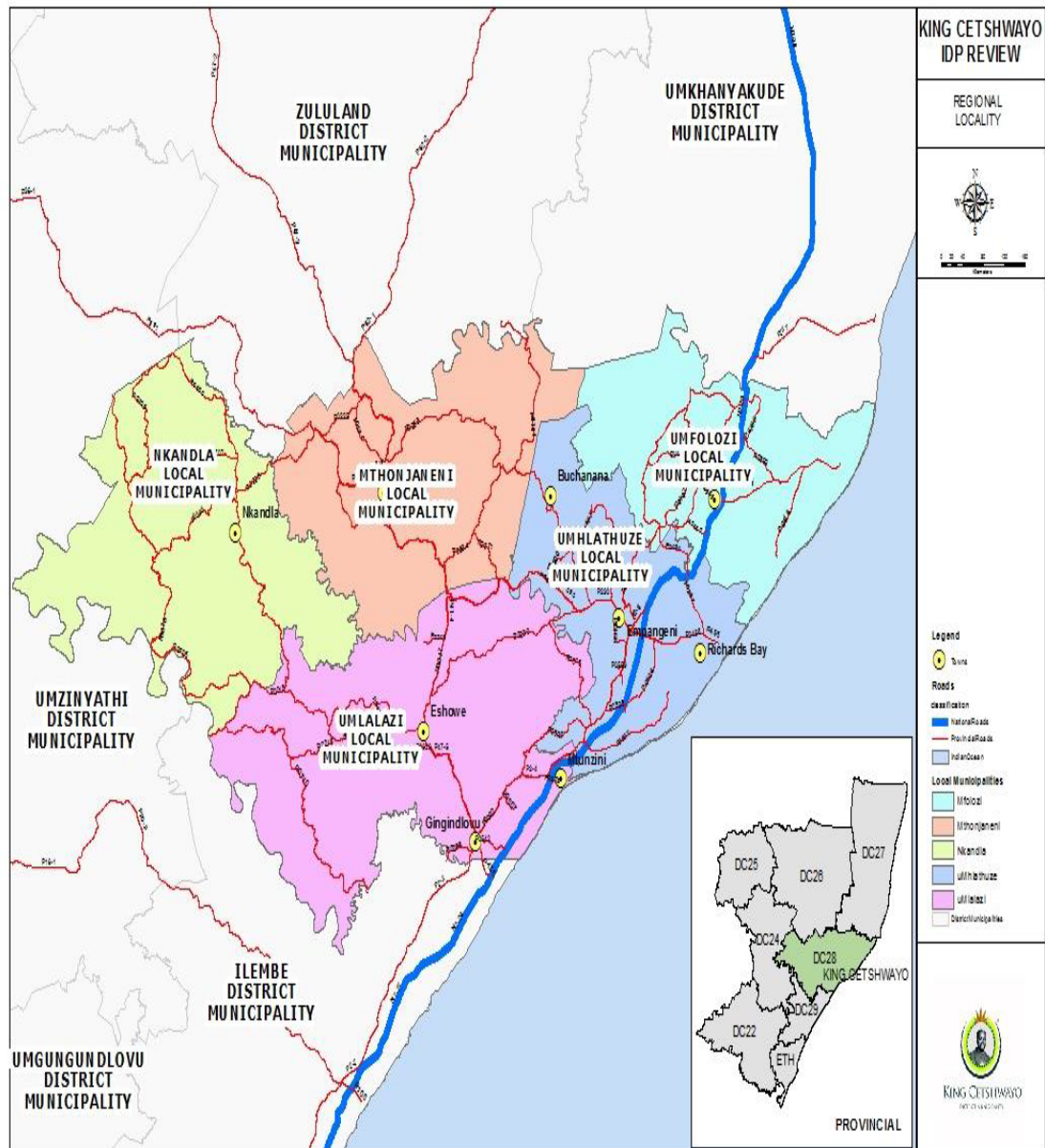
.....
MC REDDY
ACTING MUNICIPAL MANAGER
KING CETSHWAYO DISTRICT MUNICIPALITY

Postal Address Private Bag X 1025 Richards Bay 3900 **Address** King Cetshwayo District
Municipality House Richards Bay CBD **Tel** (035) 799 2500 **Fax** (035) 789 1409
Web Address www.kingcetshwayo.gov.za

ANNEXURE: C

UTHUNGULU / KING CETSHWAYO DISTRICT MUNICIPALITY MAP

FIVE (5) LOCAL MUNICIPALITIES UNDER ITS JURISDICTION



- uMfolozi (KZ 281) uMhlathuze (KZ 282) iNkandla (KZ 286)
- UMLalazi (KZ 284) uMthonjaneni (KZ 285)

ANNEXURE: D

The Millennium Development Goals (MDGs)

1. To eradicate extreme poverty and hunger
2. To achieve universal primary education
3. To promote gender equality and empower women
4. To reduce child mortality
5. To improve maternal health
6. To combat HIV/AIDS, malaria, and other diseases
7. To ensure environmental sustainability
8. To develop a global partnership for development

Goal 7: Ensure environmental sustainability

Target 7A: Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources

Target 7B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

- Proportion of land area covered by forest
- CO₂ emissions, total, per capita and per \$1 GDP (PPP)
- Consumption of ozone-depleting substances
- Proportion of fish stocks within safe biological limits
- Proportion of total water resources used
- Proportion of terrestrial and marine areas protected
- Proportion of species threatened with extinction

Target 7C: Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation

- Proportion of population with sustainable access to an improved water source, urban and rural
- Proportion of urban population with access to improved sanitation
- Target 7D: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum-dwellers
- Proportion of urban population living in slums

NB: The Sustainable Development Goals (SDGs) replaced the MDGs in 2016.

ANNEXURE: E

POOR WATER AND SANITATION SERVICES

1. Broken sewage system



Small businesses from containers near the sewage:- owners are angry at the municipality for failing to fix the problem

1. Water scarcity



Residents protesting over water shortage