

# Investigating the Causes and Impact of Inconstant Water Supply on the Wellbeing of Communities: A Case of Molemole Local Municipality

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**Abstract:** This paper investigates infrequent water supply and its impact on communities at Molemole Local Municipality. The paper aims to investigate infrequent water supply in Molemole Local Municipality in Capricorn District Municipality located in Limpopo Province. Although local municipalities in South Africa are regarded as the providers of essential services, such as water, to date most of the municipalities still lack the capacity to provide water services to community members across the country. Molemole Local Municipality finds it challenging to provide water services to communities within its jurisdiction. To achieve this objective, the researcher utilised a combination of qualitative and quantitative research methodologies with a semi structured questionnaire. The findings in this paper prove that the issue of too much dependency on boreholes as water sources brought a number of challenges in terms of water services.

**Keywords:** Borehole, Communities, Dependency, Infrequent, Water supply

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## 1. Introduction

According to Baietti and Raymond (2005), more than 1.1 billion people worldwide do not have access to safe drinking water. In Africa, millions of people still have to rely on unsafe water while domestic consumption competes with water for commercial, agricultural and industrial activities (Abdullah & Rakhmatullaev, 2015). Although water resources in Africa are relatively abundant, it has the lowest water supply coverage of any region in the world. This can be attributed to low and infrequent rain as compared to other regions in the world. To achieve water access and enable Africa's economic growth, there is a need to provide water infrastructure that ranges from dams to irrigation systems, toilets and water treatment plants (Development Bank of Southern Africa, 2006). The post-apartheid government of South Africa instituted the Reconstruction and Development Programme (RDP) in 1994 as the policy foundation stone of the new government. The RDP gave the Department of Water Affairs and Forestry (DWAF) as it was previously known the responsibility of ensuring universal access to basic water for all South Africans. Subsequently, the White Paper on Water and Sanitation was released in 1994, with emphasis on speedy delivery of water and sanitation services to ensure that all South Africans have access to basic water supply (DWAF, 2004). The South African Water Sector Institutional landscape strives to provide running tap water and

electricity to rural communities by 2025 (Claassen, Funke & Nienaber, 2013). The effective provision of drinking water and sanitation services are two major challenges confronting South Africa's public service sector since the country entered into a phase of multiracial democratic governance in 1994 (Kido, 2008:64). Water supply in South Africa is characterized by both achievements and challenges with concern mostly in the rural areas of Limpopo Province (Water Supply & Sanitation in South Africa, 2013). This paper therefore seeks to investigate infrequent water supply in the Molemole Local Municipality with a view of understanding how this situation affects communities socially and economically.

Basic water supply in terms of the Water Services Act, 1997 (108 of 1997) requires that prescribed minimum standards of water supply services are necessary for reliable provision of sufficient quantity and quality of water to households to support life and personal hygiene. Households and schools are concerned with the quality and use of water facilities. People depend on water for drinking, producing food and maintaining basic standards of hygiene. Lapses and even the non-delivery of certain services related to water supply and sanitation can have disastrous consequences such as cholera and diarrhea. It could also have a direct impact on the everyday livelihoods of communities (Kingsbury, Remenyi & Hunt, 2004:277). In fact, they could pose

an environmental health risk of substantial proportions. The effective provision of drinking water is one of the major challenges confronting South Africa's public service sector since the country entered into a phase of multiracial democratic governance in 1994 (Kido, 2008:64). Lack of water services infrastructure is causing many of the municipalities to exhibit performance problems in water supply. Many municipalities in South Africa, Molemole Local Municipality included are poorly managed, operate with tariffs well below cost-recovery levels and are therefore struggling financially, and lack the governance and resources to improve performance and growth (Baietti & Raymond, 2005). It is the responsibility of Molemole Local Municipality to supply water to all the communities and villages that fall under its jurisdiction. This however has proven to be a challenge. The 2011, Statistics South Africa survey (CENSUS) reveals that the municipality is not satisfying all its communities in terms of water supply. Significant problems and challenges include incompetent staff, financial sustainability of service providers and the lack of service providers and the problems of proper maintenance and sustainability of water resources (Wellfield, 2011). These and other challenges therefore, call for an investigation of the causes of inconstant water supply in Molemole Local Municipality.

## **2. The Causes of Inconstant Water Supply in the South African Municipalities**

There are varying reasons that could lead to the inability of municipalities to provide and supply frequent water services to residents depending on a setting of a municipality and the people it serves. Such can be as a result of among others; informal settlements, municipal institutional capacity, municipal debts and credit ratings, water tariffs and magnitudes of development finance instruments.

### **2.1 Informal Settlements**

According to the World Bank (2009), a billion people worldwide live in slums, and 2 million live in informal housing settlements in South Africa. According to Young (2015), the disbursement of development finance from development finance institutions, private banks and government, the number of household backlogs with access to water supply and sanitation continues to decline at a very alarming rate. This might have contributed to South

Africa's failure to reach Millennium Development Goals targets in terms of addressing water backlogs. The number of informal settlements continues to increase the municipal backlog of water supply. Some of the settlements that are being formalized are historically disadvantaged areas characterized by poverty which presents significant challenges for municipalities in terms of water supply. As a result, the water services assets are poorly maintained and fail to reach their full design and life expectancy (Informal Settlement Atlas, 2004).

### **2.2 Municipal Institutional Capacity**

According to Mufamadi (2003), part of the reasoning behind the establishment of the Municipal Infrastructure Grant (MIG) was to improve the capacity, efficiency, effectiveness, sustainability and accountability of local government as stated in the 2005 Department of Provincial and Local Government Guide for establishment of a Project Management Unit by municipalities. Unfortunately, often in places where improved infrastructure and employment opportunities are most required, the municipality's capacity to implement is low. Improving municipal capacity, efficiency, effectiveness, sustainability and accountability should be prioritized as a long term goal. Municipality viability elements are critical for financing water infrastructure as they all take into account the water-specific aspects of the municipality. Just as with any other aspect of the Integrated Development Plan, municipalities are required to produce annual reports against the WSDP, but sadly many municipalities fail to comply (Cardone & Fonseca, 2006).

### **2.3 Municipal Debts and Credit Ratings**

Municipalities as water service authorities purchase bulk water from water service providers and water boards and resell to different end users based on a tariff structure. The reason behind municipalities charging a service fee or tariff on water services is that municipalities incur costs when purchasing and distributing water and for that they need to have a cost recovery mechanism. Existing levels of debt impact on the conditions and costs of incurring new debts for that particular municipality. Most municipalities have areas with no or unsatisfactory services, they have an infrastructure wish list and yet many do not properly spend their grants allocations. Palumbo and Shick (2006) affirmed creditworthiness, as reflected in bond ratings, as of great interest

to municipalities since it directly affects the cost and ability to borrow money. According to Ramphele (2008), migration has pushed people into big cities in search of employment and municipalities have not been adequately absorbing the trickle effects of. As in most cases, when the economically active people migrate, the municipal revenue stream from tariffs changes. As a result, most municipalities fail to have a sufficient revenue base and end with huge debts from local communities due to a diminishing community income. This ultimately results in municipalities having a negative credit rating when applying for new loans and thus faces further challenges in financing their infrastructure development.

## 2.4 Water Tariffs

Municipalities face challenges with regard to water services as the growth in demand outstrips supply. It is for this reason that the Division of Revenue Act of 2007 encouraged municipalities to review the level and structure of their water tariffs carefully. This is with a view of ensuring that water tariffs are fully cost effective including the cost of maintenance and renewal of purification plants and water networks and the cost of new infrastructure (Division of Revenue Act of 2007). Designing appropriate water tariff rates that ensure full cost pricing is one of the most important challenges of effective water management. According to the Organisation for Economic Co-operation and Development (2007), water systems typically recover their costs of operation through a mix of customer charges (prices), own country or local tax revenue, international loans or aid (other-country tax revenue). If water infrastructure cannot retain sufficient levels of finance through tariffs, then the infrastructure will not meet service level standards to marginal and poorer areas that lack basic water services supply. Municipalities have been receiving increasing pressure from funders to increase funding by increasing user charges in an effort to co-finance water services infrastructure projects. This is often referred to as full cost recovery or a trend towards full cost pricing. Prasad (2006) described the water sector as being unavoidably social in nature and evoking political emotions like no other sector. The risks of political pressure on contracts and tariffs are therefore high and affect the financial sustainability of water supply services.

According to Department of Water Affairs (2010), one of the challenges of municipal water tariffs is water losses. Most South African municipalities

have unacceptably high water losses. Causes of non-revenue water are largely attributed to poor infrastructure operation and maintenance. Globally the trend of acceptable water loss is below 15 percent by best practice. The water losses in South Africa average is 36 percent (equivalent to about R5.3 billion loss of revenue per annum).

## 2.5 Magnitudes of Development Finance Instruments

Financing is critical for ongoing operations and maintenance as well as responding to needs for new infrastructure. Water infrastructure investment in South Africa and globally is significantly low compared to other sectors even for basic operations and maintenance cost and the reason is that most of the time only around half the investment required is provided (Moss, 2003). Tariff accounts for major capital share of municipal water infrastructure development and the rest is mostly transfers provided through public budget such as infrastructure grants. Buyelwa (2009), indicated that South Africa needs more than R70 billion to improve its bulk water supply infrastructure. According to Ramphele (2008), richer municipalities and metros finance most of their infrastructure needs through user fees and cross subsidisation as they have large middle and upper class income residents. These metros make billions of Rands from revenue collections. This is different for poorer municipalities which have high unemployment and poverty rates. Many of these municipalities do not have sufficient revenue base, and therefore fail to raise capital for infrastructure development. Public Private Partnerships (PPP) have materialised as important financial instruments through which development finance institutions can structure their development banking portfolios by mobilizing resources in partnerships with private sector players. Unless municipalities have the financial, technical and qualified human resources to comply with national water policy and standards, their ability to deliver is severely compromised (Ramphele, 2008).

## 3. Regulatory Framework for Provision of Water Services in South Africa

According to Strategic Framework for Water Services of 2003, the water sector faces serious challenges including failure to meet basic human needs for water services supply. There are also difficulties in meeting the financial requirements for maintaining,

extending, and upgrading both new and ageing water systems, new regulatory requirements for water quality, increasing water scarcity and competition for limited capital are constant challenges that are facing municipalities (Statistics South Africa, 2003). Throughout the water sector there is a growing focus on the best ways to improve the access of development finance for new infrastructure development and maintenance of existing ones. To achieve this objective, in 2003 the South African government adopted the Strategic Framework for Water Services under the phrase; 'water is life and sanitation is dignity' (Statistics South Africa, 2003).

The Water Services Act 108 of 1997 was promulgated with a primary purpose of regulating the provision of access to basic water supply and basic sanitation to provide for the setting of national standards and of norms and standards for tariffs, and provide financial assistance to water service institutions. The Act also recognizes the status of municipalities with water service authority as institutions responsible for ensuring efficient, affordable, economical and sustainable access of water services to all consumers under their jurisdictions.

The Constitution of the Republic of South Africa, 1996, sections 24 and 27 grant rights to access to sufficient water, an environment not harmful to health and well-being and the protection of the environment from degradation. The Constitution provides for three spheres of government and sets out the functions of these three distinctive, interdependent and interrelated spheres in service delivery. The executive power to deliver water services infrastructure finance and development falls, in terms of the Constitution, on municipalities (South African Local Economic Development Network, 2010).

The National Water Act 36 of 1998 provides for the establishment of suitable organizations that can carry out the function of water services infrastructure development. The Act clarifies the importance of developing water infrastructure to promote social and economic development. The Act further sets provisions for protection of the water resources from pollution through good functioning sanitation facilities such as wastewater treatment plants.

#### **4. Research Design and Approach**

Qualitative and quantitative research approaches were selected for this study. Qualitative research

displays a commitment of seeing the world from the point view of actors and participants and close involvement is always advocated (Brynard & Hanekom, 1997:18). Qualitative research enables the researcher to be able to understand the feelings and perceptions of the respondents and target population at large towards. Quantitative work implies applying a measurement or a numerical approach to the nature of the issue under scrutiny, as well as to the analysis of data (Brannen, 1992:85).

#### **4.1 Sampling**

The study adopted both a purposive and random sampling strategies. Purposive sampling is a strategy in which the researcher purposively uses his own judgmental knowledge to select a group of people whom he thinks those people can provide the required information. Random sampling is a strategy where every member of the population of the entire population have an equal chance of being selected to participate in the study. The sample size of the study was 65 participants (20 educators, 15 municipal officials and 30 community members).

#### **4.2 Data Collection**

Semi-structured questionnaires were used to collect quantitative data to investigate the phenomenon of infrequent water supply and its impact on the socio-economic well-being of communities in Molemole Local Municipality. Supplementary follow-up interviews were also conducted as a follow up to the questions contained in the questionnaire.

#### **4.3 Data Analysis**

Data analysis usually involves two key steps, namely (a) reducing the data collected into manageable proportions and (b) identifying patterns and themes in the data (Mouton, 1996:161).

### **5. Findings and Discussions**

#### **5.1 Responses from the Community Members and Educators**

##### **5.1.1 The Nature and State of Water Supply in Molemole Local Municipality**

Respondents were asked of the nature and state of water supply in Dendron? Majority (92%) of the respondents (community members and educators) indicated that the nature and state of water

supply in Dendron is very poor. Furthermore, such water is unpurified and as a result the taste of the water is very salty. The respondents also indicated that some of the sections in the area can spend a month without accessing water on their taps, and as a result some cannot even water their plants due to shortage of water. In addition, some respondents said that they struggle to do their laundry, because they find it hard to access water on their taps. Respondents indicated that there are poor families who cannot afford to buy water, due to lack of financial resources. In a supplementary interview, one respondent indicated that:

*"The state of water supply is very poor, though sometimes in a month the municipality sends a truck to distribute water to people but often take long. Another respondent said that the water supply is very poor, they only get water twice a week and sometimes they do not get water at all. Furthermore, I buy water and put it inside the 'jojo' tank. In addition, if there is no money to buy water, we are forced to push wheelbarrows and fetch the water from the traffic stations and those who have cars, use their cars to fetch the water."*

### **5.1.2 The Current Water Supply Trends as Compared to the Previous Five Years**

Respondents were asked of the current water supply trends as compared to the previous five years. Majority (85,3%) of the respondents said that the current water supply trend is not different from the previous five years. Respondents also indicated that in some of the sections of Dendron the situation is getting worse, where there is no improvement at all when it comes to the supply of water. Furthermore, respondents indicated that the current water supply is erratic, most of the time the water is not available. Meanwhile, few (14,7%) of the respondents said that current water trends as compared to the previous five years are better because back then most of the sections did not have water at all. Furthermore, respondents agreed that in the past 10 years, there was consistent water supply because Dendron was not having a lot of residents by that time, and now because the place has grown in terms of population, people find it difficult to access water from their taps. One of the respondents said that:

*"The current water supply is the same as compared to the previous five years, because the residents have been experiencing this challenge of inconstant water supply for the past 10 years."*

Another respondent indicated that:

*"The current water supply trends as compared to the previous five years are very bad, we used to get water every day from our taps and the worst part is that the township as a whole is expanding on daily basis in terms of population."*

### **5.1.3 Measures to be used to Address Poor Service Delivery in Respect of Inconstant Water Supply at Molemole Local Municipality**

Respondents were asked about their views on how the municipality can minimize the challenge of inconstant water supply. Majority (95%) of the respondents provided that the municipality must just drill boreholes, build dams for the purpose of bulk water supply. The dam that is available is very small. As a result it cannot accommodate all the community members, as the population is forever growing day by day. Respondents also provided that the municipality must build or increase their water reservoir for the purpose of improving the water supply around the township. One of the respondents indicated that:

*"The Municipality must act on the problem, the community has complained, but there is no change at all."*

In addition, one of the respondents suggested that the municipality must have a formal meeting with community members, whereby the municipality and the community members would be expected to tackle the problem, share ideas on how best they can minimize or get rid of the inconstant water supply challenge. While few (5%) of the respondents suggested that the municipality must hire competent people, particularly in the water section, some indicated that the municipality must stop relying on Capricorn District Municipality as the water authority. In addition, relevant stakeholders must be involved in this kind of a challenge, so that they can develop possible measures and mechanisms on how to alleviate the issue of inconstant water supply. In addition, the municipality should not exclude community members, in issues of service delivery. Furthermore, one of the respondents said that:

*"Molemole Local Municipality must request for enough money from the treasury, so that they can establish a big source of water supply which will accommodate every community member, and maybe the municipality can also connect water pipes from Glenel pipe dam, as this could also be one of the possible solutions".*

Another respondent said that:

*"Merging of Molemole Local Municipality with Blouberg or Polokwane Local Municipality can also be a good decision, because the municipality on its own is failing to provide the water services and Molemole Local Municipality must take charge, because Capricorn District Municipality is failing as the water authority."*

## 5.2 Responses from the Molemole Local Municipality Employees

### 5.2.1 Causes of Inconstant Water Supply in Dendron

The municipal officials were asked of the causes of inconstant water supply in Dendron. Majority (95%) of the respondents indicated that the cause of inconstant water supply is as a result of the total dependency on boreholes as a source of water supply. In addition, respondents indicated that there is insufficient ground water, and this is the reason the municipality is having challenges in terms of water services supply. One of the respondents claimed that:

*"Lack of funding to renew ageing infrastructure also causes inconstant water supply."*

### 5.2.2 People who are Responsible for Water Services Delivery in Molemole Local Municipality

Respondents were asked of the institution responsible for water services delivery in Molemole Local Municipality? 93,3% of the respondents indicated that Capricorn District Municipality is the one responsible for water services delivery. While 6,7% of the respondents indicated that Molemole Local Municipality is the one responsible for water services delivery in Dendron. Based on the information provided, the researcher can conclude that Capricorn District Municipality is the one responsible for water services delivery. The responses by the 6,7% of the respondents who indicated that the Molemole Local Municipality is responsible for water service delivery can be attributed to the lack of knowledge about water service authorities and roles of different categories of municipalities.

### 5.2.3 Responsible Workers Ensuring that Water is Always Available to all Areas

Respondents were asked as to whether the responsible workers are doing enough to make sure that water is always available to all areas. 60% of the respondents agreed that the responsible workers are not doing enough to ensure that there is always

water in all areas. While 40% of the respondents assumed that the responsible workers are doing their best to ensure that there is water service supply. Some of the respondents said that:

*"They are doing all their best just that we are fully relying on Capricorn District Municipality, there is no budget for water related projects in Molemole Local Municipality. The pump operators are always on side to monitor the reservoirs and water pump generators. In general, the responsible officials are doing their work."*

However only one respondent claimed that:

*"Not certain as to whether responsible workers are doing their work."*

In conclusion, the researcher can say majority (60%) of the respondents agreed that the responsible workers are not doing their work.

### 5.2.4 Municipality Provide Sufficient Support in Supplying Water to Dendron Village

Respondents were asked if whether the municipality provide sufficient support in supplying water in Dendron. Majority (67%) of the respondents agreed that the municipality does provide support in supplying water, because there are technical service workers who sometimes help in supplying water to the community members using trucks. Other respondents agreed that the municipality is providing the support, although sometimes not always. One of the respondents said that:

*"Yes with all available personnel it has, the municipality does provide enough support. In cases where there is a need of supplementing the reservoirs, the municipality uses water tanks to deliver water to the community. In addition, given the community situation of shortage of water the municipality is in partnership with Mohodi Ga Manthata traditional authority in order to provide water for the benefit of Dendron residents."*

Furthermore, the minority (33%) of the respondents agreed that the municipality is not providing enough support.

### 5.2.5 The Monitoring Measures for the Authorities Who are Responsible for Water Services Supply

Respondents were asked about the monitoring measures that are available in the municipality for the authorities responsible for water services supply. The respondents indicated that one of the monitoring

measures is meter billing and post payment systems. Although the municipality is having monitoring measures, majority (53,3%) of the respondents disagreed that the municipality is not having monitoring measures. One of the respondents said that:

*"The municipality does not have monitoring measures at all."*

Furthermore, there are few respondents who indicated that they are not sure whether the municipality is having monitoring systems in place for water services supply.

### **5.2.6 The Kind of Planning on the Part of the Municipality Which Can Bring the Effectiveness in Water Services Supply**

Respondents were asked about the kind of planning the municipality has to bring the effectiveness of water services supply. All the respondents indicated that the municipality is having all necessary plans in place. Some of the respondents provided that their plan is to convince the residents to pay for services to enable refurbishment of water provision infrastructure. Furthermore, respondents indicated that they will appoint skilled, competent and experienced personnel particularly in the water section. However, the data collected makes the researcher conclude that the municipality has a number of plans, therefore, it is important to make sure that the municipality does implement those plans, considering the needs of the residents. The municipality must be practical; they cannot create water savings campaigns meanwhile the community does not have running water from their taps.

### **5.2.7 The Municipality Receives Complaints from the Community About Water Services Supply**

The respondents were asked as to whether they get complains from community members or not. All respondents indicated that they do receive complains from community members concerning the issue of inconstant water supply. One of the respondents indicated that:

*"We told community members that we will liaise with the district so that it can assist. In addition, we normally respond to community members during community meetings by saying that we will dispatch technicians to address the problem."*

From this information, it is clear that community members do complain about the matter, the

problem is that the municipality is always promising to act on the matter. However, the municipality is not fulfilling its promises. This is so because members have been complaining for some years, yet nothing has improved the situation is just getting worse every day.

### **5.2.8 The Community is Satisfied with the Water Services Supply**

Respondents were asked as to whether the community is satisfied with the water services supply. All respondents agreed that indeed the community is not satisfied at all. It is on this basis that one of the respondents indicated that:

*"Not at all, the municipality is aware of the problem and is willing to assist in change the situation into better."*

Another respondent said that:

*"Not necessarily, but partially satisfied. To a certain extent much still needs to be done, though."*

It can therefore be concluded that indeed the municipality is fully aware of the fact that community members are not satisfied at all. Therefore, it is the responsibility of the municipality to find possible and practical solutions to minimize or improve the water supply challenge. This is backed up by the fact that the problem has been recurring for a number of years.

### **5.2.9 The Municipality has Maintenance Schedules on Water Services Delivery and Related Functions**

The respondents were asked if whether the municipality is having maintenance schedule on water service delivery. And if yes, how does it work. Majority (53,3%) of the respondents indicated that the municipality does not have any maintenance schedule in place. While minority (46,7%) of the respondents said that the municipality is having maintenance schedules. Maintenance activities are only performed after and only when pump machines are broken down. One of the respondents said that:

*"The District Municipality is the one which has maintenance schedules."*

In conclusion, it is clear that Molemole Local Municipality does not have any maintenance schedules, the powers of maintenance schedules are under Capricorn District Municipality as the water services

authority. Therefore, such maintenance services are not effective to that extent, because the community still suffers for a period of a week, when the pump machines are dysfunctional. The above challenges, in the opinion of the respondents, face the municipality and community members as a whole. These challenges could negatively affect the economic and social activities in Dendron. For example, investors cannot afford to invest in a place which does not have constant water supply.

## 6. Conclusion and Recommendations

This paper undertook to investigate and understand the causes and impact of inconstant water supply and its impact on the community within Molemole Local Municipality of the Capricorn District Municipality. In essence, it is found that respondents indicate in general that the municipality is having a recurring challenge which has been happening for the past 5 to 10 years. Furthermore, municipal officials particularly in the water section are not competent and skilled enough to address the challenge. In this regard, failure to address these challenges would negatively continue affecting both economic and social activities in the community. This paper undertook to investigate the causes of inconstant water supply and its impact on the community at Molemole Local Municipality, found within Capricorn District Municipality. The regulatory framework underpinning water services supply in South Africa was discussed and it was important to realise that the regulatory framework should always be the first focus on understanding the significance of providing basic services such as water to community members. It can be concluded that the methodological approaches of the research that were used highlighted that the respondents are not satisfied with the nature and state of water supply in Dendron.

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