

https://dspace.org/

Jozini Dam infrastructure and its role on local economic development

Mngomezulu, Sanelisiwe

2018

https://hdl.handle.net/10539/26039

Mngomezulu, Sanelisiwe Sibongile, (2018) Jozini Dam infrastructure and its role on local economic development, University of the Witwatersrand, Johannesburg, https://hdl.handle.net/10539/26039.

Downloaded from a DSpace repository. https://dspace.org/



Jozini Dam infrastructure and its role on Local Economic Development

by

Sanelisiwe Mngomezulu

A thesis submitted to the Wits School of Governance
at the University of the Witwatersrand, Johannesburg
in fulfilment of the requirements for the Degree of
Master of Management in Public Policy

Supervisor: Professor Mike Muller

May 2018

ABSTRACT

Water is a scarce commodity worldwide. In South Africa, water services and the management thereof have been under deliberation since the dispensation of the new democratic government in 1994; when the African National Congress (ANC) was handed over the responsibility to ensure the widespread delivery of basic services.

The delivery of water services is dependent both on natural resources and the effective allocation and management of these to efficiently ensure that access to water is enshrined as a basic human right, and therefore widely accessible. However, based on the water quality and quantity, the delivery of water services in South Africa has not been without hurdles. With the new dispensation came a shift in government, in terms of policymaking, to a model of New Public Management which denotes that controls be shifted from inputs to outputs, to stress results rather than procedure. In this new way of public management, managers are given powers to conduct hands-on professional management to ensure accountability. As such, policymaking in the water sector has moved away from apartheid-dominated principles that were applied to water provision and land ownership in the country.

The Jozini Dam is an economic asset for the country that can contribute to effective water delivery, agricultural development, hydropower generation and electricity distribution; all of which, in turn, ensure local economic development. However, as per the findings of this research report, the expectations of the economic benefits that should emanate from the Dam are erratic and irregular as: there is no consistent water provision to residents; no comprehensive support structures for local farmers; and, other uses of the Dam have not been fully exploited. This report: identifies the relevant institutions and activities that are responsible for the above-mentioned developmental activities, assessing the reasons for the failure in service delivery; and, finally, attempts to provide recommendations for future successes.

Keywords: ‘Jozini Municipality’, ‘Water Resource Management’, ‘Water Governance’, ‘Dam Infrastructure’, ‘Water Provision’, ‘Local Economic Development’.

DEDICATIONS

This Research Report is dedicated to my two beautiful daughters, Adeah and Yeira: you girls have been my driving force throughout. I also dedicate this to my father, Dlakadla, who travelled to Jozini with me for my fieldwork: all I ever wanted was to make you and Mamma proud. This is for all your efforts. I also dedicate this to my partner, Matteo, who has helped keep my hand steady and my mind clear. To uSimakade, for providing me with all the resources I needed to start and complete this work, thank you.

ACKNOWLEDGEMENTS

Professor Mike Muller, thank you for sharing your time and expertise with me, and for your patience throughout until the completion of this Research Report.

All my interviewees from Jozini Local Municipality, thank you for your time, knowledge and for sharing your stories with me.

My two sisters, Gugulethu and Sphumelele Mngomezulu, for being around, in every way, allowing me to complete this work; you two have been my constant friends. Thank you.

My sincere appreciation also goes to my classmate and friend, Mr Kingwell Chirwa, for being my source of moral support. King, we made it! After all the phone calls and ranting and raving, we made it!

LIST OF ACRONYMS

ANC:	African National Congress
CGTA:	Cooperative Governance and Traditional Affairs
CMA:	Catchment Management Area
DLPG:	Department of Local and Provincial Government
DM:	District Municipality
DWS:	Department of Water and Sanitation
DWAF:	Department of Water Affairs and Forestry
DWA:	Department of Water Affairs
DOA:	Department of Agriculture
DEA:	Department of Environmental Affairs
FBW:	Free Basic Water
HDI:	Historically Disadvantaged Individuals
IDP:	Integrated Development Plan
IPPs:	Independent Power Producers
KZN:	KwaZulu-Natal
LM:	Local Municipality
LED:	Local Economic Development
MWIG:	Municipal Water Infrastructure Grant
NDP:	National Development Plan
NWRS	National Water Resource Strategy
OECD:	Organisation for Economic Cooperation and Development
RDP:	Reconstruction Development Programme
WRM:	Water Resource Management
WSP:	Water Service Provider
WSA:	Water Service Authority
WSDP:	Water Services Development Plan
WCD:	World Commission on Dams
UMDA:	Umhlosinga Development Agency

TABLE OF CONTENTS

ABSTRACT 1
DEDICATIONS 2
ACKNOWLEDGEMENTS 3
LIST OF ACRONYMS 4
TABLE OF CONTENTS 5
LIST OF TABLES 7
LIST OF FIGURES 7
CHAPTER 1: INTRODUCTION 8
1.1 INTRODUCTION 8
1.2 PROBLEM STATEMENT 10
1.3 BACKGROUND 13
1.4 RESEARCH OBJECTIVES 15
1.5 FIELD STUDY 15
1.6 PRIMARY RESEARCH QUESTIONS 16
1.7. ORGANISATION OF THE REPORT 16
CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK 18
2.1 LITERATURE REVIEW 18
2.2 THEORETICAL FRAMEWORK 47
CHAPTER 3: METHODOLOGY USED 56
3.1 INTRODUCTION 56
3.2 RESEARCH DESIGN 57
3.3 SAMPLING METHOD 58
3.4 ETHICAL CONSIDERATIONS 60
3.5 QUALITATIVE RESEARCH TOOLS USED 60
3.6 ANALYSIS 62
3.7 RESEARCH METHODOLOGY 65
CHAPTER 4: CASE STUDY AREA AND ANALYSIS 68
4.1 INTRODUCTION 68
4.2 FIELDWORK AND RESEARCH FINDINGS 70
4.3 ANALYSIS 99
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS 114
5.1 CONCLUDING REMARKS 114

5.2 CONCLUSION 115
5.3 RECOMMENDATIONS 117
6. REFERENCES 121
7. APPENDICES 130
7.1 Fieldwork Plan (Scheduled Interviews) 130
7.2 Interviews conducted 135
7.3 Themed framework for document analysis 152

LIST OF TABLES

Table 1: Specification of the Jozini Municipality's' population..... 9
Table 2: Water Management Service Delivery: Basic Models..... 24
Table 3: The Evolution of Economic Development Theory into Local Practice. 35
Table 4: Structure of water service provision in South Africa 70
Table 5: Structure of water service provision in South Africa 78
Table 6: Structure of Agricultural provision in KZN..... 86
Table 7: The structural description of the UMDA..... 88
Table 8: The Top down model of the governance of the Jozini LM 110

LIST OF FIGURES

Figure 1: uMkhanyakude District Municipality Demarcation 9
Figure 2: A Boathouse on the Jozini Dam 10
Figure 3: Street-vending in Jozini Town 11
Figure 4: Rural Housing in Jozini 12
Figure 5: Parameters of the Jozini Dam 14
Figure 6: Sugarcane Farming (Harvesting) in Jozini, Makathini Flats 37
Figure 7: Map illustrating trans boundaries between S.A, Swaziland and Mozambique 42
Figure 8: Pongola River Railway Crossing Water Level in September 2009. 43
Figure 9: Pongola River Railway Crossing Water Level in September 2015. 43
Figure 10: Process Outlined to Develop and Test the Operating Objectives and Rules 45
Figure 11: Houseboat on the Dam Water in Jozini 45
Figure 12: Governance Analogy by Dr Tapela (2013) 52
Figure 13: The enabling environment for Good Governance (Source: Dayem and Odeh, 2010) 53
Figure 14: Map of uMkhanyakude District, presented within the SA context..... 69
Figure 15: Department Responsible for Water Service Delivery at uMkhanyakude DM 73
Figure 16: Open Water Canal used by Mjindi Farming in Makhathini Flats..... 80
Figure 17: Irrigation system (equipment) in Makhathini Flats supplied by Mjindi Irrigation Scheme 81
Figure 18: The Institutional Structure of the Mjindi Irrigation Scheme 82
Figure 19: ADA Key Focus Areas 84
Figure 20: Institutional Structure of the ADA 85
Figure 21: The Sol Plaatjie Hydropower Project: construction underway 89
Figure 22: Social Protests in Jozini 111

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Although there have been achievements with regard to the broadening of access to water for historically disadvantaged individuals (HDI) in South Africa, the issue remains that many men and women in rural communities continue to live without adequate access to water and service delivery thereof. Unreliable access to water services also limits the potential of rural women and men to engage in economic activities that ensure prospects of food security and livelihood. According to Lankford et al. (2011: 1237), the present and future livelihood of humans on earth relies immensely on ecosystem services, therefore, they should be protected and preserved.

The uMkhanyakude District is a Category C Municipality as it includes more than one (1) municipality in its area, these being: Mtubatuba, Hlabisa, the Big Five False Bay, uMhlabuyalingana, and the Jozini Local Municipality, Jozini consisting of Mkhuze town, Ingwavuma, Jozini town, and uBombo; characterised as rural in nature. The Jozini Municipality is bordered by: “Mozambique to the North; Hlabisa to the South, Swaziland to the West with Nongoma and uPhongola adjacent; uMhlabuyalingana to the East; (Jozini Local Municipality, 2014/15 annual report). As recorded in the Jozini Local Municipality, (2014/15 annual report); “the municipal area is well served by major routes, including: a national link (the N2); the R22, which links Jozini to Manguzi in the uMhlabuyalingana Municipality; and, the 522-1, which extends from uBombo in the south to Ingwavuma in the north”.



Figure 1: uMkhanyakude District Municipality Demarcation

Table 1: Specification of the Jozini Municipality's' population

Basic Facts	Stats SA 2001	Community Survey 2007	Stats SA 2011
Total Population	184 052	207 722	186 502
Total Number of Households	33 534	38 530	38 849
uMkhanyakude District Municipality	573 341	614 046	625 846
Age Profile			
0 - 19	114 095	114 217	101 818
20 - 64	56 831	85 005	77 256
65+	13 090	8 501	7 428
% of Households with No Income	49	47	43

Source: Jozini Local Municipality (2014/15 Annual Report)

According to the Statistics South Africa census (2011), “the Jozini Municipality population amounts to 186 502 individuals, making up 38849 households, representing 29.8% of the District’s population, rendering the municipality the most populated municipality within the district.” The municipality has 72% of its population under the age of 29 years with such a high percentage of youth, there is a dire need for the municipality to engage the youth in efforts that would facilitate access to economically productive activities, such as education, farming, enterprise development and ensuring job creation in local industries.

1.2 PROBLEM STATEMENT

Bird & Wallace (2001) state that, when and where available, large dams serve as water resources that meet fundamental human needs such as food, fodder, consumable water, sanitation and industry, this posits large dams as economic commodities from which societies should benefit.

The Jozini Municipality, and the surrounding areas, is characterised by strong a visibility of underdevelopment, manifested in the shortage of economic activity. Where there is economic activity, however, it is insufficient and not widespread enough to include all residents. The economic industry is highly dominated by agricultural activities both smallholder and commercial farms but also the tourism industry such as lodges, nature reserves and other tourist activities. While the tourism industry is large, it is, however, not big enough to be a source of widespread job creation in the area.



Figure 2: A Boathouse on the Jozini Dam

Currently there is not enough economic activity in the area to include all residents. This is evidenced by the extreme levels of poverty that are apparent through not meeting monetary and nonmonetary indicators of poverty (World Bank Institute; 2005), that is, the levels of health and education, and the measurement against the poverty line threshold. Based on the backdrop of economic and social deprivation, the 2011 Statistics South Africa community survey further confirms that Jozini has limited inclusive economic activities this is

evidenced by the unemployment rate which stands at a devastating 44%, with total of 12 559 people, of a population of 186 502, being unemployed (Stats SA; 2011).

The Jozini Municipality's Local Economic Development (LED) office has had some limited successes in planning for and ensuring support and inclusion in the boom sectors of agriculture and tourism, the Jozini LED strategy has not expounded in detail on how the dam resource can be beneficial in expanding economic productivity. All of the above poses a question of how can the Dam be used to maximise economic and social returns for the district and the municipality, as well as the neighbouring countries with which South Africa shares the Pongola River?



Figure 3: Street-vending in Jozini Town

Figure 3 illustrates the informal street-vending activities the residents of Jozini engage in as one of the means of economic productivity, these can be leveraged and expanded, provided there is consistent and sufficient water supply. It also shows a vast difference between these income-generating practices and the tourism industry, which caters for those seeking leisure and recreational activities. The disparity lies in the fact that the informal street-trading is a means for survival as an economic activity for black residents; while the latter, predominantly owned by white residents, generally requires more capital and is thus more lucrative.

The lack of economic activity in the area is exacerbated by an inefficient and erratic water supply system and mechanism. The Jozini community has been struggling for years to

access water for their residential use and to engage in activities involving the use of the Dam. According to Statistics South Africa (Stats SA, 2011), “the municipality faces many challenges in the provision of infrastructure, Jozini ranks as the third lowest in the province in terms of access to electricity, with only 29,1% of households with accessibility, and just 10,9% of households with piped water” (Stats SA, 2011). Stats SA further records youth unemployment at a devastating 53%, with 54% of households in Jozini headed by women and an additional 1,8% (692) being run by children, almost 80 000 household earnings being below the poverty line of R1 600 or less.



Figure 4: Rural Housing in Jozini

Figure 4 shows the lack of spatial planning of one of the villages in Jozini. The villages are remote and separated from the town, and the mud houses are far from each other as well. This distance (both from the town and one another) may have been a contributing factor in inhibiting water reticulation and the connection of electricity points. This lack of spatial planning indicates the level of poverty and underdevelopment the residents are living under, it is therefore evident that the residents in Jozini, Makhatini flats and the surrounding areas are living in absolute poverty with little to no income in order to sufficiently sustain their livelihoods, this is despite having a large water infrastructure within their vicinity.

Colvin et al (2008). Extends that “water managers grapple with a plethora of complex dynamics and challenges as chronic poverty exacerbated by the ongoing circular of migration between rural and urban areas, increasing informal settlements on the margins

of towns; high levels of HIV/AIDS; growing concerns of the amount of basic free water that should be provided to needy and vulnerable households; and service options that will meet the needs of the poor in a swift and affordable manner". The Strategic Framework for Water for Sustainable Growth and Development Discussion document, dated April 2008 by the Department of Water Affairs and Forestry states that "HIV/AIDS has enormous implications for water delivery services, as people with compromised immune systems are particularly susceptible to water-related diseases. They require access to increased amounts of quality water and sanitation services, while their ability to pay for such services is often reduced" (DWAF; 2008).

The White Paper on Water Services by the Department of Water Affairs and Forestry (October; 2002) states that the provision of water services is a simultaneous competence of the national, provincial and local legislative council, with all three spheres having the responsibility of water provision, with their respective roles and responsibilities; with the National and Provincial government mandated to support and strengthen local government capacity, and to regulate its performance. There are major service delivery incompetence's that may be exacerbated by a lack of clearly understood water service delivery roles. Cameron (2014) argues that "there are some broader concerns about the practical implementation of existing legislation regarding inter-governmental relations", citing Steytler's (2008) argument that "the current plethora of national and provincial laws may be guilty of strangulating local government, preventing its constitutional and developmental mandates."

1.3 BACKGROUND

As reported by the Jozini Local Municipality (2014/15 annual report) "In the depression years of the 1930s, a government irrigation settlement was established upstream of the dam on the west side of the Lebombo mountains, particularly for the upliftment of white farmers and for supplying water to the Makhatini Flats for the cultivation of crops such as sugar cane, maize and cotton". Furthermore, the dam was impounded for the purpose of forging ties between South Africa, Mozambique and Swaziland (Van Vuuren; 2009: 24).

Regarding the use of the Dam, only “3 500 hectares of land is irrigated in comparison with the 45 000 hectares of land the Dam water was envisaged to be used for” (Van Vuuren, 2009: 24). There is a lot of potential for the usage of the Dam as “the Pongola floodplain is one of the most biologically diverse ecosystems in South Africa, comprising of lagoons, lakes, forests, levees and floodplains, with grasslands providing for a wide variety of birds, fish and animals” (Van Vuuren; 2009: 24). It is more important that the means to use the dam further are explored as “the area is home to thousands of people of the amaThonga culture, who have lived adjacent to the floodplain and subsisted on the resources it provides for hundreds of years” (Van Vuuren; 2009: 24). More so because the Jozini Dam is the 5th largest dam in South Africa, with a water storage capacity of 2 267 100 megaliters, with its wall 70 m high, the largest being the Gariep Dam in the Free State province with the capacity of 5 340 600 megaliters, with the wall 88 m high, a crest length of 914 m.



Figure 5: Parameters of the Jozini Dam

Figure 5 illustrates the vicinity of the Jozini Dam, showcasing its specification as noted above. The Jozini Dam, is a double curvature single arch dam, 89 metres high with a length crest of 515 metres. It has a gross capacity of 2 500 cubic meters squared (m^3), with a volume content of 575 000 cubic metres squared (m^3). Based on these, it is evident that it is a large dam, considering the geographic area over which it spreads, its height and carrying capacity.

Despite the initial purpose of the Dam being built to provide irrigation for 45 000 hectares of land, the overarching societal issue is that, although the resource is sufficient to provide water to the Makhathini Flats, residents of the surrounding areas are still living in dire poverty with a lack of a sustainable and consistent water supply. What, then, causes this disjuncture of possessing a resource of this magnitude and the lack of water supply services?

1.4 RESEARCH OBJECTIVES

The objectives of this research are to study the institutional arrangements pertaining to water service delivery, agricultural development and local economic development in the uMkhanyakude District, particularly the Jozini Municipality. The study identifies water provision, agricultural development and tourism as catalysts for LED by analysing the intrinsic nature of the institutional structures - their successes, failures and effectiveness in delivering their mandated services. Further, the study aims to assess the changed political and policy environment pertaining to the Jozini Dam. Lastly to highlight and explore ways in which the Dam can further be utilised through hydropower generation.

1.5 FIELD STUDY

At the advent of democracy in 1994, the current democratic government inherited the legacies of the apartheid government, which were characterised by race segregation and inequalities in basic services provision. Needless to say, this has resulted in poor spatial planning and hindered the widespread delivery of basic services to the historically disadvantaged individuals. The South African Government has, through pro-poor policies, made tremendous strides towards ensuring service delivery, however, despite these strides there are still significant backlogs in basic service delivery, such as the supply of clean potable water, this inhibits tremendous benefits that accompany widespread water provision such as local economic development. The provision of water depends on a stable water governance system, attained through political and policy provisions as well as the provision of aligned water institutions.

It is essential to analyse the development of water rights and the political environment that has allowed for the Dam water to positively affect Local Economic Development in the Jozini Municipality. It is essential that studies on water governance and the analysis of institutional organisation and capacity are studied to purposefully diagnose service delivery issues and find implementable solutions to strengthen these.

1.6 PRIMARY RESEARCH QUESTIONS

The study then seeks to answer the following research questions;

How has the uMkhanyakude DM and Jozini LM progressed in the realisation of water service delivery and the tracking towards Local Economic Development (LED)?

- Post 1994, how have the residents of Makhathini Flats and surrounding areas benefited from the Dam, regarding access to water and to increased economic development?
- What institutions and strategic policy frameworks are in place to ensure the management of the Dam in a manner that has socio-economic benefits? How have these changes occurred over time; and, if they have changed, what informed the change?
- How have water rights been ensured, implemented and protected in South Africa?

1.7. ORGANISATION OF THE REPORT

This report is organised as follows;

Chapter 1: provides an introduction into the identified societal problems faced by the demarcated area of Jozini pertaining to a shortage of basic important services such as water and electricity. A lay out of this is provided through the definition and articulation of: the problem statement, research questions,

the objective and importance of the study; all of which are presented with some of the researcher's and the study's limitations.

Chapter 2: provides a detailed overview of previous literature on water governance as well as Local Economic Development and the impact agricultural development has on Local Economic Development. This chapter considers the different factors that influence water service delivery as well as those that influence agricultural development.

Chapter 3. provides an overview of the institutional arrangements pertaining to water service, agricultural development and Local Economic Development.

Chapter 4: provides the methodological approach used to gather and analyse data.

Chapter 5: presents the study's findings and the discussion of themes.

Chapter 6: provides concluding remarks as well as recommendations.

This chapter has served as an introduction to the research report, stipulating the aim and objectives of the study and the reasons for the selection of the study, including compilation of research questions for the research to address, and, ultimately, find solutions to. The following chapter (chapter 2) explores the theoretical framework in which this study is embedded, further providing relevant literature as formal information against which the findings of this research will be assessed.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 LITERATURE REVIEW

2.1.1 Introduction

The Constitution (1996) stipulates that all South African citizens have the right to access water. This declaration of water being a basic human right is challenged by the fact that South Africa is the 30th driest country worldwide (Department of Environmental Affairs; 2011; 60). Nonetheless, the Constitution demarcates roles and responsibilities for the attainment of 'the right to access water' in order to operationalise the delivery of water services. Muller (2009) stipulates that the Constitution (1996; 1323) gives explicit oversight duties to the national government for water services, with responsibilities to "set policies, norms and standards, to monitor and regulate the provision of services and intervene where necessary in the event of local government failure" (South African Constitution: 1996; 1323).

As such, the Department of Water and Sanitation's legislative mandate "seeks to ensure that the country's water resources are protected, managed, used, developed, conserved and controlled by regulating and supporting the delivery of effective water supply and sanitation". In achieving this, it relies heavily on the adherence to the constitutional mandates, water-related policies and legislation which depict how water should be used, conserved and allocated (Naidoo, Moola, & Place, 2013). Further, the Constitution (1996) sets the primary role and responsibility of ensuring access to basic services to the local government.

The National Water Act (36 of 1998) and the Water Service Act (108 of 1997) are water legislations passed by the Department of Water and Sanitation (DWS) provisioning municipalities to be able to carry out their mandate to provide for water services, the NWA (36 of 1998) legislates the manner in which water resources are used and protected. It is the fundamental legislation that enables a municipality to obtain the means to use the water it requires to redistribute to consumers.

The Water Service Act (108 of 1997) legislates municipalities to provide for water supply and sanitation services. This responsibility is of the municipality and therefore denotes a major dependency on the ability and capacity of the municipal institutions to be able to adhere to their water services supply mandate. They are dependent on the national government performing its duty which is to ensure that municipalities have the required capacity to deliver on its mandated services (Scheepers: 2015). Therefore, the responsibility to ensure access to clean water is a dual responsibility between the Department of Water and Sanitation and the respective municipality (S.A Constitution, 1996).

Further, agricultural services are dependent on water resources for the irrigation of farms. Therefore, agricultural development becomes an important point of analysis in a country like South Africa, where agriculture is a primary contributor to the attainment of economic development, specifically in the case of uMkhanyakude and Jozini, where the Jozini Dam was initially built so as to be a water source to irrigate 45 000 hectares of land. Similar to water supply services, Cloete (2013) states that the governance of agricultural development initiatives in KwaZulu-Natal (KZN) is set to rest at the two different levels of government, however, in this case these being the national and provincial sphere. As with the water sector, where the national department legislates the municipality's duty in ensuring access to the supply of water; there is also a combined effect to ensure economic development in their localities. "The most important constitutional functions of local government include the provision of water, sanitation; road and storm water drainage; solid waste disposal; electricity reticulation; and municipal health services" (Cameron, 2014: 83).

To achieve the local government constitutional function, municipalities have the responsibility, to plan for water service delivery, and to ensure that, through a participatory forum, these plans are intrinsic with LED policies and strategies and Integrated Development Plans (IDP) as well as the Water Development Plans (WDP).

Cloete (2013) states that for a programme or project to be successful, the institutions responsible for the implementation of service delivery should be in place and should be sufficiently capacitated for effectiveness and efficiency. Although, according to Muller: (2009) “water service does not usually determine the structures of public organisation, because, if the technical imperatives of the required water project are not too enormous, there may be no need to create a special purpose organisation”. The supply of water is a prerequisite for agricultural production as the lack of water supply impacts negatively on economic development as South Africa is largely dependent on agriculture for its economic development.

The Pongola River is the source of the Jozini Dam, it rises to 2 200 metres above mean sea level, of which the International Commission on Large Dams (ICOLD) defines large dams “as those that are more than 15 metres in height impounding more than 3 million cubic metres (ICOLD; 2011, 3); they are distinct from small ones as they save resources in building and managing many smaller dams.” “They enable large storage of water and can better respond to the needs of growing urban and industrial areas, having the potential for generation of hydropower and agricultural support” (Bird & Wallace, 2001).

Dams can have multi-purpose uses such as irrigations, water supply, hydropower, flood control, fish breeding and recreation (ICOLD; 2011, 3); according to (ICOLD; 2011, 3) “for developing countries, storing water is a vital and the only means to economically develop the natural resource, water reservoirs give a guarantee of water supply for irrigation, domestic and industrial use during droughts and reduce negative impacts of floods.”

Following suit, the Jozini Local Municipality annual report (2014/15) states that: “The District Municipality has plans for Regional bulk infrastructure, defined by the Water Services Regional Bulk Infrastructure Grant Policy Document, dated 2 February 2007; as infrastructure required to connect water resources on a sub-regional scale (over vast distances), with internal bulk and reticulation systems.” “The concept behind the regional schemes is to ensure that a sustainable and reliable source of water is secured to benefit the people of uMkhanyakude and to ensure growth in the local economy” Jozini Local

Municipality annual report (2014/15). A regional bulk water systems serves to distribute water from its main water source to variant households.

2.1.2 Water Governance

According to Bachelor (2007:1) “water governance is the set of systems that control decision-making regarding water resource development and management”, it is therefore about the way in which decisions are made (how, by whom, and under what conditions), than the decisions themselves (Bachelor: 2007;1). Nkuna (2012:14) quotes Troop (2007), who indicates that water governance mainly addresses questions like, “Who is making decisions on the right to water and its benefits? Who is making decisions about who gets what water, when and how? What voices are heard in influencing decision-making? and on what political and scientific basis are decisions made”? Plummer and Slaymaker (2007: 1) connotes that poor governance oftentimes lead to a lacking water governance system.

In the article, “The Governance of Drought”, from The Witness Report (dated 29 February 2016), Vanderhaeghen & Hornby reported that during the 2013-14 Integrated Development Plan for Jozini in KwaZulu-Natal, community halls and sports fields were abundantly allocated funds in the budget, yet, the budget allocation for the procurement and installation of 80 boreholes across all wards had a zero budgetary allocation, this is contradictory to the fact that among the unfunded projects listed water is a priority request from all the municipality’s 20 wards, either in the form of dams, or pipes, or water tanks, or a windmill. However, these much needed water delivery items are not prioritised through budget allocation “this is despite the regions Key Performance Area (KPA) number two which is stated as ‘basic service delivery and infrastructural development’ and records the key water service delivery challenge as “ageing infrastructure and the threat of irregular water & electricity supply on Development & Investment Planning”.

This paints a picture of how the region does not prioritise water supply through allocating funds either for maintain broken down water infrastructure or through installing boreholes and other water reticulation piping. State governance of public assets and private

amenities is critical for a sustainable water system and the fair distribution of water for human and ecological needs. To achieve this, there needs to be long-term planning and careful monitoring of climate change and relevant adaptive financial planning (Oxfamsa: 2016).

The uMkhanyakude District Municipality's Water Service Development Plan (WSDP; April 2007) states that "Jozini comprises of 17 water delivery schemes, however, most of these schemes are not properly maintained, and are therefore dysfunctional, In areas not covered by the scheme, and in cases where the schemes are dysfunctional, there are boreholes; however, unfortunately, most of these boreholes are non-functional due to poor maintenance" (Jozini IDP: 2013/14; 69). In the light of this, as the District municipality is responsible for water and sanitation services the "municipal managers should take stringent steps in ensuring water supply is both planned and budgeted for, and that these plans are implemented through the practice of ring-fencing funds allocated to this end to ensure delivery on this basic water service, where there is built infrastructure, there should be budgetary and human capacity provided for the maintenance of this public infrastructure" (Jozini IDP: 2013/14; 69).

Bachelor (2007:1) further stipulates that, "water governance covers the manner in which allocative and regulatory politics are exercised in the management of water resources, and broadly embraces the formal and informal institutions by which authority is exercised. Scarcity of water, whether absolute or induced, is not, however, the only fundamental reason for improving the effectiveness of water governance; pollution also contributes to scarcity and the challenge of meeting demand for good quality water."

It is important to note that although water service delivery challenges have been cited largely as a systematic issue there are other reasons behind the failure to deliver water such as those that are a result of the social and institutional context, however, also arising from technical factors of water governance (Xavier, 2012). Amongst other factors are funds and the municipal allocation of these, which requires "acquiring the technical know-how to use the resources most effectively and institutions capable of managing them properly" (Dovi, 2007: 7).

Batchelor (2007) states that “the trend in governance now is for distributed water governance systems to supplement the state by increasing reliance on the private sector, through public-private partnerships, Bachelor (2007) suggest that this coordination and cooperation can assist in preventing governments from being caught up in the contradictory roles of being both a provider and regulator of services” and as stipulated by the National Water Act of 1956, which states that the government should to take control of the management and regulation of the water sector, “Its main principles were that the riparian ownership of water was a workable system; however, the final control of water resources is with the state, where strict state control on industrial and groundwater uses was advocated”.

This sees the state as a regulator of water and the private sector as the provider, this then demarcating roles and therefore, enabling water supply services. When the state is the regulator of services, its primary goal can be providing oversight over water providers such as the WSSA. Public-private partnerships can assist with finding implementable solutions to societal issues as the private sector can be the source of the ‘know how’ and sector specialists. This would take away the responsibility of the government to implement and oversee operations, placing the municipality in a role of contractual compliance regarding service delivery and quality assurance of the services provided.

This outlook is propelled by the fact that municipalities are not sufficiently equipped technically which is caused by the fact that, “white, technically qualified officials upon the 1994 democratic dispensation were encouraged to take ‘voluntary severance packages’ and leave municipal services, and since there were no ‘black skills’ to replace them, this allowed less qualified or often completely unqualified candidates to take up positions in municipalities while the former incumbents returned to the municipality to work as service providers’” (Muller; 2009). Therefore, many municipalities have been left without the technical personnel required to do technical work (Muller; 2009 cites Lawless; 2005 & Mbeki; 2006b). According to the (Strategic Water Partners Network; 2013) Water scarcity in South Africa has solicited more so the public-private partnership model as a pathfinder “in developing collective action partnerships and not just transactions that enable a trust building environment”

Table 2: Water Management Service Delivery: Basic Models

Water Management Service Delivery: Basic Models	
a. ***Public Provision***	When the central, sub-national or local government is directly providing the water service with no other intervention. Done via water - boards, state-owned water companies.
b. ***Private Provision***	When a private company is providing the water service and it is charging water – clients directly for its services.
c. ***Community Based Provision (Including Water Trucks)***	When local communities and non-state or informal providers are left alone in providing their water service. In most cases, no big infrastructure is involved, and wells, and water trucks form part of the service model because mainly they are connected to the infrastructure. "Local communities in the developing world have done much more to improve the livability of cities than any other actor, including the government." (UNCHS; 1996)
d. ***Private- Public Partnerships – Two Different Approaches: Market-led and Community-led***	When there is an association or collaboration of public and private entities, providing water services using either a market led or community led approach with the engagement of formal or informal community associations.
e. ***Multi–stakeholder Provision and/or Multi-stakeholder Arrangements***	Multi-stakeholder platforms for water management are institutional innovations for combining the diverse agendas of several actors who recognise a common management problem and realise their interdependence in solving it (Steins & Edwards; 1998). An example of these could be multi-sectorial and multi-actor committees or commissions. Baud et al. (2007) says that multi-stakeholder arrangements on the other hand mean that (a) several organisations are involved, and (b) cooperation is not limited to the private-for-profit sector, but includes local communities.

2.1.3 Water: A Human Right

With democratisation in South Africa came a shift in the water sector regarding legislation and regulation which shifted to focus on the inclusion of all South Africans in the supply of basic human rights such as supplying clean consumable water consequently being attentive to the social and spatial disparities faced by a majority of black South Africans, these were addressed through the enactment of the National Water Act 36 of 1998, to replace the Water

Act 54 of 1956. The National Water Act 36 of 1998 focuses on dismantling the riparian water rights system, as stipulated by (Muller; 2009) in the democratic era, a significant measure of democratic success is measured through assessing the access to clean, consumable water.

The Constitution of the Republic of South Africa provides for the use of environmental resources and sets about conditions for their use. The use of dam infrastructure is for water provision which should lay a foundation to economic and social development as stated in the Bill of Rights (Chapter 2 of the Constitution) that everyone has a right to "secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development". The Constitution further sets forward the right to 'sufficient food and water' as a constitutional right. Therefore the ability of South Africans to have access to clean water is as much a constitutional right as it is a fundamental for human survival.

Tissington et al (2008) emphasises the importance of 'right based water reform' to remedy the societal ill that "a large portion of the historically disadvantaged South Africans live in the rural areas and are 'stuck' at the bottom of the water ladder with only rudimentary water services and no progressive realisation of water related rights". To remedy these challenges (Muller; 2009, cites for President Mbeki who stated in the 2007 State of the Nation Address) who stated that legislative reforms have ensured that all South Africans have the basic human right to water, this then serving as a mechanism for empowerment and guide to policy such as right based water reform.

For right based water reform to be attained. The changed political environment directly aligns to the changes in management of dam water resources, therefore, ensuring a rights based water reform.

Graf (2003; 51), indicates that "decisions about alternatives in planning and management are complex, involving not only the environmental outcomes, but also the economic and human social outcomes that impact on whether citizens have water provided for, entailing a constant balance between planning and management inputs and the way the human right of access to clean drinking water is enshrined in the Bill of Rights". The necessity to regulate water is articulated in the South African Water Services Act 108 (1997), stating

“the importance of the prescription of a minimum standard of water supply services necessary for a reliable and sufficient quantity and quality water supply to households, especially in the informal settlements”, this is aligned to Scanlons’ et al. (2004) definition of the right to water, stated as the right of access to sufficient water quality and quantity necessary to meet basic needs. “The right to adequate water has also been provided for in the Copenhagen Declaration, where States are supposed to focus their efforts and policies to provide basic needs for all, the International Convention on the Elimination of all forms of Discrimination against Women (CEDAW) recognises the right of women in rural areas to enjoy adequate sanitation and water supply” (SAHRC; 2001). The South African Constitution is in cooperation with these as it states that international law must be considered in interpreting the rights contained in the Bill of Rights (SAHRC; 2001), for water access as a human right to be realised, there has been considerable attention to pro poor focused policies.

2.1.4 Pro-poor Focus

Water is a basic human right that has been provided for through various legislations and global declarations, however, the supply of clean water remains an eminent challenge faced mostly by rural communities, evident to this is stated by Nkuna (2012) who cites that the World Bank (2010) estimated that almost a billion people, the majority of whom live in rural areas, lack access to safe water. The lack of access to water is exacerbated by the exclusion of the poor in policy processes, rendering the poor left behind in decision making or in influencing the way in which decisions are made, as then the exclusive decision makers do so without explicitly diagnosing the societal issue and fall victim to remedying the wrong issues or not having the appropriate responsive remedial action at all, this deprives residents of being provided with basic services of which in turn residents resort to violent protests and the use of illegal and unhealthy water connections (UN-HABITAT, 2005).

With the water supply challenges facing rural; low income areas, Cleaver et al. (2009) states that “studies indicate the lack of piped water for the marginalised rural communities affects economic productivity and further exacerbates conditions of poverty”, keeping

women and children busied with walking long distances to fetch water in the place of being participatory in economically productive activities (Nkuna, 2012), this then rendering a large part of the population is as economically inactive (Cleaver et al., 2009). Since 1994 local governments have been facing exhaustive backlogs to ensure consistent water supply. UN-HABITAT (2005) states that “better water and sanitation governance for the urban poor does not necessarily mean that the governments need to provide these services, but it does imply that governments need to work to ensure that the poor groups can obtain adequate water and sanitation”. The challenges faced by local governments in ensuring access to water supply is propelled by the very water institutions that are designed by the national government to ensure supply, It is therefore, important to realign policy, regulation, and legislation with the actual current needs of the poor (Tewari, 2009), and also align these with the institutional structures.

As water law is concerned with human right to water access and the concomitant duties of others, Haigh, Fox & Davies (2010) indicate that “both legal and policy arrangements have an important role to play in improved access to water supply and to ensure adequate provision of services, however, most Water Resource Management legal frameworks still support inadequate models of service provision, with no proper definition of what constitutes equitable access or provision to the urban poor. “The (UN-HABITAT, 2006) states that “most legislation overlooks the needs of the poor, for instance, in unplanned settlements, the relationship between security of land tenure and the right to the provision of basic services is often ignored as a result, and short of the necessary legal provisions, the poor cannot articulate the human rights issues surrounding their living conditions”.

Bachelor (2007) states that “the challenge of achieving pro-poor water governance can be met by initiatives such as” provisioning and strengthening water policies and laws for the needs of the poor; in particular women and children and mainstreaming gender and development aspects in the water sector; making information accessible for the poor and ensuring inclusiveness in decision-making and also, ensuring there are pro-poor safeguards such as river basin planning and management. There have been considerable strides in providing access to clean drinking water for residents who cannot afford to pay for it, this such as the Free Basic Water Policy.

2.1.5 Free Basic Water Policy (FBWP)

Muller (2008) states that “the Free Basic Water Policy (FBWP) was implemented and supported within the framework of the Department of Provincial and Local Government’s (DPLG) broad programme to support local government transformation”, he further states that it was introduced and implemented to ensure water access to households who cannot afford to pay for water and are living under poverty. On the question of how the FBW programme is to be financed (Muller: 2008; 78) states that “local government was encouraged by the national government to ring fence the ‘equitable share and cross-subsidies’ to use these to finance the (FBW) programme within the municipalities.” “The FBW programme grants each household 6000 litres of free water per month, at RDP standards or higher and if an additional amount of water is used, it must be paid for, as per standard rates and tariffs set by the Department of Water Affairs” (Farrar and Rivett; 2014).

The FBW policy decision was adopted in the year 2001, based on the constitutional declaration that everyone has the right to access water this, running contrary to the conventional wisdom, that water, as a human necessity and economic good, should be paid for (Muller, 2008: 67). Despite the governments’ attempt to provide ‘free’ water to the communities, the FBW has been criticised by civil society commentators for not being far reaching to all the poor and non-poor users alike and for not providing an adequate amount of “water and charging excessive amounts for water supplied beyond the free amount” (Muller, 2008: 68).

The shortfall with the implementation of the FBW policy programme in Jozini for instance, is that water supply is erratic in the area and although water is free when provided, it is inconsistent and therefore insufficient. Therefore, although water is free when it is supplied, since it is not paid for there is no revenue to be used as capital for the purpose to expand water reticulation systems in the area, this then places residents in a cycle of inconsistent water supply and no hope of having water connections in the near future.

This phenomenon is at large a common occurrence of the South African democracy, occurring many years after of the constitution was enacted, of which it stipulates that everyone has a right to access clean water.

(Muller (2009) cites (SALGA; 2004, Mbeki; 2004 & Manuel; 2004) who state that “the inability to supply reliable water services is based on the municipality’s lack of capacity to deliver water projects through to implementation, this phenomenon is still cited as a reason for the systemic failure of municipalities to spend their resources effectively”. Despite municipalities being faced by this ineffectiveness, the widespread provision of water to communities depends on extensive and expensive network infrastructure, which requires substantial and long-term funding.

Although the FBW is plausible in providing water at no cost to people, it is however, detrimental as “upgrading infrastructure and maintaining services such as boreholes, taps within households and water cans does come at a cost, and as with all services, the costs must be recovered for the system to be sustainable over time” (Farrar & Rivett, 2014:). “Water service, as with agricultural development, is often financed through government funding and taxes and relies mainly on external donors where available” (Dovi; 2007). Dovi (2007) further stipulates that “most water institutions are not run on a for-profit basis; as a result, communities are either not paying for water services or tariffs are kept at a minimum”.

This renders the free basic water policy controversial, “although it is pro-poor focused, it cripples the municipality’s ability to fund the building and upgrading of water systems as the municipality is rendered highly dependent on ‘Inter-Governmental grants’ ”(Muller; 2009), ‘inter-governmental grants’ consists of funding from the Department of Finance and DPLG into one channel, channelled into local governments. Challenges associated with the current water supply system in municipalities revolve around the municipality’s’ in ability to implement water projects which is strangulated by ineffective ring-fencing of revenue for this end. Muller (2009) states that in some arid and sparsely populated areas,

the cost of providing safe water is substantially more than the formula-determined grant", these cited hindrances point to the devastating challenges of the FBW policy.

Even so, it is to be considered that South Africa has made considerable strides towards realising the constitutional provision of water as a basic human right, through legislation and active water projects, "In the year 2006, a national programme that was launched by the Department of Water Affairs and Forestry (DWAF) had provided access to water supply infrastructure to more than 10 million people, which has reduced the number of people without access to water supply down from 12 million in 1994 to 3.7 million in the year 2005" (Muller; 2009). However, amidst the considerable progress in supplying clean drinking water, there are still significant backlogs, mostly manifested in the rural communities.

Nkuna (2012) attributes this water service delivery deficit in developing countries to an insufficient number of capacitated personnel and government institutions that are effective. On the other hand (Berkowitz; 2009), states that water service institutions point the failures of water supply service on a lack of funds and the poor not being able to pay for water services, this largely affects the community's ability to participate in the economy and therefore the prospects of local economic development.

2.1.6 Local Economic Development (LED)

Various scholars define LED in a number of ways. At the core LED refers to an increased economic base for a defined locality. Rogerson (2009) suggests that the definition of LED includes "a strategic emphasis upon a defined territory, leaning on participation of all stakeholders, predefined and locally owned and managed processes with the mobilisation of local resources for a competitive advantage and ensuring this is delivered in a manner that brings about sustainability".

The DPLG (2006) defines LED as “an approach towards economic development which allows and encourages local people to work together to achieve sustainable economic development herewith bringing economic benefits and improved quality of life in a local municipal area”, it is noteworthy that South Africa is amongst the few leading countries in sub-Saharan Africa to officially embarked on LED projects over the past decade.

Furthermore, in defining LED, the UN-HABITAT (2005) states that it is as “a participatory process in which local people from all sectors work together to stimulate local commercial activity, resulting in a resilient and sustainable economy; it is a way to help create decent jobs and improve the quality of life for everyone including the poor and marginalized”. These definitions of LED share common factors of economic development in their emphases on jurisdiction; the sustainability of development; inclusive growth that is planned for and implemented accordingly and the utility of natural resources.

The South African focus on LED strategies was introduced shortly after the end of apartheid regime, in order to ‘redress societal imbalances and backlogs by redirecting services towards eradicating poverty through growth and economic development’ (Motswiane: 2009). The policy framework that makes provision and governs Local Economic Development (LED) is embedded in: the South African Constitution (1996); in Chapter 4 of the National Development Plan (2011); the White Paper on Local Government (1998); the Municipal Systems Act No. 32 of 2000; the Municipal Structures Act No. 117 of 1998; and on local municipal Integrated Development Plans (IDP).

The responsibility to ensure economic growth and to reduce poverty has now been decentralised and diversified to not only be the responsibility of the national government but also, that of the provincial and local government (Mostwaine; 2009), further, the attainment of this collaborative effort by the different spheres of government, is beneficiary to local residents whom as a result then have the opportunity to “utilize business enterprises, labour, capital and other resources to achieve goals for Local Economic Development” Mostwaine (2009).

This study places importance to water access for the development of the local economy, positioning the Jozini Dam as a catalyst for Economic Development in uMkhanyakude

District and Jozini Local Municipality, if it is, however, managed and positioned as such. Rogerson (2009) cites Helmsing & Egziabher (2005) who view LED in Africa “as a process involving partnerships between local governments, Non - Governmental Organisations and community based groups, these are established to manage resources for job creation and to stimulate the economy of a well-defined territory.”

The advent of democracy has seen many public policies and institutions created for the redress of past apartheid regime separatism policies. Firstly, Chapter 7 of the South African Constitution (1996) makes provision for decentralisation by ensuring that municipalities are well able to govern themselves locally stating that, it states that “a municipality has the right to govern, on its own initiative, the local government affairs of its community, subject to national and provincial legislation, as provided for in the Constitution”. The objectives of local government is stated in the South African Constitution (1996; 74) as being “to provide democratic and accountable government for local communities; to ensure the provision of services to communities in a sustainable manner; to promote social and economic development; to promote a safe and healthy environment; and to encourage the involvement of communities and community organizations in the matters of local government”.

The attainment of Economic development positively impacts job creation, thus creating substantial benefits - such as, creating more employment opportunities and increasing wages in order to ensure increased profits for local businesses, and, in turn, ensuring more tax revenues (Batrik: 1991). “Research shows that faster growth of a metropolitan area has significant long-term effects on its unemployment rate, leading to significant occupational upgrading to better jobs particularly for minority and less educated persons” (Batrik: 1991), access to better jobs for the historically disadvantaged in turn impacts the real incomes of low-income persons by a greater percentage than those of upper-income persons (Bartik: 1991), allowing for increased ability to be active in the economy and therefore bettering standards of living, thus alleviating poverty.

The attainment of local economic development does not, however, come without challenges. Ariatti (2013) indicates that “challenges at the local level are to minimise

potential conflicts that may arise in the quorum of stakeholder engagement, in the articulation of needs as well as in ensuring responsive strategies to meeting needs, further, problems may arise in attempting to expand the roles and responsibilities of the partners and to align institutions for improving the local economy by benefiting from the cooperation amongst the public sector, private parties and civil groups; and thus need to be addressed and overcome at that level" (Ariatti: 2013).

The National Framework for Local Economic Development in South Africa (2014 – 2019) further identifies and lists the challenges to the attainment of LED as the;

- Lack of agreement on the meaning of Local Economic Development;
- Poor intergovernmental relations in Local Economic Development;
- Inabilities to develop productive partnerships to maximise local competitiveness;
- Lack of clear communication and knowledge sharing;
- Local governmental capacity constraints;
- Differentiated approaches to LED support between large cities and poorer and smaller municipalities;
- Funding for Local Economic Development Projects, particularly in municipalities that struggle for resources;
- Poor investment in economic information and identifying the strategic competitiveness of regions; and
- Lack of dedicated focus supporting the 'second economy'.

To ability to address the above challenges translates into opportunities to maximise local economic development. As stated by Motswaine (2009), "The aim of the LED framework support mechanisms is for the realisation of the local government constitutional objectives", and to "further support the development of sustainable local economies through integrated government action" (DPLG, 2006).

The vision for the National Development Plan (South African Government, 2011) is, "to achieve sustainable and inclusive growth by 2030 through investing in a strong network of economic infrastructure designed to support the country's medium and long-term

objectives, this is achievable only through targeted development of transport, energy, water resources, information and communication technology".

The presence of dams in a local area presents an opportunity for the resource to be an anchor for an entire ecosystem as "ecosystems provide not only the basic materials that society needs to survive such as food and water, they also foster health, good social relations, security and well-being, therefore, the management of water resources is one of the most important aspects of environmental conservation, as water sustains all life on earth and access to it and the supply of it are determinants for development" (Lankford, 2010). It is therefore paramount that the management of dams takes into account the entire ecosystem, this then ensuring that people have access to water for residential use and farmers have access to water for agricultural purposes.

Many stakeholders benefit from the existence of any particular dam. According to Lankford (2010) major stakeholders are farmers who grow food; industries; municipal institutions who use water stored in dams; the national government who promotes water resource development and ensures its equitable management; and societies to whom these dams are crucial for existence.

William (2013) stipulates that dams are now seen as water resources that are presented as being part of an ecosystem with geographic spaces which are habitats for wildlife and dominantly for human use, "in this new view of the river as an ecosystem rather than merely a conduit for water to be bought and sold; simplistic outdated notions of water resource management will have to be replaced by much more complicated approaches that integrate science and decision-making".

As such, amongst the objectives of the National Water Resource Strategy (NWRS, 2011) is the multi-purpose use of major storage dams to serve multi-stakeholder use, ensuring that poor communities benefit accordingly. As stated, the role of agriculture in South Africa plays a large role in the attainment of the objectives of the National Water Resource Strategy (NWRS, 2011), as one of the major uses of dams is for agricultural support.

Blakely & Leigh (2010) state that resources are often underused for development purposes, and therefore state that a way to remedy this is to ensure capacity of local institutions to rightfully turn resources into development opportunities, this calls for an integration of new concepts into what LED was conventionally tabulated as.

Table 4 is adapted from Blakely & Leigh (2010), it presents old concepts of LED in comparison to new LED concepts, these ought to shape the thinking of local policy-makers when developing LED strategies.

Table 3: The Evolution of Economic Development Theory into Local Practice.

LED Component	Old Concept	New Concept
Locality	Physical location improves economic options (nearby natural resources, transport, markets).	A quality local physical and social environment constitutes advantages for economic growth
Business and Economic Base	Firms and export industries create jobs and promote an increase in local business.	Regional networks of clusters of competitive industries contribute to an increase in growth and income.
Employment Resources	Additional firms create extra jobs (minimum wage jobs).	Skills development and technological innovation contribute to quality jobs and higher wages.
Community Resources	Purposeful organisations can boost economic opportunities in the community.	Concerted partnerships of many community groups are required to create a base for competitiveness.

2.1.7 Agriculture for LED

At least of 35% of South Africa's economically active population is directly or indirectly dependant on agriculture (Backerberg & Sanewe; 2006), in agreement (DAFF; 2015) states that Irrigated food plots on small farmer irrigation schemes fulfil important roles in terms of household food security. Accordingly, the National Development Plan (2011) earmarks the extension of land under irrigation for small and emerging farmers to create one million jobs in agriculture by 2030. This necessitates that water resources used for irrigation are accounted for; also, that there is the arrangement of a comprehensive institutional framework capacitated to carry out its mandate.

Agriculture is the primary driver of the South African economy, especially of KZN, given its strategic advantage regarding land and natural resources (Department of Agriculture and Rural Development: KZN, 2015). Irrigation the, is essential for agricultural produce, however, it can be affected by many variables, some of which are under human control and some which are not. Those that are under human control are, for instance the management of water governance systems; structures and measures such as the controlling of water losses; and ensuring efficient drip irrigation systems. If these can be maximised in control Irrigation in South Africa could be expanded by 145,000 hectares if these structures and measures are improved (Oxfamsa: 2016). Variables that are natural and not directly under human control which affect irrigation in South Africa particularly in Kwa Zulu-Natal is dry lands and droughts, Van Averbbeke et al. (2011) further includes erratic rainfall and high evaporative demand as part of this, stating that their presence causes water deficits, and, in turn, limited crop production.

The governance of water resources and the distribution thereof, planning for, and responding to, reduced rainfall all affect the impacts of drought on people, agriculture and ecology (Oxfamsa: 2016). These are very important factors to consider in agricultural development particularly in the case of uMkhanyakude, as the climate in Jozini can, for the most part, be described as subtropical, ranging from moist subtropical along the coast

to moderately dry subtropical in the west. The climate, together with the soil of the area, has the greatest influence on agricultural production (Jozini LED Strategy; 2015).



Figure 6: Sugarcane Farming (Harvesting) in Jozini, Makathini Flats

According to the Jozini LED Strategy (2015), although agriculture has shown growth rates within the past ten years, it has declined in its contribution to the gross value added (GVA) to the local municipality, evidently, in the year 2013 the sector contributed only 7% to the overall GVA of Jozini Local Municipality, value adding remains a challenge for Jozini Municipality's agricultural production. In the Jozini LED Strategy (2015), the municipality states the LED strategy should focus on creating the whole value chain (processing, packaging, marketing and the distribution of local produce), in order to increase agricultural value.

Investing in a strong network of social and economic infrastructure ensures that water systems are built that connect the water from dams to households for domestic use, and also to farms for irrigating purposes. This has been the subject of much outcry amongst the people of Jozini and is ultimately the focus of this research, that is, is the Jozini Dam providing residents with sustainable clean water supply that enables economic viability in the area. Many of the issues raised during this study point to the uMkhanyakude District Municipality's lack of sufficient funds and the misallocation thereof for fast-tracking the connection of a water supply system in the area.

An investment in water reticulation systems for household and agricultural use is of utmost importance for the attainment of economic development in a country like South

Africa, where the economy is dependent on agriculture and where water contributes 60% towards agriculture and irrigation. Therefore, as Fraser (2009) states, “investing in agriculture can positively impact poverty reduction and have a great pay off, not only because of agriculture’s importance to food security but also because of economic dependence on the sector in the poorest countries, its labour-intensity and the high proportion of budgets spent by poor rural households on foodstuffs”.

The Medium Term Strategic Framework (MTSF, 2014-2019) tabulates two imperatives related to the dependency on management of water resources for development, these are “smallholder farmer development and support (technical, financial and infrastructure) and the creation of sustainable rural enterprises supported by increased investment in agro-processing, trade development, access to markets and financial services”. As such, the KZN MEC for Agriculture and Rural Development, in a media statement dated 22 April 2015, stated that, in the aim to encourage private sector investment in rural communities the KZN DARD has planned to convene smallholder investment and marketing expos in five District Municipalities in KwaZulu-Natal with the objective to promote agricultural investment and marketing opportunities to potential investors and markets in order to encourage private sector investment in rural communities.

The KZN Investment Strategy (2011) “was developed as a tool for all stakeholders to assist in attracting and facilitating foreign and domestic investment in KwaZulu-Natal”, with the key focus areas as; “improving structures and systems of investment promotion and facilitation; attracting investment to meet job targets; channeling resources to where they have the greatest impact for instance, certain geographic areas, economic sectors and foreign country investment); ensuring competitive advantages are utilised to the fullest and building on these; alignment and integration with national, provincial and local policies, strategies and programmes this including Richards Bay IDZ, DTP; maximisation of job creation and retention through business retention and expansion; gaining optimal benefit from incentives such as Department of Trade and Industry (DTI) sector-based incentives and service and utility incentives; and public sector investment into infrastructure to lead the private sector including rural and small towns”.

The Jozini Municipality aligns the above strategy to the Jozini LED Strategy (2015), stating that it must be developed with the above principles in mind while ensuring that it creates an environment that is conducive to effective promotion and attraction of investment as well as the efficient facilitation of investment. The strategy then;

- Suggests improvements in the business environment in Jozini;
- Seeks to improve coordination between key stakeholders who are required to work together to promote and facilitate investment;
- Identifies key sectors and focus areas for inward investment (based on comparative advantages); and
- Promotes the sharing and development of research and information.

Jozini LED Strategy (2015)

Oxfamsa (2016) stresses the importance of agricultural development, stating that, unless government strategically intervenes to actively redistribute land and capital resources, the existing dynamics driving agrarian concentration will be exacerbated by drought and accompanied by rising rural unemployment and inequality.

In many rural areas, water is primarily used for agricultural purposes, either for subsistence, small-scale farming or large-scale farming as well as for grazing livestock to supplement diets and income, this phenomenon is evident in Jozini, where water is important not only for residential use, but also for agricultural use (UN-HABITAT, 2005). It is important to be cognisant when formulating LED policies and strategies whether they provide a significant effect on job creation in a specified locality as the failure to increase job creation exacerbates unemployment (Bartik: 1991).

To support agriculture and irrigation, the government created and funded irrigation schemes that operate as state owned companies and seek to provide agricultural assistance to smallholder farmers.

2.1.8 Irrigation Schemes

Van Averbeke, Denison, Mnkeni (2011) define irrigation as referring to the artificial application of water to land for the purpose of enhancing plant production, (Van Averbeke, Denison, Mnkeni; 2011 cite Backeberg & Groenewald; 1995a) state that the government creates, operates and funds state irrigation schemes with the purpose to increase food production; ensure agriculture against droughts; provide rural employment opportunities and develop new settlements. Irrigation schemes were largely created to assist smallholder famers, Van Averbeke & Mohamed (2006) define “South African smallholder irrigation schemes as multi-farmer irrigation projects larger than five (5) ha in size that were either established in the former homelands or in resource-poor areas by black people or agencies assisting their development”.

Van Averbeke & Mohamed (2006) cite May (2000) & Aliber (2003), who state that “in South Africa, most smallholder irrigation schemes are found in the former homelands”, which were designated for the black population before 1994, where today the incidence of poverty peaks. Mohamed (2006) further states that “in these socio-economic environments, smallholder irrigation schemes present an attractive opportunity for the development of local livelihoods.”

For this reason then, Ogunwale, Maurya, Owunubi (1994) cite NEDECO et al. (1970), who stipulate that “most irrigation projects, are designed to have strong and efficiently organised and well-staffed authorities to operate and maintain the scheme and avail the agro-services and inputs to the farmers”. Over the last few decades, irrigated agriculture in South Africa has undergone major changes in terms of switching from grain to high-value horticulture and industrial crops, coupled with drastic intensification in production. The effects of these changes on some irrigation schemes have been drastic, where production has decreased substantially, or, in some cases, it has ceased - often in areas with limited other economic activities or potential (DAFF; 2015).

Some African countries have managed to improve their agricultural produce by utilising irrigation schemes and therefore, reducing the number of people in danger of starvation, this then has assisted in reaching the Millennium Development Goals (MDGs) (http://afkinsider.com/biggest-irrigations-schemes-africa). “In Nigeria, most irrigation schemes are developed and managed by the government, who owns the water impounding and distribution structures while the farm lands could be owned by either the government or the farmers, or a combination of both, the interaction, between the farmers and government could be classified as a benevolent patron-client relationship, oftentimes, the government owns the water impounding or lifting, conveyance and control structures; and in some cases, the farm plots which are allocated periodically to the farmers” (Ogunwale, Maurya, Owunubi; 1994). It is noteworthy to state that the Nigerian irrigation scheme management system is one that is similar to irrigation scheme management in South Africa.

The Mjindi irrigation scheme is a public entity that provides agricultural support to the farmers in the Makhatini Flats, on the one hand, with the government providing agricultural services to the farmers, on the other hand, the farmers are recipients of these services and are then tasked with ensuring agricultural produce as an output. Ogunwale, Maurya, Owunubi (1994) equate this system to farmers being highly dependent on government for services which in turn can affect their farming productivity, they suggest that this manifests as a pattern of paternalistic patron-client relationships, with the government simulating the role of a patron as the role of government (DOA) is to ensure the scheme’s operation, maintenance and production - and the Mjindi Irrigation Scheme simulating the role of a client.

2.1.9 Water Resource Management

2.1.10 Shared Water Resources

The SADC Regional Water Policy (2005) states that the “SADC is a region of shared water resources, it is estimated that about 70% of the regions’ water resources are shared by more than one country, with a further fifteen (15) major river basins that are trans

boundary or watercourses shared by two or more countries" the SADC water policy (2005) has therefore established three (3) key development objectives have been identified as the basis for an integrated regional economy in Southern Africa, these have been stated as poverty alleviation, food security and industrial development, however, fundamental to the achievement of these is the sufficient availability of water throughout the region" (Ashton, 2000).



Figure 7: Map illustrating trans boundaries between S.A, Swaziland and Mozambique

Figure 7 above illustrates the interjection of the Pongola River, from Swaziland, joining into South Africa (Pongola River) and flowing through to Mozambique. According to the National Water Resource Strategy (2013), "approximately 60% of South African stream flows in rivers is shared through trans boundary water systems". The National Water Resource Strategy (NWRS) (2013) states that "South Africa is a signatory to the SADC revised protocol on Shared Water Courses and thus has an obligation to fulfil its commitments through cooperation with its neighbours in the management of international waters in the interests of economic integration, peace, and security".

Perpetuated by the recent drought in 2017, KwaZulu-Natal has been recorded by the DWA (2017) as the second lowest-level dam with the dam level at 57.5%, with the Western Cape the lowest at 29%. Kaplan & Zitzer (2016) state that "before the drought, the normal raw water flow at Hluhluwe phase one (1) was averaging 280 cubic meters

per hour, which dropped to 90 cubic meters, affecting rural areas, water from the Pongolapoort Dam is ‘flushed’ on an annual basis in October every year, and is taken to supply communities and farmers east of the lake”; on normal rainy days, the rain replenishes the Dam, while, with very little rain the water levels in the dam decrease (Africa Geographic; 2016).



Figure 8: Pongola River Railway Crossing Water Level in September 2009.



Figure 9: Pongola River Railway Crossing Water Level in September 2015.

Figure 5 and Figure 6 above illustrate low levels of water, showing the differences between the river capacity in the year 2009 in comparison to water levels in the year 2015, with erratic rain fall causing the decreasing water levels in KZN, this in turn affects and limits water supply to neighbouring countries as per the signed agreements that South Africa has with Mozambique and Swaziland.

The Tripartite Interim agreement between the Republic of Mozambique and the Republic of South Africa and the Kingdom of Swaziland is the first signed agreement of a basin wide management in the SADC, stipulating the amount of water South Africa is obligated

to supply to Mozambique and Swaziland (Ashton, Earle, Malzbender et al., 2005). The agreement, signed in the year 2002, governs the use of two shared rivers, as stated in the media release held by DWAF (DWAF. 2002. Tripartite Permanent Technical Committee between the Republic of Mozambique, the Republic of South Africa and the Kingdom of Swaziland).

Ashton, Earle, Malzbender et al. (2005) state that, “the agreement further makes provisions for a time during drought conditions when the obligations to supply water cannot be met extensively, it introduces a flexible system of water allocation and uses, addressing concerns of a potentially drought-stricken region in an adequate manner”. The agreement’s Article 4 (5) of Annex one (1) determines that, “during droughts, the water use by all of the parties must be reduced sequentially, water use for irrigation must be reduced first, followed by reductions in first priority uses.

For the agreement to operate effeciently, there should be effective flood controls and the timeous opening of the floodgates at the Pongolapoort Dam for fulfilling the obligation South Africa has in supplying much needed water to Mozambique. Ashton (2000) agrees with this, stating that for Mozambique to maintain water and ecosystems there should be sufficient water released from the Jozini Dam as “no single nation within an economic region can prosper in isolation”. “This is recognized by the (Southern African Development Community (SADC), in its’ objective to attain an integrated regional economy based on balance, equity and mutual benefit for all member states” (Ashton, 2000).

Hallowes et al (2010) outlines the processes involved in ensuring cooperation in the utilisation of the shared water resources between the three countries, also stating the challenges involved in such an arrangement, he states that the complexity involved with the task revolves around the arrangement that these large basins are split between three countries which individually have a number of different management units and institutional structures to address operational water management challenges, the key challenge is to optimise the local resource usage while at the same time not compromising the system as a whole, this will thus require a multi-tiered approach to the management of the basin

where overall key management objectives will need to be produced at a global level and then the systems will need to be operated on a local basis while ensuring compliance with the larger overall objectives" (Hallowes et al 2010: 4).

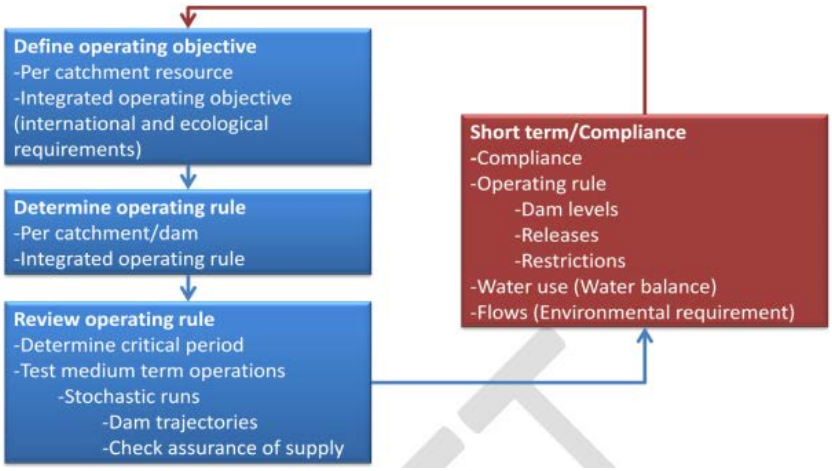


Figure 10: Process Outlined to Develop and Test the Operating Objectives and Rules

The key challenge is to optimise the local resource usage, while, at the same time, not compromising the system (Hallowes et al (2010: 4).

2.1.11 Tourism and Recreation



Figure 11: Houseboat on the Dam Water in Jozini

The economic activities in uMkhanyakude District fall within the agriculture and tourism economic sectors. The Jozini Dam, as previously stated, was intended for use for

irrigation purposes; however, to this end, the Dam is an underexploited resource, and it is essential to consider avenues that can maximise the use of the dam as an infrastructure and a resource. These unintended uses can have positive spill-over effects, much like the Vaal River in Gauteng, which has attracted tourists to nearby towns such as Parys.

Jozini town has many present socio-economic challenges, however, despite these, the town has been marked as a tourist attraction, boasting wildlife, game reserves, boating, fishing, and beautiful scenic views (Jozini LED, 2015). “The vision for tourism in Jozini Municipality is to increase the product offerings in order to attract tourists that have traditionally bypassed the area and in the long term, to turn Jozini into a fully-fledged destination in its own right by focusing on the area’s natural asset base, its diverse cultural representations and the unterminated natural beauty of the area, the local municipality has identified the need for park and recreational zones at Jozini to boost the local economy through tourism, the Muzi Lake and boating and canoeing projects have been specified as priority projects that represent a potential entry point for unlocking potential” (Jozini LED Strategy, 2015: 77).

This unintended spill-over effect is well in alignment with the NDP (2030: 137), which states that “socio-economic development will reflect understanding of an alignment with available resources and as a result, will ensure a reliable supply of water to meet needs, while efficient agricultural use of water will support the productive and inclusive use of water, it further states that water should be recognised as a foundation for activities such as tourism and recreation”, further reinstating the importance of the NDP 2030.

These tourist attractions are; “the Lebombo mountains, the Jozini Dam, Pongolapoort Game Reserve, Mkhuzi Game Reserve, Ndumu Game Reserve, Hlatikulu Forest, Jozini Dam Development, the Border Cave, fishing in the Pongolo River, King Dingaan’s grave, and the Usuthu Gorge” (Jozini LED Strategy, 2015).

Although, as indicated in the Jozini LED Strategy (2015), tourism alone cannot provide the full impetus needed to alleviate poverty, it can provide a catalyst for socio-economic development and the promotion of secondary activities and initiatives arising from the

influx of tourists, which could positively impact the greater community. Accordingly, Oxfamsa (2016) states that compounding the effects of consolidation of the land area under production is the fact that nearly 10% of the land and water has already been diverted from farming to leisure uses and residential settlement, a trend likely to increase as drought and warming raise the economic risks associated with farm-based livelihoods.

The above gave an outline of the institutional arrangements that are pertinent to the uMkhanyakude District Municipality and the Jozini Municipality, following below is the theoretical framework of the study that encompasses the institutional theory, institutional arrangements, the concept of governance and the policy environment.

2.2 THEORETICAL FRAMEWORK

2.2.1 Institutional Theory

The definition of institutions has been under much scrutiny, controversy and dispute amongst scholars. Mbeche (2004) quotes North (1989) in defining institutions as enforced rules and norms of behaviour that structure human interactions. Williams (2006) elaborates on this by further indicating that institutions describe any organised collective action that reiterates institutions as fundamentally comprised of human interactions this view is echoed by old institutionalism which postulates that institutions shape policies and politics to this view, Thoening (2002) states that Institutions serve to uphold policy, they provide the infrastructure for action; however, contrary to this view the historical approach postulates that politics and policies shape institutions.

Hill (2005) indicates institutions as manifestations of the state that are crucial for the explanation of policy outcomes he states that they determine human actions, wherewith policies are made to remedy a societal need. Hill (2005) further quotes Selznick (1957) who indicates that institutions are a responsive and adaptive organism to those societal needs; they are, therefore, an agency established to deal with programmes legislated by policy, the operationalisation and enactment of policy depict an arrangement of rules and regulations. Hill (2005) quotes Immergut (1993) who conducted an analysis of the

evolution of policy in a turbulent period in European history; she identifies the influence of ‘external events’ that have an influence on pre-established rules. (Immergut; 1992: 63) posits that although institutions do not allow one to predict the outcomes of policy, they do, however, establish rules within which policy actors should act, they serve as a framework, enabling one to predict the outcomes of policy conflicts.

2.2.2 Institutional Arrangements

An institutional framework refers to an array of institutions, organisational structures, networks and groups that are responsible for the delivery of services as such (Muller (2009) states that the allocation of financial and human resources to established water sector institutions is fundamental to meet water delivery services, to enable the purification and distribution of water reliably to all. The National Development Plan (NDP) 2030 states that there have been changes in the water sector that have manifested through policy reformulation and alignment resulting in new institutional frameworks and accordingly new role players, this era has placed importance on the institutions as the implementing body that is set to be responsive to public policy’s. The (NDP: 2030) further states that water sector policies have shifted from infrastructure development to a holistic focus on water resource management, this approach addresses both water demand and supply.

The key enabling factor for the attainment of the efficient and sustainable provision of water and the realisation of it as an economic instrument is envisaged by the water institutional framework, which aims to ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons; and to ensure and facilitate effective service delivery while supporting and contributing to the government’s transformational objectives and outcomes (WRMS; 2011:16) in accordance, the National Development Plan (2012) and the National Programme of Action (NPA) for 2010 to 2014 both decree to serve the public effectively and loyally by carrying out their responsibilities with integrity, transparency, energy and compassion through active cooperation and contribution towards sustainable water resource management.

The formulation and enactment of water laws and policies has occurred in tandem with the broad transformation in the political arena, this has had notable strides on water resources management (Chiluwe & Nkhata, 2014), these led to the realisation of the International Conference on Water and the Environment (ICWE, 1992), which denotes water as with economic value, amongst other principles, and therefore, water resources should then be used efficiently as economic instruments to ensure this realisation. As such, the NDP (2030) further states that water resource management institutions should reflect the shared, public nature of water and the need for the users and potential users to understand the limits of its use while being involved in decisions about its management and costs it is noteworthy that Institutions which uphold and operationalise the goal of water supply services, agricultural development and consequently LED are, however, not without obvious controversies and failures. In fact, Mbeche (2004) cites (Cernea,1987:1) who stipulates that, the experience of many unsuccessful, or marginally effective development projects has shown that long term sustainability is attributable not only to economic or technological factors, but to institutional and organizational factors as well.

The World Commission on Dams (WCD) states that initially dams built for irrigation are typically unable to provide water for the planned area of land, however; their performance typically improves over time, further stating that the dams they examined did not meet their intended goals initially and often had failures at the management and institutional level rather than structural and engineering deficits, these are identified as management issues that involve poor and insufficient water distribution networks (Water for All:2017).

The White Paper on Water Services (October, 2002) by the Department of Water Affairs and Forestry states that the provision of access to water services is a functional area of concurrent national and provincial legislative competence. It also outlines the fact that all three spheres of government have the responsibility to ensure access to water; with the two main actors being the National Department of Water and Sanitation (DWS) and the local government institutions, the national government is responsible for overseeing activities of all water sector institutions for national and international (transboundary) resource planning and allocation in alignment to this Nkuna (2012:14) states that local

governments (LM/DM) are tasked with facilitating the provision of water services to communities. In this institutional kinship, the DWS is mandated to enact water legislations, support and strengthen local government capacity, to regulate its performance and to form Water Service Plans and Integrated Development Planning, whereas the local government , referred to as 'Water Service Authorities', plan for local water development (the White Paper on Water Services; 2002).

In this arrangement, local governments' institutional failure is exacerbated by a lack of accountability and legitimacy in turn creating service delivery failures in local economic development and therefore generating public protests (Cloete 2013; 3499). The appropriate institutions that are able to respond to policy provisions as well as societal issues are of utmost importance for the success of economic development, water service delivery as well as agricultural development.

Following this it is important to delve into the institutional arrangements and policy orientations responsible for water supply services and agricultural development for the attainment of local economic development in the Jozini Dam as a central water resource, providing water to these ends these are elaborated as research findings in chapter 5.

Mbeche & Kumssa (2004) emphasise the linkage of institutions and good governance in the delivery of sustainable development.

2.2.3 Governance

(Fukuyama; 2013) posits "the policy process is administered under good governance if strong political and administrative institutions deliver on goods and services to citizens", and that to successfully implement public policies different stakeholders that exercise power and influence at different stages should be involved. Cochrane and Malone (1999) define "public policy as consisting of a plan of action or programme and a statement of objectives".

Hill (2013) defines governance as "a descriptive label that is used to highlight the changing nature of the policy process", further indicating that policy-making is a multi-

dimensional arena with a variety of actors such as policymakers, the media, civil society, interest groups, policy associations and policy participatory bodies, the interaction of these is referred to as interactive governance wherewith a combination of governing efforts are used to govern society at different societal spheres locally, regionally, nationally or globally and also considering the overlapping cross-cutting authorities and responsibilities. Kooiman (2008) further states that in addition to horizontal networks, all kinds of vertical governing arrangements between public and private entities are also seen as governance and that the interactive governance approach suggests relating governability to qualities of a societal system that can be divided into a system-to-be governed and a governing system, with governance interactions taking place between them" (Kooiman: 2008). (Kooiman et al., 2005) further elaborates that "systems to be governed, societal systems, including water resource systems, are characterised by complexity, diversity and dynamics", intensifying over time through forces like globalisation and industrialisation and therefore, when policy-makers and decision-makers craft policies, they should be cognisant of these issues. Kooiman et al. (2008) interlinks this in stating that "governability from the point of view of the governing system is the capacity to bring about, organise and carry out governing interactions in the face of this diversity, complexity and dynamics".

The Jozini Dam is a natural societal system that is, it is a system to be governed through governing policies and institutions such as the Constitution and National Water Act of 36 of 1998 and the Water Service Act No. 108 of 1997, and the Department of Water and Sanitation, the uMkhanyakude District Municipality. The interaction of these policies and institutions is based on a relation of pressure from the systems to be governed, that is, the dam and the society meant to utilise the dam and performance impacts from the governance systems.

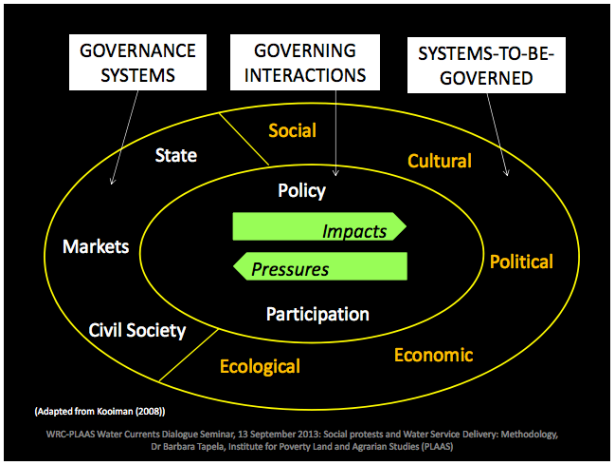


Figure 12: Governance Analogy by Dr Tapela (2013)

Simeon (1976) further articulates that "the broader political environment within which bureaucrats and politicians operate is defined by factors such as prevailing ideologies, assumptions and values, structures of power and influence, patterns of conflict and division", Reincke (1998) states that "these structures of power and influence are considered as the political environment of a public policy consisting of different stakeholder values, interests and ideologies, the political environment pertains to the state, government, its institutions and legislations, and the public and private stakeholders who operate and interact to influence that system, it is important to note that the different policy actors concentrate on one or more stages of the policy process".

Of these, the first stage of the policy process is the setting of the political agenda, where the government focuses attention on a societal issue with the aim to prioritise it as a government programme, once established and deliberated on, a policy is formulated setting the agenda to attain institutional status, thereafter, the policy is formally adopted and implementation strategies planned for accordingly, translating the policy into programme and projects of action thus, operationalising the policy. It is important to continuously monitor the policy process in order to gather and maintain performance information which in turn can evaluate or assess whether the policy has achieved what it initially intended to achieve and use the information to determine whether policy change or termination is needed (Gupta (2001: 47 – 65).

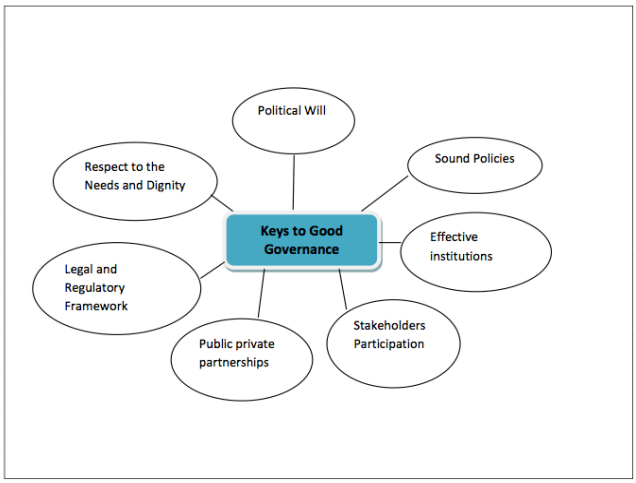


Figure 13: The enabling environment for Good Governance (Source: Dayem and Odeh, 2010)

This chapter aimed to unravel the relevant theoretical framework and to collate and review literature on the topic at hand. Subsequently, the following chapter will serve to narrate how this research report will gather this information and that of the subsequent chapters. It serves to present the research methodology used.

2.2.4 Policy Environment

South Africa has demonstrated a major policy shift in its public administration following its first democratic elections. In his keynote address Kasrils (2001) states that “the Reconstruction and Development Programme (RDP) and the South African Constitution provided impetus for a complete review and revision of policy and the law in the administration of government affairs holistically alike to those that relate to water, which resulted in the development of the National Water policy for South Africa”. The water sector has experienced changes from the National Water Act No. 54 of 1965 to the current National Water Act No. 53 of 1998, which set out to redress water allocation, its use, conservation and management based on equality, efficiency and sustainability principles (National Water Research Strategy; 2004).

It is important to note that there are different actors that dominate a policy and political environment, these may be divided into five categories; namely; those that are elected into power, those whom are appointed, self-formed interest or lobby groups, research organisations and mass media. All of these play a participatory role in policy formulation in the pursuit to govern institutional structuring and organization and to drive the implementation of policy programmes (Howlett and Ramesh: 1995; 52).

CHAPTER 3: METHODOLOGY USED

3.1 INTRODUCTION

This study is qualitative in nature, it focuses on the uMkhanyakude District Municipality, particularly the Jozini Local Municipality, which is one of five municipalities in the district. The study aims to assess the correlation between the presence of the dam in Jozini and the state of the municipality's Local Economic Development. The study also aims to consider the Trans boundary water agreement with Mozambique and Swaziland, the two countries with which South Africa shares the Jozini Dam.

As this research is qualitative in nature, it employs a qualitative research approach rather than a quantitative approach. According to (Norman. K. &. Lincoln; 2000) "qualitative research stresses the socially constructed nature of reality and the situational constraints that shape inquiry, they seek answers to questions that stress how social experience is created and given meaning", (Marlow and Boone: 2005) further stipulates that a qualitative research approach is non-numerical, using words rather than numbers".

For the purpose of the research fieldwork study, municipal officials, ward councilors, traditional leaders as well as community members were selected as part of the interview process to study and uncover the case of Jozini municipality and the role of Jozini Dam in water provision, this was addressed and presented through the posing of research questions, "these are broad methods that produce descriptive data from the respondents' written or spoken words and observing their behaviour as a way of approaching the empirical world" (Taylor, Bogdan, & DeVault, 2016).

The above has described the nature of this research study as being qualitative in its methodology, the following subheading therefore, explicitly describes the design of the research, it is aligned to methods typically qualitative in nature.

3.2 RESEARCH DESIGN

The main objective of this research study is to record a case study of the Jozini Dam in KwaZulu-Natal by assessing the areas changing political environment, to assess the management of the Jozini Dam and its impact on the use of the dam today. This assessment will cover the period between the inception of the dam in order to assess why the dam was built, and up until today in order to assess the current uses of the dam, this with the purpose to explore the dams potential future uses, such as expanding the hectares of land currently irrigated for farming and exploring the prospect of hydropower generation, further, to uncover the standing trans boundary agreement between South Africa, Mozambique and Swaziland.

The above objectives set the design of the study which is dominantly the case study of Jozini Dam and the intrinsic in-depth details of the elements of the geographic area. Zainal (2007) defines a case study as “a research method allowing for the exploration and understanding of complex issues through reports of past studies, further indicating that “a case study research method can be considered robust, particularly when a holistic, in-depth investigation is required” (Zainal (2007). Yin (1994) further elaborates that “case studies are the preferred strategy when the researcher seeks to investigate the ‘how’ or ‘why’ questions being posed, also, when the investigator has little control over events and when the focus is on a contemporary phenomenon within a real-life context.”

Zainal (2007) further states that a “case study method selects a small geographic area or a limited number of individuals as subjects to be studied, it explores and investigates contemporary real-life phenomena through detailed contextual analysis of a limited number of events or conditions and their relationships”.

The geographic area of the study is within the uMkhanyakude District Municipality, it is situated in northern KwaZulu-Natal, encompassing five (5) local municipalities, namely, Kwa - Hlabisa, Mtubatuba, Hluhluwe, Kwa - Mhlabuyalingana and Jozini, the dam being studied is situated within the Jozini Municipality which comprises of 17 wards and 33 councillors. Of these, five wards were selected for the study based on their proximity to

the Jozini Dam. The dam is the main water resource, at its inception, in the year 1972 it was the largest constructed dam in South Africa. However, currently with the Gariep Dam as the largest dam, the Jozini Dam is now the fourth (4th) largest dam in South Africa.

The case study of the Jozini Dam and Municipality was selected based on the ironic fact that, although there is a dam in the area, the residents of Jozini are however, without a stable water supply, this in turn affects the resident's quality of life, which is manifested by poverty and low economic activity.

As specified above the study primarily explores a case study method in order to uncover the situation of the Jozini Dam and that of the Jozini residents, their relation and experiences of the dam and all other stakeholders involved. Following this it is necessary to stipulate how the individuals involved in the study were selected, this by specifying the research method chosen and most suitable to this case study.

3.3 SAMPLING METHOD

The research method used to sample respondents is a non-probability sampling method of the snowball type, also referred to as 'respondent-driven sampling'. This method was chosen based on the fact that the villages in and around Jozini are highly communal and therefore connected to one another, this proved to make the fieldwork easier to conduct as one respondent helped to refer the researcher to other relevant respondents, this was applied to both the households and the farmers category.

This method of sampling is relevant to this study because, as depicted above, the members of the community who were interviewed referred the researcher to other relevant respondents. Snowball sampling allows for the sample size to grow (Wagner: 2012). This was demonstrated by the initial pool of participants who provided names of other people who were eligible to participate in the study. The researcher then pursued the identified contacts and continued asking them to identify other participants for the study. As pointed out by Palys (2008) "the sampling method must be tied to the study's

objectives", (Wagner: 2012), further states that it is important to categorise the fieldwork questions posed to the respondents to address particular research questions and the study objectives.

All the smallholder farmers were referred to the researcher by Sibonelo Mnyeni, who works at the Sentrans Company, a transport company located in the town of Mkhuze, Mkhuze town is 10 kilometres away from Jozini, the company is owned by Mr. Senekal, who is a large commercial farmer in the areas of Mkhuze and Jozini. Two ward councillors were suggested for the study by the traditional leader (*Induna*), named Mr Peter Nyawo, who resides in Mpondwane Village in Jozini. The dam manager was suggested by Mr Senekal, who has the water licence and uses it to extract water from the dam and supplies water to the District Municipality.

The interview schedule focused on smallholder farmers as well as large-scale farmers. Interviews took place with one (2) commercial farmers, two (3) smallholder farmers, and one (1) irrigation scheme formally registered as Mjindi Farming Pty Ltd, which has the mandate to provide water for irrigation to farmers and agricultural assistance such as providing farmers with irrigation facilities and other agricultural means of assistance. Farmers were divided based on those that had been farming before the democratic dispensation, for instance, farmer Samson Hadebe has been farming for 34 years and irrigating his farm with water sourced from the Jozini Dam. He has farmed in Pongola for 30 years, Pongola is 75 kilometres away from Jozini. For 4 years he has been farming in Jozini, Makhathini flats. Both of his farms have been using water for irrigation from the Jozini dam. The sample also included farmers who have been farming only since after the dam was impounded.

The interview schedule included a selection of employed and unemployed household residents, who referred the researcher to other relevant respondents. These referrals were often based on the fact that the suggested person was thought to have more knowledge on the area of research.

The researcher interviewed householders who had been living in the area prior to the impoundment of the dam as well as families that had been living in the area only after the dam was impounded, and compared the two based on variables such as:

- Understanding provision of water in the area;
- Establishing if they pay for water;
- From where they were getting water for domestic use and for farming, and also assessing water accessibility.

With the selection of interview respondents, it is of utmost importance that ethical considerations are taken into place so as to ensure that the vulnerable in society are not exploited for research purposes, the below gives a statement of the researches ethical standards and considerations.

3.4 ETHICAL CONSIDERATIONS

The researcher complied with the research ethics for the purpose of this study. Through informal verbal consent to participate in the research, information such as the research objectives and the significance of the study was sufficiently communicated to the respondents.

Below is a listed and descriptive spectrum of research tools that have been used for the purpose of this study, these are, desktop study, formal interviews and physical observation.

3.5 QUALITATIVE RESEARCH TOOLS USED

3.5.1 Desktop Study

A preliminary desktop study was conducted to collect background information on the water services and policy documentation of the municipality. Statistics on population, water services were collected from the relevant Integrated Development Plans (IDPs); Annual Performance Plans as well as Annual Reports; the Department of Water Affairs (DWA) website as well as Statistics South Africa (Stats SA) community surveys.

3.5.2 Formal Interviews

The interviews conducted were unstructured and open-ended, and served to collect data and ask individuals about their opinions, attitudes and behaviours towards the dam and the economic status of Jozini.

According to Kvale (2006) “an interview is an inter - subjective enterprise of two persons talking about themes of common interest”. where the interviewer’s (Midgley et al; 2014) “questions lead up to what aspects of a topic the subject will address and the interviewers active listening and following up on the answers determines the course of the conversation”, Wagner (2012) defines interviews as “a two-way conversation and a purposive interaction in which the interviewer asks the participant questions in order to collect data about ideas, experiences, beliefs, views, opinions and behaviours of the participant”.

A formal interview guide and a fieldwork plan were prepared wherein the questions were predetermined and open-ended, allowing for in-depth responses from the respondents, this allowed the interviewer to pose follow-up questions. The respondents were asked questions with regard to water sources and services and their relation to and expectations of the Jozini Dam. Questions regarding job opportunities in the area in sectors such as farming and tourism, as these have been identified by the study as catalysts for local economic development in the Jozini area were also posed to the respondents.

3.5.3 Physical Observations

The researcher also employed physical observation at the areas where the interviews took place, these are of the dam infrastructure and the dam site, the irrigation infrastructure that Mjindi farming offers to the local farmers in Makhathini Flats and the residential area around the households where there are JoJo water tanks, formally known as vertical tanks, where water is stored for communal use. These tanks are one of the few means through which residents collect water for domestic use.

The researcher also observed the different tourist attractions in the area, such as lodges and boats for hire on the dam also visited the different farms in Makhathini Flats, the

researcher also visited and observed the Sentrans Transport Company which is a logistics company that leases out trucks to local farmers to transport sugarcane to nearby sugar mills such as uMfolozi Sugar Mill, and the Hulett Sugar Mill in Empangeni.

Other points of observation pertained to the mountainous landscape of the area, how the houses in the villages are widespread and separated from each other. Another observation was the poor standard of living, evidenced by the community gravel roads, the lack of personal vehicle transportation and the fact that houses did not have free-flowing water in the backyards and the general state of their dwellings. Water tanks were also more than 200 meters from the houses, this causing residents to travel far distances to fetch water. As per the aim and performance target of the local IDP, all these further confirmed the truths documented in the community surveys and in government reports, which state the area's low income per capita and per household situation.

The following states the analytical methods used to analyse the different themes of this research study. These are; thematic analysis, that served in categorizing the different themes of this research into related sub sections, discourse analysis, which served to break down meaning derived from the text used in documents and also interviews and lastly, institutional analysis, which has served as an explanatory component into how institutions were identified and analysed.

3.6 ANALYSIS

3.6.2 Thematic Analysis

Braun (2006) states that "qualitative approaches are incredibly diverse, complex and nuanced and therefore should be seen as a foundational method for qualitative analysis" Braun (2006) further cites Boyatzis (1998) who states that "thematic analysis is a method for identifying, analysing, and reporting patterns within data, it minimally organises and describes data set in rich detail, it also goes further than this and interprets various aspects of the research topic". Further, similar to other analytical methods it seeks to provide concise guiding themes chosen for analysing and categorising documents, interviews and observation.

In this research study, thematic analysis has been employed in order to categorise important aspects of the research, categorising them into similar themes in order to synthesise information gathered and develop them into patterns for analysis. The fieldwork instruments and questions were categorised according to their relevance and ability to answer and correspond to the study's research questions, further, the research questions were developed and themed based on their alignment to the study's objectives. Braun (2006) further states that thematic analysis differs from other analytic methods that seek to describe patterns across qualitative data, such as discourse analysis.

3.6.1 Discourse Analysis

Discourse analysis is a qualitative data analysis method that was used for this study to analyse the data collected, especially in relation to the document analysis. "Discourse means anything from a historical monument, *lieu de memoir*, a policy, a political strategy. Discourse analysis is narrative in the broad sense of the term, and comprises text, talk, a speech or topic-related conversation, and is linked to language" (Wodak & Meyer 2008).

According to Wagner (2012), discourse analysis "is used to make meaning from text by incorporating both human behaviour and culture in the interpretation", further," Wagner (2012) refers to White (2004), who indicates that "discourse analysis is underpinned by social constructivism; that is, how people construct their reality, their inter-subjective other and therefore, that there are multiple realities and understandings of the discourse being analysed".

It is from this then that it was essential to understand the method employed to analyse institutions in place to deliver water services, to gather the different discourses of stakeholders involved. For institutions to functions an organisational structure is established and functions categorise based on their alignment to each other.

3.6.3. Institutional Analysis

Institutions and institutional analysis was at the core of political science from the time of Aristotle until the middle of the twentieth century. In this long-standing tradition of analysis,

the formal structures of the public sector were assumed to dominate governing (Keeman; 2016). Further, there was an assumption embedded in this approach that institutions could be designed, and, if they were designed properly then governments would be effective (Keeman; 2016).

Cloete (2013) cited Williamson (1996) defining the conceptual model for institutional analysis, stipulating that “the first level deals with the institutional structure, with the objective to improve the knowledge of the structures, actors and rules that conform a specific economic system”, describing the situation. For the purpose of proposing improvements to the institutional structures pertaining to the nuance of this study, a first task is to understand the structures involved with water service delivery and agricultural development pertaining to the uMkhanyakude District Municipality in Northern KwaZulu-Natal. Cloete (2013) further cites Williamson (1996) stipulating that the “second step pertains to assessing the effectiveness of the institutional structure.

This will determine whether the current institutional structure is producing a socially and economically desirable outcome, if not, this would suggest the need to move towards a new institutional equilibrium”, and lastly, “the third level is where individuals make decisions about the allocation of resources, and individually or collectively participate in the other levels condition by their preferences and cultural assumptions”. Citing (Williamson; 1996) Cloete (2013) states that “the third step is institutional choice or the process of designing institutional arrangements or structures, the focus being to look for arrangements that could contribute to improving the current performance of the institutional structure.”

The above has served to present the analysis framework that has been employed for the purpose of the research findings analysis. It is here forth important to explore the research methodology that has been used for this research study.

3.7 RESEARCH METHODOLOGY

3.7.1 Quantitative Research: Secondary Community Survey Data

As stated by the Community Survey 2016 (CS), “the community survey is a large-scale survey that takes place between censuses 2011 and 2021, with the objective to provide the population and household statistics at municipal level to the government and the private sector, this, in support of planning and decision-making” (www.statssa.gov.za). “Demographics on income per capita, socio-economic status and economic activity are used in measuring population size, access and quality of basic household services, ownership of household goods and the householders involvement in agricultural activities” (www.statssa.gov.za).

3.7.2 Qualitative Research

Wagner (2012: 8) explains that “qualitative research methodology is used for exploring, describing, identifying and explaining social phenomena”. (Nkwi; 2001) further explains that “an advantage of using the qualitative method in exploratory research is that the open-ended questions and opportunity to probe gives participants the opportunity to respond in their own words, rather than having to choose from fixed responses, as in the quantitative method”.

For the documenting the selected case study, both the quantitative secondary data and the qualitative methods have been deployed.

3.7.3 Research Design: Case Study

“Case study research, through reports of past studies, allows the exploration and understanding of complex issues, it can be considered a robust research method particularly when a holistic, in-depth investigation is required, in most cases, a case study method selects a small geographical area or a very limited number of individuals as the subjects of study” (Zainal, 2007), “in their true essence, the case study method is exploratory and investigates contemporary real-life phenomena through detailed

contextual analysis of a limited number of events or conditions and their relationships" (Zainal, 2007).

A case study was applied for this paper, wherein an assessment of the effects dam water resources have on local economic development, by studying the Jozini Dam and the municipality in which it is located. Methods used to study the case of Jozini is as detailed below, in depth interviews with key informants, and document analysis.

3.7.4 Methods Applied:

3.7.4.1 In-depth Interviews with Key Informants:

The interview is a qualitative data collection method that offers the opportunity to capture, descriptive data about people's behaviours, attitudes and perceptions, and by unfolding complex processes.

Interviews were held with the following respondents/ stakeholders:

- Local businessmen in Jozini: farming, tourism, fishing and other businesses;
- Mjindi Farming: Mr W. Tom (Senior Manager for Farm Development and Support);
- Local traditional leadership;
- Municipal officials on LED Policy, Agriculture and Fishing Policy, Tourism Policy.
- Jozini residents (sampled six households to trace to trajectory of development in the area);
- Department of Water and Sanitation: Inkomati Water;
- Representative from the SA Water Research Commission.

The interviews helped to answer the following secondary research questions:

1. How does having the dam in the area contribute to social and economic development for the area?
2. How is measurement information captured regarding the use of the dam water: is the water extracted for each industry's use measured?
3. Institutional and policy arrangements for management purposes of the Jozini Dam: are there any water allocation strategies for the residents?

3.7.4.2 Document Analysis:

Document analysis is a form of qualitative research that gives the researcher a sense of voice and meaning of the text in documents used. Analysing documents involves coding focus group or interview transcript content into themes for further analysis. To support the findings, secondary data available from newspapers, documents from the municipal office and the Department of Water and Sanitation are to be collected and analysed to supplement the field research findings.

Document analysis will help in answering the following sub-questions:

1. What was the main purpose of the Jozini Dam. How drastic has the change in the utilisation of the dam water been? What has caused the drift?
2. How has the political environment changed in the new dispensation? What has caused the trajectory the use of the dam has gone through?
3. The SA Constitution of 1996 provides for the basic human right to water services. With Jozini boasting a big national water resource, how have the residents of Makhathini Flats and surrounding areas benefited regarding access to water and the trajectory to attaining economic development?
4. Over time, how has the change in political leadership and management affected economic development?

In the light of the methodology detailed herein, the following chapter serves to present the case study area in order to further provide evidence of the interviews that took place with the selected respondents from Jozini Municipality. The chapter further provides an analysis as per the fieldwork findings.

CHAPTER 4: CASE STUDY AREA AND ANALYSIS

4.1 INTRODUCTION

This chapter serves to present the findings of fieldwork observation and interview responses pertaining to the research study case, being the water shortages in the Jozini Local Municipality specifically and the uMkhanyakude District Municipality broadly. Data collection included key government publications such as the Jozini IDP, and the LED strategy document as well as the District Municipality's water development plan. Emanating from research fieldwork, the following analytical themes were identified: Irrigation, agriculture development and farming; land ownership; water supply systems, and local economic activity and development. These were derived from the interviews and responses until data saturation was reached.

4.1.1 Location of the Case Study Area: Jozini

The uMkhanyakude District is a Category C Municipality as it includes more than one (1) municipality in its area, these being: Mtubatuba, Hlabisa, the Big Five False Bay, uMhlabuyalingana, and the Jozini Local Municipality, Jozini consisting of Mkhuze town, Ingwavuma, Jozini town, and uBombo; characterised as rural in nature. The Jozini Municipality is bordered by: "Mozambique to the North; Hlabisa to the South, Swaziland to the West with Nongoma and uPhongola adjacent; uMhlabuyalingana to the East; (Jozini Local Municipality, 2014/15 annual report). As recorded in the Jozini Local Municipality, (2014/15 annual report); "the municipal area is well served by major routes, including: a national link (the N2); the R22, which links Jozini to Manguzi in the uMhlabuyalingana Municipality; and, the 522-1, which extends from uBombo in the south to Ingwavuma in the north".

Figure 21 below profiles the geographic location of the uMkhanyakude District Municipality within the KwaZulu-Natal province.

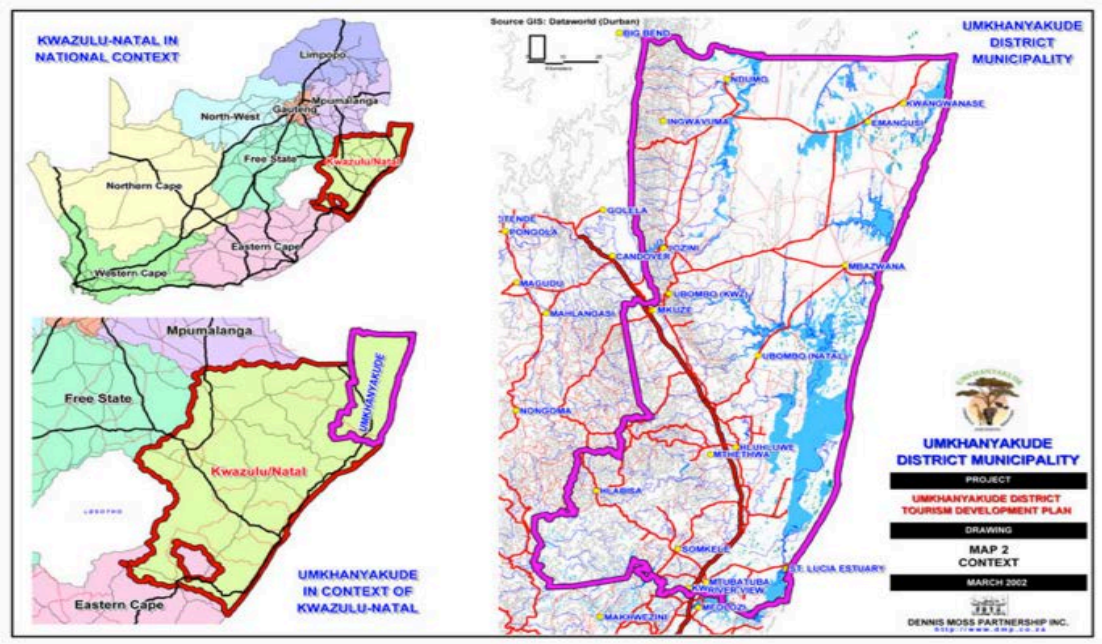


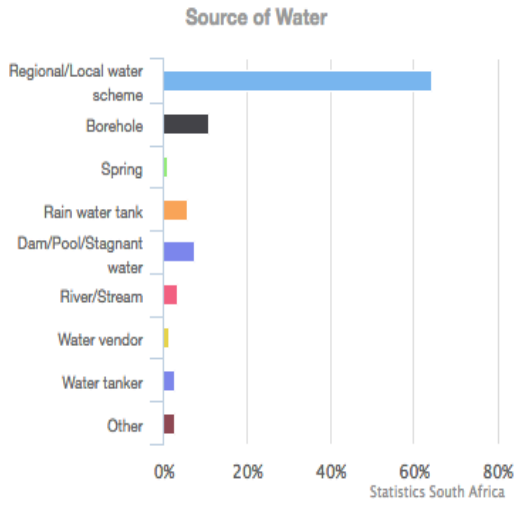
Figure 14: Map of uMkhanyakude District, presented within the SA context

4.1.2 Economic activity in the area

4.1.3 Water Services

The uMkhanyakude District Municipality has the mandate to supply water for all its local municipalities. Based on the graphical illustration below, and on the study findings, the area does not have a stable, constant water supply system as a result an irregular integrated water supply approach is used. For instance, in Mpondwane, there are ten impounded boreholes, though only one of these is in working order. An illustration that shows water provision through IWRM can be seen below. Most residents get water from boreholes; but, given the fact that many of the boreholes have become dysfunctional; some are compelled to source water from unprotected springs and the agricultural canal intended for Mjindi Farming. This poses serious health hazards to the community as it is an open canal vulnerable to waterborne diseases.

Table 4: Structure of water service provision in South Africa



4.2 FIELDWORK AND RESEARCH FINDINGS

As noted in the National Development Plan 2030 (RSA Government, 2012), while there have been strides made in ensuring greater and more widespread access to water, there are regions and sub-regions that experience water service backlogs. In light of this, it is important to appreciate and understand that the water shortage that bedevils the uMkhanyakude District Municipality is not isolated, but it is a reality that is experienced by many other regions/communities of South Africa. The water shortage epidemic that is tormenting the uMkhanyakude District Municipality is severe and very present as there are no stable and secure avenues through which residents can have access to clean drinking water. During my visit to uMkhanyakude District, I had the privilege of travelling from Mtubatuba, Somkhele, Mkhuze, Jozini (and its immediate surrounding areas); visiting villages such as Thokothini, Mpondwane, Makhathini Flats and Mjindi. The area is rich in livestock, grazing land, green fields of farming land and valleys. I visited the area just a few days after cyclone Dineo (2017) had swept through Mozambique. Usually the area is dry and hot, with temperatures reaching highs of up to 38 degrees.

The residents use means such as illegal and insecure connections to the water grid, *izigwedlo* (water pumps), paddles, and infrequent water cans from the municipality. In one case, 10 boreholes had been sunk in Mpondweni; however, only one was in working condition at the time of the study. The residents of uMkhanyakude/Jozini are deprived of

their water and sanitation needs. This case is both unique and peculiar at the same time because of the monumental contradiction of the existence of an enormous water resource in the area: the Jozini Dam, previously known as the Pongolapoort Dam. Initially, the Dam was intended for white farmers to be direct beneficiaries of the water to use for irrigation purposes. After extending the right to use the water to black farmers, the Homeland government did not have the know-how, expertise and financial backing to ensure that black farmers utilised the Dam. This meant that it would be under - utilised by black and emerging farmers.

The fieldwork observations and interviews responses are detailed in *appendices 1*, an analysis of the findings is necessary. The ensuing section provides an analysis of the information about the case study as gathered through the data collection methods of observation and interviews, while keeping in mind the literature review and theoretical framework created in Chapter 2.

4.2.1 Institutional Arrangements

4.2.1.1 National: Department of Water and Sanitation

The regional office of the DWS situated in Durban, KwaZulu-Natal, is responsible for ensuring the issuance of water permits allowing for water users to draw and use water from dams, they also ensure that when dam water levels reach their maximum storage capacity, the dam sluices are opened, releasing water, thus ensuring South Africa meets its water obligations to Mozambique and Swaziland, as stipulated in the signed agreements.

During an interview with Mr Bongani Mdluli, the hydrologist and surface water manager at the Durban KwaZulu-Natal regional office he narrated that the dam manager reports to the regional office and has the duty to inform, control and maintain the upkeep of dams and to ensure the maintenance and reporting on water quality and quantity. The regional office is also responsible for aquaculture; assessing and approving professional service providers (PSPs); assessing applications for business entry to the tourism industry; and

assessing the quality of equipment used for recreational services in and on the dams through the daily inspection of boats seeking to detect oil leaks which may be damaging to the aquaculture.

4.2.1.2 Local: Water Service Authority (uMkhanyakude Municipality)

The Water Service Act 108 of 1997 defines a 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), that is responsible for ensuring access to water services. The uMkhanyakude District Municipality is, therefore, according to this definition, a water service authority; with an important role in ensuring the operation and management of water services.

The Water Service Act 108 of 1997 posits the duty of a water service authority as being to ensure efficient, affordable, economically sustainable access to water services, the uMkhanyakude District Municipality is mandated to ensure that their water consumers have access to affordable and sustainable water services. The Jozini Local Municipality does not provide any water related services, they are the sole responsibility of the District Municipality. COGTA (2011) is concurrent with this, stating that uMkhanyakude District Municipality performs the electricity reticulation, potable water and sanitation functions for its five (5) local municipalities.

The National Water Act (Act 36 of 1998) authorises the Department of Water and Sanitation to gather the information needed for the optimal management of water resources. Regulating water use through the acquiring of water licenses is one of the ways the department exercises resource management, and these water licenses enable the license holder to be able to extract water from the dam (http://www.dwa.gov.za/Projects/WARMS/). Accordingly, the uMkhanyakude District Municipality has a water license, which enables the municipality, by law, to directly extract water from the Dam, however, a prevailing constraint the municipality has is the lack of necessary infrastructure to pump water from the Dam to the water purification plant, preventing it to perform this function, because of this obstacle, the DM entered into a

contractual agreement with Mr. Senekal, a farmer and business man in the area who has a water license and water pumping infrastructure for his farm's irrigation purposes, to pump water from the Dam to the purification plant. It is noteworthy to state that Mr. Senekal owns most of the land around Jozini and Mkhuze. There also exist some legal contractual disputes between the municipality and Mr. Senekal and, as a result, Mr. Senekal, the Operations and Management Regional Manager and other individuals contacted for interview purposes refrained from talking about this ongoing legal dispute.

The uMkhanyakude DM is responsible for drafting the Municipality's Water Service Development Plans (WSDP) and Integrated Development Planning (IDP), the (DWA; 2013) states that the local government plans local (water) development, which includes implementing local by-laws, monitoring drinking water quality and setting tariffs wherewith the WSA maintains a register of water services infrastructure assets and puts in place a system to manage these assets in terms of a maintenance and rehabilitation, these then form part of the Water Services Development Plan (DWAF; 2013).

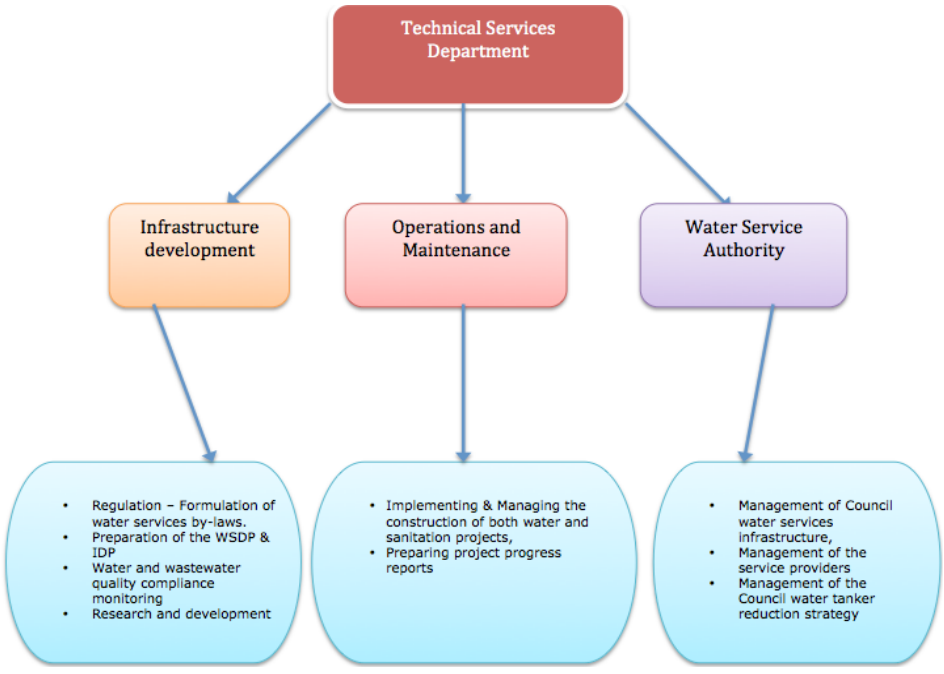


Figure 15: Department Responsible for Water Service Delivery at uMkhanyakude DM

Figure 14 above depicts the organisational structure of the technical services business unit within the uMkhanyakude DM responsible for water service delivery. As recorded by the uMkhanyakude District Municipality "the prime mandate of the Technical Services unit is the provision of reliable, cost-effective, efficient and sustainable water services to communities within municipal jurisdiction, with the objectives of research and development of new projects; preparation of short-, medium- and long-term water development plans and implementation strategies; operation and maintenance of water and sanitation schemes; planning and implementation of municipal capital infrastructure projects and also; the management of electricity at Ingwavuma and Kwa-Msane Township."

The Water Service Provider (WSP) undertakes water operational services through a contract with the Water Service Authority, in uMkhanyakude DM the Water and Sanitation Services South Africa (Pty) Ltd (WSSA), appointed in the year 2011, is the water service provider that manages water and sewerage plants in the area and monitor the municipalities blue drop and green drop measurements, they provide technical assistance, management, operational and maintenance services to the municipality which in turn the municipality then oversees the functioning operation of the service by the WSSA. According to an interview conducted with Mr Tembe, the Regional Manager, the WSSA has been a competent entity as their water service provider, however, they have had some challenges with paying the WSSA as per their contractual agreement also, the municipality owes a lot of money to the entity, which has led to service delivery hindrances on the part of the WSSA.

The main challenge with the municipality, as identified by Tembe, is the lack of internal skilled human resource such as engineers to undertake the services they procure to the WSSA another challenge the municipality experiences is the lack of sufficient funds to maintain water infrastructure, currently, the municipality uses revenue collected from water users, however, the revenue collected does not amount to the capital required to use for operations and maintenance of the existing infrastructure, this creating a deficit.

Emanating from the interviews with the Regional Manager and the Technical Services Manager, as well as information derived from documented reports from the municipality, it is evident that the local municipality's revenue is not sufficient to deliver the necessary services to the residents. This is due to a number of factors, such as an unstable billing system in the municipality; the non-functionality of meters installed at the water users, which are constantly broken and disconnected by the users, related to this, is the issue of illegal connections, which interrupts the functioning of existing water and electric connections.

Despite these hindrances the Water Institute of Southern Africa, notes that the staff from WSSA were seen as being eager to ensure processes were put in place to improve drinking water service delivery within the municipality, and further recommended that the uMkhanyakude DM management should ensure that funds and resources are rightfully allocated and availed to allow WSSA to implement and maintain improved water quality management procedures (www.ewisa.co.za/waterworks), the WSSA acknowledged the enormity of the task to improve the quality of service delivery within uMkhanyakude, this mandates them with the task to ensure that staff delegated to the uMkhanyakude DM had the required support and experience to address the situation. The WSSA further reports progress and information on the status of water supply, concerning the provision of water services, to the municipality (WSA); as stipulated and mandated by Section 23 of the Water Service Act 108 of 1997.

Aligned to the WSA's mandate to ensure efficient, affordable, economic and sustainable access to water services section 12 (1a) of the Municipal Services Act 108 of 1997 further articulates that Water Service Authorities have the duty to prepare draft water services development plans as part of the process of preparing any Integrated Development Plan in terms of the Local Government Transition Act (Act No. 209 of 1993), stipulating plans to further develop and prioritise water service delivery in the area. Africa, Magwaza & Patel (1999) further posit that municipalities are now also required to align with the provincial and national spheres of government in the delivery of developmental programmes at a local level, incorporating a wide range of sectoral programmes for

example; water, health and small business development into their own municipal development programmes, and to comply with the requirements of national legislation aimed at facilitating development.

The District Municipality as identified by the Municipal Demarcation Board, has the duty to: pass and review by-laws; to help capacitate local municipalities to be able to perform their functions; monitor the performance of local municipalities; and ensure that the delegated functions are addressed in the Integrated Development Plan. The Local Municipality has the task to pass and review by-laws; determine service delivery mechanisms; and make budgetary provisions (WRC; April, 2007). Where municipalities fail to perform their functions, the DWAF is empowered to take direct action to strengthen local government and temporarily perform the functions of the municipality (Governing Board Induction Manual, DWS, 2013).

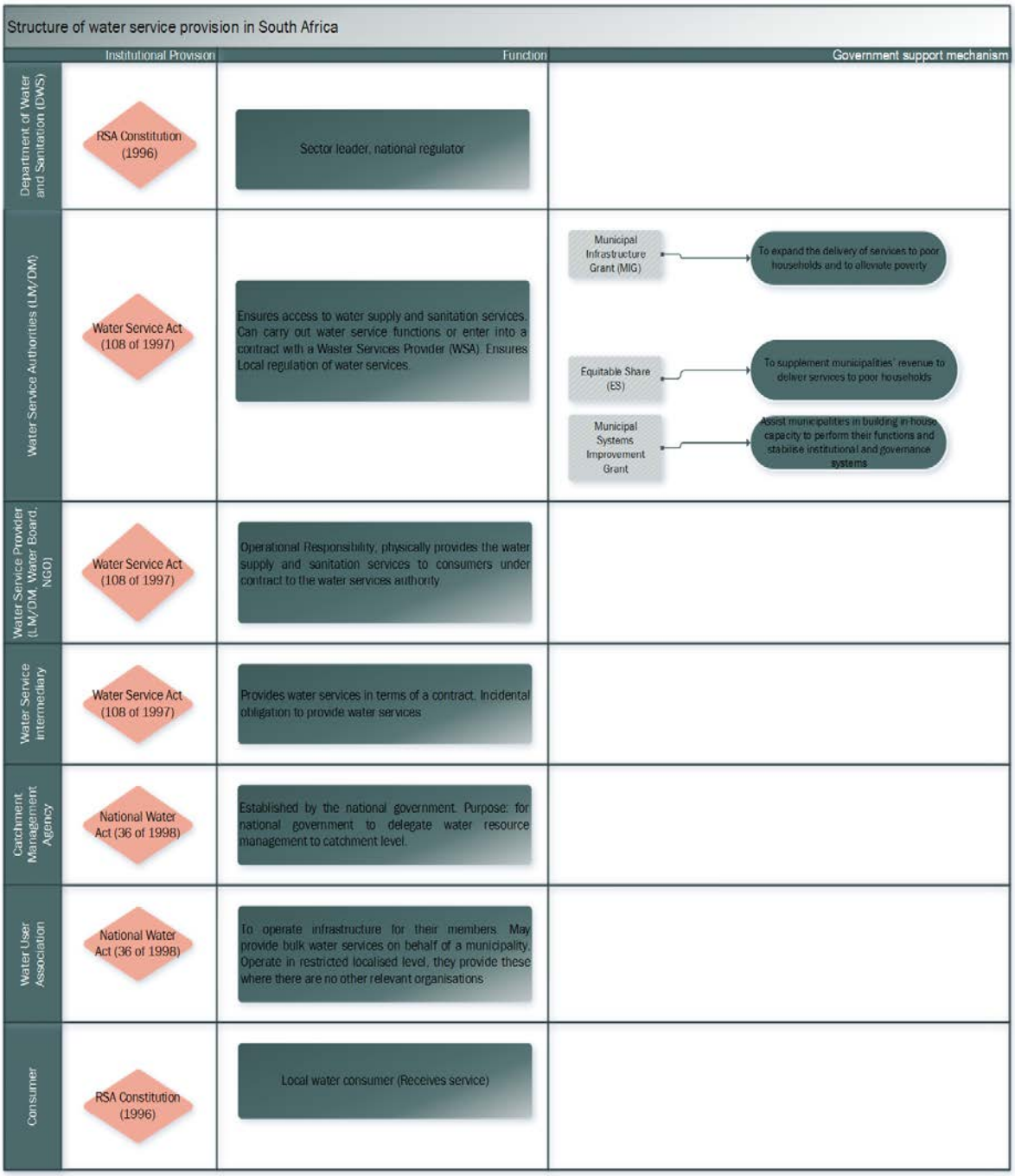
The White Paper on Water Services (2002: 14) states the Grootboom Constitutional Court judgment ruled that, where a municipality has failed to progressively plan and implement strategies for addressing the needs of its consumers, and where a municipality does not have the financial resources to address these needs through a strategy of progressive realisation, it is the responsibility of the national government to support, strengthen, regulate and ensure the provision of basic services to those persons in dire need. Accordingly, the KwaZulu-Natal MEC for Cooperative Governance and Traditional Affairs took a decision in October 2015 to intervene in the uMkhanyakude District Municipality by placing it under S139 provincial administration in terms of Section 139(1)(b) of the Constitution. Amongst other issues that led to the decision of the provincial intervention, as reported by the Parliamentary Monitoring Group in the meeting summary issued on the 16th February 2016 is that there were persistent unprotected labour strikes by municipal staff; all of these ranging in theperiod between January to August 2015 were mainly about water supply.

The meeting report, dated January 2016 by the monitoring group, states that the issues manifested in the uMkhanyakude District Municipality were plagued by governance, financial and service delivery deficits, which were unresolved over several years despite

provincial and national government support. In terms of basic service delivery failures, the municipality remained one of the poorest performers in terms of the ‘blue drop’ and the ‘green drop’ assessments conducted by the DWS. The report further unraveled that, “there was an absence of a revised Water Service Development Plan (WSDP), according to DWS, the last revision was dated February 2012, also, the municipality had lost the 2014/15 implementing agent status for the Municipal Water Infrastructure Grant (MWIG).” because of this performance issues, “the uMhlathuze is assisting the uMkhanyakude District Municipality in the development of a Regional Water Master Plan for the entire uMkhanyakude area, which will contextualise the three major regional schemes that the municipality is implementing under the Regional Bulk Infrastructure Grant (RBIG) programme” (uMkhanyakude District Annual Report; 2013/14).

There is an agreement between the Impala Irrigation and Pongola LM that aims at ensuring that water is supplied to the community. In terms of the Catchment Management Area Act, there are water-user associations (WUA), which are groups of people that use the water from a river; these groups have water licenses that permit them to draw water. As part of this structure, Mr. Senekal pipes water from the Pongola River to the community and serves as the sole supplier and drawer of the water for the uMkhanyakude DM.
Table 4 below depicts the South African water supply institutional arrangement.

Table 5: Structure of water service provision in South Africa



4.2.1.3 Department of Agriculture and Rural Development: KZN

The Agricultural development services' unit within the KZN Department of Agriculture and Rural Development, is mandated to ensure agricultural interventions that promote sustainable food security with the function of providing strategic management of agricultural services and research; establishing and maintaining developmental and training institutes; and managing agricultural related engineering services (www.kzndard.gov.za).

In the year 2009 the Medium Term Strategic Framework (MTSF) was introduced with the purpose to align government programmes and priorities with the term of office of each administration. During the current cycle of the KZN MTSF (2014-2019), the two imperatives related to the dependency on the management of water resources for development are tabulated as smallholder farmer development and support (technical, financial and infrastructure); the creation of sustainable rural enterprises supported by increased investment in agro-processing, trade development, access to markets and financial services (Department of Agriculture and Rural Development: KZN, 2013).

4.2.1.4 Mjindi Farming: DoA Public Entity

Van Averbeke, Denison & Mnkeni (2011) state that "irrigation schemes were created to increase food production, ensure food security against droughts, establish new owner operators in the farming sector, and provide rural employment opportunities", according to Bembridge (1991), stipulates that for successful and sustained implementation of irrigation schemes there ought to be an integrated water resources management practice that infuses financial resources, irrigation facilities, farmer support services, and the integration of evaluation and change within a single institution, for the success of this, there ought to be an interacting subsystem of "physical resources; irrigation systems; farming systems and technology application and high levels of participation of local organisations and supporting institutions that can produce a positive impact on the community".



Figure 16: Open Water Canal used by Mjindi Farming in Makhathini Flats

Figure 15 depicts the water canal used by the Mjindi Irrigation Scheme, utilised as a water channel. This is an open canal meant for irrigating farms. During an interview with Mr. Fihlani, an engineer at the Mjindi Irrigation scheme, he cited an operational and safety hazard of an open canal is that since there is erratic to no water delivery to the local residences, the residences then use the water from the canal for domestic use. Consuming this water is highly dangerous and not purposed for human consumption or even for general domestic use as the water is not purified, it is suitable only for irrigational purposes. The use of this contaminated water by residences exacerbates the incidence of waterborne diseases.

Policy Provision for Mjindi Irrigation Scheme:

The Mjindi Irrigation Scheme operates under the Department of Agriculture (DoA) as a public entity established in terms of Section 197 of the Constitution and Section 7(1) and 7(2) of the Public Services Act of 1994. Mjindi is a provincial enterprise listed in Schedule 30 of the Public Finance Management Act 1 of 2009 (Mjindi Irrigation Scheme, 2012), it is mandated to operate and facilitate agricultural development in KwaZulu-Natal's remote Makathini Flats. The scheme is responsible for supplying farmers with water for irrigation and providing support with agricultural services.



Figure 17: Irrigation system (equipment) in Makhathini Flats supplied by Mjindi Irrigation Scheme

Mjindi's Institutional mandate:

As rightfully stated by the Democratic Alliance, Member of Parliament Mr. Thomas Radebe, the mandate of the Mjindi Irrigation Scheme is to "develop and sustain agricultural potential, supply effective farmer support and maximise agri-business development for the Makhathini farmers", this is to be achieved through the expansion of land irrigated by the Jozini Dam water of which currently only 3 500 ha of land is irrigated; maintaining the Irrigation Scheme as a viable and sustainable farming irrigation project by transforming it into a land user - landowner, farming-driver entity. Further, "the Mjindi Irrigation Scheme is meant to achieve its mandate through assisting with the planned and approved expansion of the scheme with a total aimed area of 15 000 hectares for the settlement of additional farmers; offering help and support to the shareholders with the planning and implementation of the Makhathini Integrated Master Development Plan; exploring and facilitating new agri-business opportunities for the irrigation scheme (KZN Agriculture & Rural Development; Annual Report: 2014).

The Mjindi Irrigation Scheme has seen a drastic institutional decline over the years, even though many studies have concluded that the Makhathini area could be the bread basket of the KwaZulu-Natal Province (Mjindi Farming Annual Report 2014/2015) evidence to this is the annual decline of farming produce, exemplary, during the year under review, the Mjindi Irrigation Scheme facilitated agricultural development through the provision of 16 irrigation water and advisory services to farmers, leading to the production of over

178,000 tons of produce, of which over 20,000 tons was food, however, the annual production was 12,000 tons lower than the previous year, amongst various attributions to the decline is the project's reliance on government support due to the non-systematic collection of water tariffs.

Mjindi's Organisational structures

Figure 17 below depicts the Mjindi irrigation schemes' programme structure and streams which were provided from the Mjindi Farming Annual Report of 2014/2015.

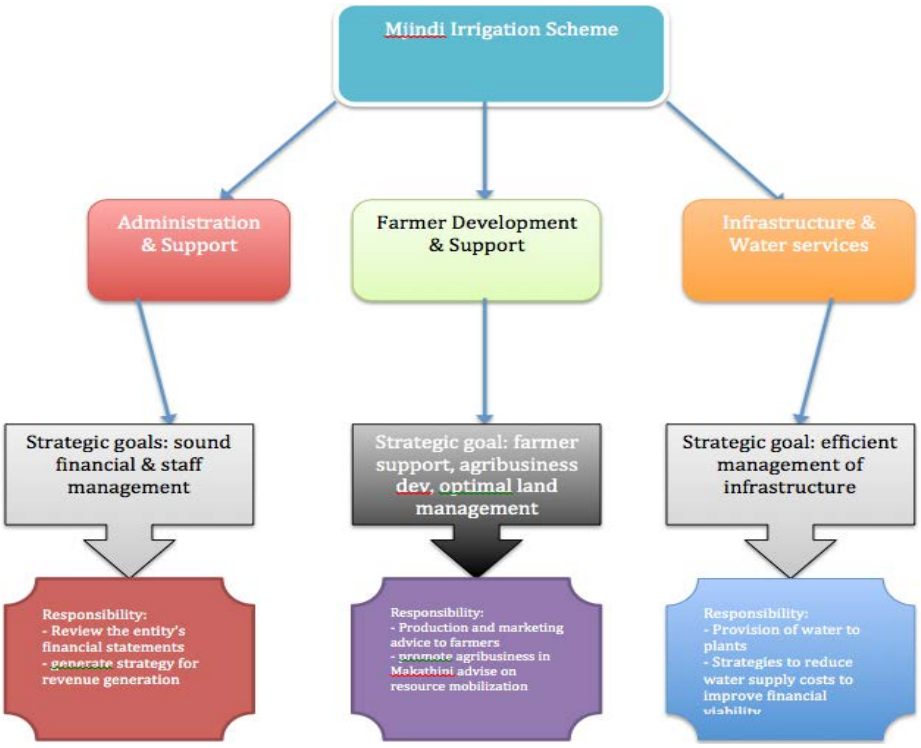


Figure 18: The Institutional Structure of the Mjindi Irrigation Scheme

The Mjindi Farming Annual Report (2014/2015) states that the institution stipulates some problems faced during the year under review, which are:

- In the beginning of the year, the unit was faced with non-achievement of activities mainly due to lack of capacity in the infrastructure unit;
- There is vandalism of the irrigation infrastructure. Some people break the irrigation canal to divert water to unintended sources, mainly for livestock. This act deprives farmers from getting sufficient water in the pump stations. Farmers end up not getting sufficient water for irrigation;
- Corruption allegations: R 11.9m worth of irrigation pipes were bought, but, according to the forensic report published the year 2012, R4.4m worth of those pipes were found to be unsuitable for use. This illustrates the lack of governance pillars like accountability, responsiveness and transparency, (https://www.onlinetenders.co.za/news/r200m-farm-fraud).

The national policy sustains that irrigation schemes should be self-sustaining over time, however, with the case of the Mjindi Irrigation Scheme, the DoA is still playing the role of providing full support services to the state-owned enterprise, as stipulated by Denison & Manona (2007: 87) the national policy requires that irrigation schemes should deliver positive economic returns and in time cover their own operational costs. This policy statement is contradictory to the reality of the Mjindi Irrigation scheme, as reported in the Mjindi Farming Annual Report (2014/2015), currently the Department of Agriculture and Rural Development (DARD) continue to provide free agricultural inputs in the Makhathini Irrigation Scheme to promote food security programmes which raises a major concern on the ability of the irrigation scheme to be sustainable and to ensure economic value through the scheme's ability to yield returns on the government investment.

Amongst other services rendered to the Irrigation scheme is the Silwane Community Trust which is mandated to lease land to farmers in the area, the uMhlosinga Development Agency which has been collaborating with the Mjindi Irrigation Scheme since the 2013/2014 financial year, to established the Makhathini Nursery School, and other necessary services, required by the farmers (Mjindi Annual Report; 2012).

4.2.1.5 Agribusiness Development Agency (ADA)

The ADA was established under the Kwa – Zulu Natal Agribusiness Development Agency Act of 2012 mandated to function as a catalyst vehicle that facilitates the growth of a strong, transformed, diversified, dynamic, competitive and sustainable agro-processing industry in KwaZulu-Natal, functioning as a state owned company under the Department of Agriculture and Rural Development (DARD) (www.ada-kzn.co.za). The agency embraces the agricultural value chain, and, as a result, aims at speeding up economic development in the area (www.ada-kzn.co.za).

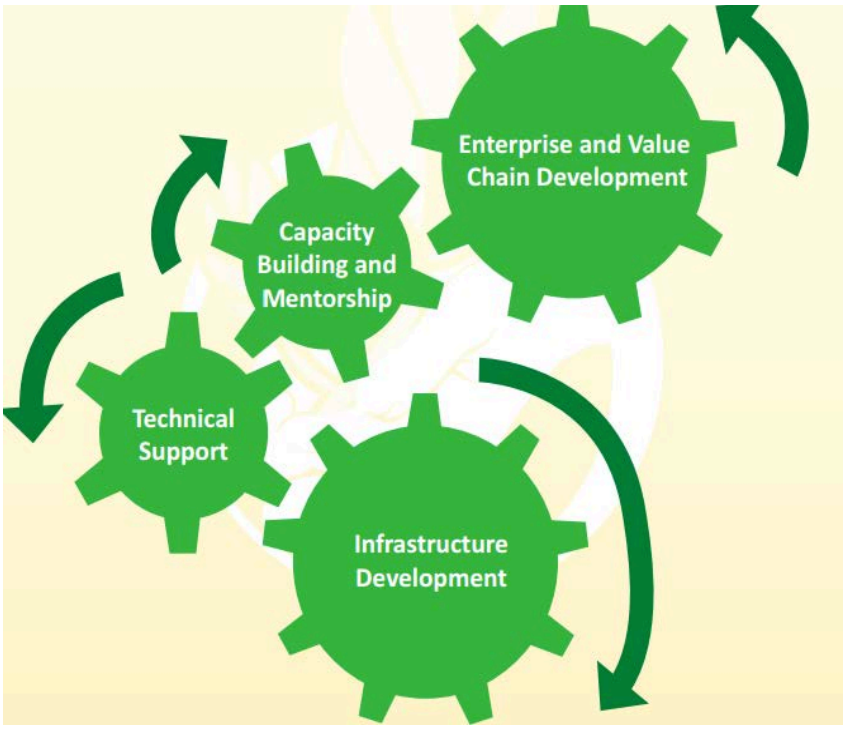


Figure 19: ADA Key Focus Areas

The agency is located under the Department of Agriculture and Rural Development (DARD) with the following focus areas:

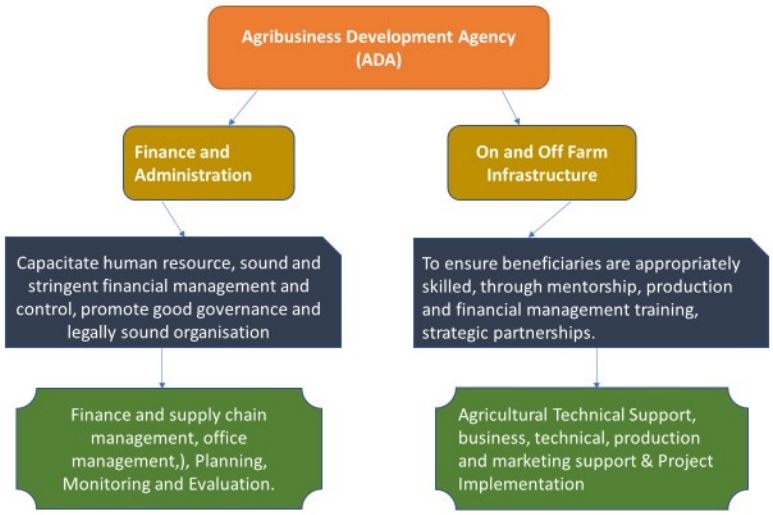
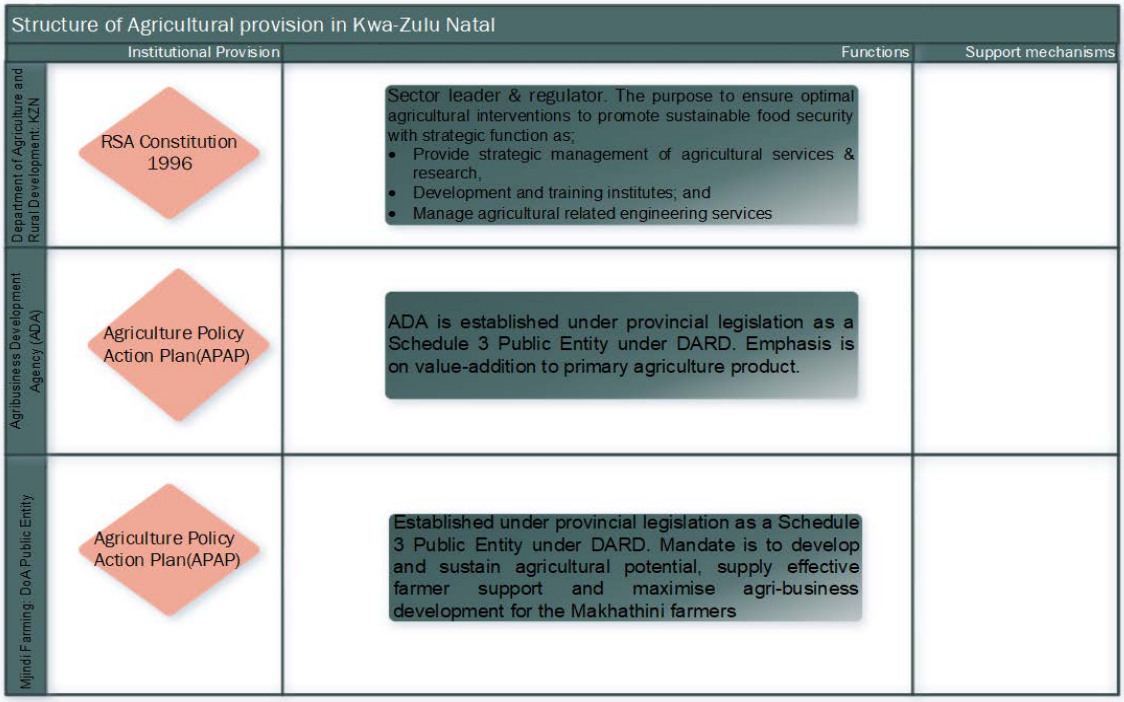


Figure 20: Institutional Structure of the ADA

The ADA's mandate is "to provide agri-business support services to entrant black commercial farmers who have acquired land through the Government's Land Reform Programme and on a private basis, established under provincial legislation as a Schedule 3 Public Entity" (ADA Annual Performance Plan; 2013/14). The organisation is not, however, without challenges, some of which are cited as insufficient funding, an uncertain operating environment and a consistent drought in the area.

Table 6: Structure of Agricultural provision in KZN



4.2.1.6 uMhlosinga Development Agency (UMDA): LED Entity

The UMDA functions as a state owned entity that is accountable to the uMkhanyakude District Municipality, it was established in the year 2003, designed as a part of the municipal LED initiative. The agency is mandated to plan and implement local sustainable development within the uMkhanyakude District, also to serve as an inclusive entity for development funding and information on the districts development potential (Garicke: 2011). As such, the UMDA has identified the construction of a hydropower plant at the Jozini Dam as a a developmental initiative that could alleviate the problems of poverty and urban migration facing the community, and kick-start development in the region fundamentally through providing electricity to the residents (UMDA, 2014/2015).

According to Mr. Sphamandla, a project manager at UMDA responsible for the hydropower generation and the Mkhuze Airport project within the agency , these are the two projects actively identified by the UMDA for the advancement of economic development in the District. He further stated that the Hydropower Project is, in its nature, a renewable energy project. Although the UMDA has established partnerships with Eskom, the Department of Energy and the Department of Water and Sanitation; there has

been political confusion and setbacks resultant from President Jacob Zuma's statement during the delivery of the 2017 state of the nation address, wherewith he stated that renewable energy projects should be put on hold due to indecisions of the government's stance on renewable energy thus the project has been put on hold until clarity on the energy policy objectives is established, despite the fact that there is international interest towards the project, Mr. Sphamandla states that this policy uncertainty has created hesitation from identified funding partners. Although partners have been engaged, the magnitude of the project is enormous; and, as such, the funding for the realisation of it is envisaged to be large, potentially requiring billions of Rands. Another requirement of the project is appropriate human resources for the project, which may require international expertise, which comes at a cost. Besides the financial and human resources setbacks, the continuous drought in the area is problematic, as it results in lowering water levels in the Dam and placing the future of implementing the project at stake.

Progressively, the UMDA has established that the Dam has three main release streams, which could potentially be harnessed for hydropower generation. These are the compensation releases into the river; flood releases at the spillway; and discharges into an irrigation channel supplying water to farmers downstream of the Dam wall The UMDA developed a proposal that stipulated the requirement of a financial investment of R250 000 000 into the project (UMDA, 2014/2015).

Other economic sectors identified by the UMDA are Tourism and Agriculture, stating that "the Tourism Industry is largely owned by a few and the Agricultural Industry is not widespread enough in use (UMDA, 2014/2015) thus, as a measure to expand the utilisation of land in Jozini, the UMDA and the Mjindi Irrigation Scheme signed a Memorandum of Undersstanding with the objective to create an agricultural programme that could be replicated throughout the region, the programme will be a joint venture between the Mjindi Irrigation Scheme and the UMDA, wherewith the UMDA as responsible for the administrative duties and market establishment, product development and quality controls, wherewith the Mjindi Irrigation Scheme will be responsible for land management and irrigation (Garicke; 2011).

Garicke (2011) further states that during the first phase of the UMDA's involvement has achieved some major results in the actuation of the economic aspirations of the uMkhanyakude District Council through sourcing and attracting development project funding and services to the district, providing a contact point for donor, public and private sector investment to the region, acting as a conduit for the channeling of development assistance and services to development projects in the sub-region, coordinating and facilitating local economic development activities for, and on behalf of, public and private investors to the area, where this is both legitimate and feasible.

Table 7 below illustrates the institutional function of the UMDA.

Table 7: The structural description of the UMDA

INSTITUTION	PROVISION	FUNCTIONS	CHALLENGES
The uMhlosinga Development Agency (UMDA)	Local Government: Municipal Systems Act (Section 21).	To coordinate the implementation of a sustainable, long/short-term District Development programme; including its spatial, economic, social and environmental dimensions, it's regulatory, budgetary, financial and legal implications and its social and economic consequences.	

4.2.1.7 Prospects of using the Dam Water: Hydropower Generation

One of the National Water Resource Strategy (2013) principles is "to ensure that opportunities for developing the hydroelectric potential of South Africa are promoted wherever viable", keeping in mind that "a typical hydropower project would require the consideration of technical, legislative, environmental, socio-economic and financial aspects" Van Vuuren, Blersch & van Dijk (2011). According to a report (A massive task to keep Makhathini green; page 1) by Bentley L, dated 03 April 2013, on the Agric-Eco Zululand; future farming viability on the Makhathini Flats will be "based on the formation of a formal market, agro-processing plants, a sugar mill, mechanisation facilities and a hydro-electric plant".



Figure 21: The Sol Plaatjie Hydropower Project: construction underway

Hydropower is identified as one of the renewable sources by the Integrated Resource Plan (IRP, 2010) for contributing to South Africa's electricity to meet energy demands up to the year 2030 (www.dwa.gov.za). The National Development Plan (2030) requires more than 20 000 megawatts of renewable energy to be contracted by 2030, including an increasing share of regional hydroelectricity, the installation of small-scale hydroelectric plants to take advantage of the flow from existing Dams is further being explored, in cooperation with the Department of Environmental Affairs (DEA), National Treasury, Eskom, the Central Energy Fund and private sector partners (www.dwaf.gov.za). As stated in the NDP 2030, one of the sites to be further investigation is the Jozini Dam. The Department of Energy (DoE) advisory team is currently undertaking a due diligence evaluation of possible hydropower generation projects to identify associated risks and to consider the best means for procuring service agreements with independent power producers (www.dwa.gov.za).

As stated by Van Vuuren, Blersch & van Dijk M (2011) the advantages of hydropower generation, compared to other forms of energy generation based on economic, social and environmental impact is that hydropower is a clean renewable and sustainable energy that makes use of energy from water due to flow without the actual consumption of water, (Frey and Linke; 2002) states that "unlike the burning of coal, oil and natural gas it does

not emit any atmospheric pollutants such as carbon dioxide, sulphur oxides, nitrous oxides or particulates, like ash", another advantage is that hydropower schemes often have very long lifetimes and high efficiency levels, so operating costs per annum can be as low as 1% of the initial investment costs". (Van Vuuren, Blersch & van Dijk M; 2011) further states the that hydropower schemes have multi purposes such as water storage, flood control is facilitated and water for irrigation or consumption can be supplied; additionally they can be used for recreational purposes.

As the Institutional arrangements pertaining to provision of water services have been explored above, following below is a description of the findings of the policy environment pertaining to the District and the Local Municipality, they are sequenced to track the policy changes from before the democratic dispensation, when the dam was built to the current state, post 1994 till the current years.

4.2.2 Policy environment

4.2.2.1 The History of Water Provision in South Africa

During the years of apartheid, the apartheid government was responsible for the grouping of small 'nations' designated areas that were named 'homelands', one of these being the Natal homeland, now known as Kwa - Zulu Natal was declared along with other homelands such as Transkei, the Bophuthatswana, to name just a few. This was exercised by the introduction of segregation laws such as the Group Areas Act no. 41 of 1950. The homelands were declared as self-governing; however, with an economic reliance on the nationalist government and because of this reliance, and ultimately the initial intent of the segregation, the homelands were plagued by poverty, manifested by overcrowding from little or no spatial planning and no resources and communal amenities (Gavlin: 2013). The major implication of the National Water Act of 1956 was that homelands were unable to economically govern themselves; although, according to (Asante Y & Ndiritu J; 2009) "the homeland territories and states had legislative power to repeal, amend or replace the 1956 Act, of which none of the states made any changes to the Act, except for Bophuthatswana."

Upon the separation of homelands, the National Water Act of 1956 denounced water as private ownership of those who owned the land in which the water streams run across, relegating to ‘private’ or ‘public’ ownership as per the riparian water rights system. “The right to use water was based on the principle of *dominus fluminus*” (Asante Y & Ndiritu J; 2009), “which refers to the absolute ownership principle that requires complete control of the water resource by the governing party” (Tewari; 2009).

The apartheid water legislation directly narrated that the Jozini Dam be built for exclusive use of white farmers for the purpose of farm irrigation, with little or no consideration for the black local residents, who were displaced as a result of the impoundment of the dam (Gavlin: 2013. Even with expanding the use to black farmers, the homeland government did not have the engineering prowess, expertise and financial backing to utilise the dam to that end, which perpetuated the inactivity of the use of the Dam for over twenty years after it was impounded. Also, further to the 1994 democratic dispensation, the dam has since been active for irrigation for farmers in Makhathini, however, inadequately so. The usage of the dam, its policy frameworks and the arrangement of policies all have undergone considerable changes over the period from when the dam was impounded in 1972 to the year 1995 and considerably thereafter.

According to the Governing Board Induction Manual 7, Ch 2: Overview of the NWA & Effects of Past Legislation, “the policies and functions of the Department of Water Affairs and Forestry prior to the 1994 democratic dispensation were limited exclusively to bulk water resource management, largely water supply management, which included: the management of large catchments; the administration of government water control areas; the supply of bulk untreated water to Water Boards; water quality management; and the administration of the Water Act”. This depicts the existence of other events, as denoted by Immergut (1993), influencing the rules of the National Water Act of 1956 and institutions established under the Act. With changes in political regime and policy today’s legislation promotes equality and, the current National Water Act of 1998 denotes water as a national right and asset.

4.2.2.1.1 National Water Act No. 54 of 1956

As stated by the National Water Act of 1956, the main purpose of the Act was “to consolidate and amend the laws relating to the control, conservation and use of water for domestic, agricultural, urban and industrial purposes”. As water use was declared to be private, belonging to the owner of the land in which it was found (Agterkamp; 2009) this deemed most black South Africans without a stable, supply of clean and consumable water, the National Water Act of 1956 was adopted and implemented based on principles of minority rule, consequently marginalising widespread water supply to many South Africans. It was enacted in collaboration with the Native Land Act 27 of 1913 preventing the black minority from owning land, and, therefore, from owning and having access to water resources (Tewari, 2009).

However, with the democratisation of South Africa, there has been a shift in the water sector, regarding legislations and regulations, where there has now been a focus on the inclusivity of all South Africans in the supply for clean consumable water, this was done by addressing the social and spatial inequalities of the past in an efficient manner through the enactment of the Water Act 36 of 1998, which has served to redress the Water Act 54 of 1956 by dismantling the riparian water rights system.

In the year 1997, the Minister of Water Affairs and Forestry; Kader Asmal provided the impetus for the fundamental review of the water policy environment when introducing the White Paper on National Water Policy, stating that “South Africa’s water law comes out of a history of conquest and expansion” (DWAF; 1997; 2). “The Apartheid government harnessed the law, and the water, in the interests of a dominant class and group, which had privileged access to land and economic power” (De Coning & Sherwill, 2004), It is for this reason that the new government was confronted with a situation in which not only (De Coning & Sherwill, 2004) were most South Africans excluded from owning land, but also denied access to water for productive use, and, by implication, “robbed of the benefits gained from the use of the nation's water, the victory of our democracy now demanded that the national water use policy and the water law be reviewed” (De Coning & Sherwill,

2004). “Our Constitution demanded this review based on fairness and equity, values that are enshrined as cornerstones of our new society" Asmal (1997: 2).

In a 2004 interview that de Coning held with Professor Mike Muller, Muller shared his views on the sentiments of Dr Kader Asmal, indicating that Asmal “perceived the core objective of the water law review process to be the development of a framework that ensured that the right to use water could easily be transferred from one user to another, in pursuit of the broader national interest and in support of the broad transformation goals of government” (De Coning & Sherwill, 2004).

The changes in political power and in the policy environment majorly influenced the way that South Africa’s water resources were managed, changing also the mandate of dams and their use, and the intended beneficiaries of the dams.

4.2.2.2 Post-1994 (Democratic Government)

With the democratisation of South Africa came a shift in the water laws to encompass all South Africans by addressing the social inequalities of the past in an efficient manner through the enactment of the National Water Act 53 of 1998, which redresses the Water Act 54 of 1956 by doing away with the riparian water rights system and providing for the widespread supply of water and the expansion of water supply networks in an environmentally sustainable manner.

The National Water Act 53 of 1998 “represents a fundamental reform of the law relating to water resources in South Africa, and replaces the previous Water Act of 1956, It is based on principles that water is a national asset, a scarce natural resource, which has been unevenly distributed and occurs in many different forms, all of which are part of a unitary entity, while water is a natural resource that belongs to all people, discriminatory laws and practices of the past have prevented equal access to water and to the use of water resources” (National Water Act 53 of 1998), further, amongst others, “the Act’s objectives are that water supports development and the elimination of poverty and inequality, and that water contributes to the economy and job creation.” (National Water

Act 53 of 1998).

There has been a rapid move in the new millennium towards the dispensation of decentralising governance to local spheres of government, with South Africa following suit and constitutionally legislating the decentralisation of the "public administrative system consisting of the national, provincial and local spheres of government" (Cameron; 2012). "The 1996 Constitution made provision for the strong decentralisation of powers and the functions of local government, giving considerable responsibility to South African provincial and local municipalities for dealing with the challenges of urbanisation" (Cameron; 2012).

The 1996 Constitution clearly stipulates that each sphere of government is independent, distinct, but interrelated. Section 151 (3) stipulates that, "A municipality has the right to govern on its own initiative its local administrative affairs, however, subject to national and provincial legislation as provided for by the Constitution." As stated by the Water Research Commission (2007;6) in the IWRMP Guideline for local authorities "Section 156 of the Constitution, together with Schedules 4 and 5, outline the powers and functions of national, provincial and local government, Schedules 4A and 5A contain national and provincial responsibilities, which can be delegated to local authorities; and, where this would be effective, and where capacity is available; delegations can be viewed as partnerships between two government bodies, further "the Schedule 4A and 5A responsibilities related to the Integrated Water Resource Management Plan include agriculture, that is, that there should be adequate provision of water for: irrigation; the environment; nature conservation, for example eradication of alien vegetation; pollution control; soil conservation; urban and rural development; and disaster management" Water Research Commission (2007; 6).

The two legislative frameworks gave rise to the institutions that govern water services and the management thereof. The Department of Water and Sanitation has established the Chief Directorate: Institutional Oversight, overseeing water management and water services institutions. The function of the Institutional Oversight Directorate is to ensure an enabling environment for the establishment, development, financing and auditing of local

and regional institutions for water resources management and water services and stakeholder participation; focusing on water governance, financial and stakeholder issues.

4.2.2.3 National Development Plan 2030

The National Development Plan (NDP) of 2030 stipulates that “the supply of water and sanitation services (water in pipes) depends on the availability of adequate water resources”, which should be properly managed to ensure natural resources are not damaged. The NDP vision for 2030 proposes that “water should be recognised as a foundation for activities such as tourism and recreation, further reinforcing the importance of its protection”.

However, water for tourism and recreational purposes should be allocated with great caution in areas such as Jozini, where water supply systems are nonexistent, and, as a result, “residents do not have access to free-flowing water for drinking and domestic use” (Viljoen; 2016). Granted, water for recreation and tourism is also a need, but it should be emphasised as a secondary need in relation to socio-economic matters such water for drinking and domestic use and the supply of food.

The NDP (2030) and the New Growth Path, both as policy directions, prioritise agriculture and rural development. Department of Agriculture and Rural Development: KZN (2015) sets out a three-pronged approach: “Agricultural development that is based on successful employment creation together with strong environmental safeguards; well-functioning and supported rural communities that will enable people to seek economic opportunity, key elements of support relate to quality education, health care and access to basic services and; the promotion of agro-processing, tourism, fisheries and small enterprise development based on an area's economic potential”.

Further stating that “the New Growth Path set out to increasing the smallholder farming sector by 300 000 householders with 145 000 additional jobs coming from the Agro-

processing sector, the NGP provides broad policy guidelines for the agricultural sector: Restructuring land reform to support smallholder schemes with comprehensive support around infrastructure, marketing, finance, extension services; Upgrading employment in commercial agriculture, especially through improved worker voice; Implementing measures to support growth in commercial farming in support of national food security; Providing support for fishing and aquaculture; Implementing programmes to ensure competitive pricing of inputs, especially fertilizer."

4.2.2.4 The Water Services Act 108 of 1997

Brown & Woodhouse (2004) state that the legislative framework for the governance of water was established through the Water Services Act (1997), the Act is concerned with the provision of water supply and sanitation services, it is aligned to the National Water Act (1998). Russ (2005) articulates that the Acts' "main objectives are to: provide for the right of access to basic water supply and the right to basic sanitation necessary to secure sufficient water and an environment not harmful to human health or wellbeing"; and also, promote effective water resource management and conservation. The Act further states that "every water services institution (municipality) must take reasonable measures in its water services development plan to realise these rights, this should be done to progressively ensure efficient, affordable, economic and sustainable access to water services" Water Service Act (1997). However, as further stated by the Act "this duty is subject to the availability of resources, and is driven by an equitable allocation of resources to all consumers and potential consumers within the authority's area of jurisdiction".

Every water services authority must, within one year after the commencement of this Act, as part of the process of preparing any integrated development plan in terms of the Local Government Transition Act1993 (Act No. 209 of 1993), "prepare a draft water services development plan for its area of jurisdiction; containing details of existing water services and industrial water use within the area of jurisdiction of the relevant water services authority" (Pretorius; 2012).

4.2.2.5 National Water Resource Strategy

Water plays a central role in all sectors - including agriculture, energy, mining, industry, tourism, urban growth and rural development. Water is a prerequisite for inclusive economic growth, poverty reduction and the significant reduction of inequality in South Africa. So this valuable resource must be protected, allocated correctly and developed.

The second edition of the National Water Resource Strategy (NWRS) “analyses the role of water in the economy and identifies the specific challenges, development opportunities and actions that inform an agreed framework for priority areas of focus for the country, it thus seeks to address concerns about socio-economic growth and South Africa’s growth potential, which may be constricted if water security, resource quality, and associated water management issues are not resolved timeously, the strategy aims to ensure that water serves as an enabler for inclusive economic and social development, and is not a hindrance” (DWAF; 2013). The strategy sets its vision statements and targets the year 2030 to achieve these. “The strategy outlines the institutional arrangements that will be established and strengthened to coordinate activities related to efficient water resource management within a defined geographical area or catchment boundary, the institutions will be required to perform their duties with a developmental management approach that values the involvement of all stakeholders in defining strategies and plans for management within their defined areas” (DWAF; 2013).

The National Water Act No. 54 of 1998 gave rise to recommendation to follow international good practice in the decentralisation of water management, and the establishment of water management institutions based on hydrological rather than political boundaries (DWA, 2003). In the development of the National Water Resources Strategy (2004), a process which included extensive public participation, nineteen (19) water management areas were defined for the country: in each of which, it was envisaged, a Catchment Management Agency (CMA) would be established (DWA, 2003).

The (DWAF; 2013) “national water legislation (Section 68 of Water Services Act) requires

the Minister to maintain a national information system to record and provide data on the development, implementation and monitoring of national policy, the monitoring should not be done only for the sake of our national concerns, but also in response to our obligations in respect of international river basins".

Objectives:

One of the visions of NDP 2030 is to achieve an inclusive rural economy with planned targets and actions to substantially increase investment in irrigation infrastructure in Makhatini Flats and the Mzimvubu River Basin. The NDP Vision 2030 objectivises Outcome 6 for provision for investment in water infrastructure to support economic development. The NWRS2 makes provision for investment in water infrastructure to support economic development through a strategy for infrastructure development and management and the National Water Sector Investment Framework.

In municipalities, non-revenue water sits at more than 37% on average, and, in many irrigations and municipal supply schemes, it is worse, with estimated losses of up to 60%. As such, schemes often have no formal record or measurement of actual losses. Another challenge amongst the identified concerns is shared water basins: South Africa shares four major river systems with six neighboring countries (Botswana, Lesotho, Mozambique, Namibia, Swaziland and Zimbabwe). International agreements on water sharing are in place for all these river basins, in line with the Revised SADC Protocol on Shared Watercourses.

4.2.2.6 Agricultural legislation

Section 27 of the Bill of Rights of the South African Constitution, Act of 108 of 1996, gives obligation to the state to uphold health care, food, water and social security rights. Section 27 1(b) states, "Everyone has the right to have access to sufficient food and water". The Department is primarily responsible for Acts related its key core functions and is responsible for implementation of provincial and national strategies applicable to its core business.

The Market of Agricultural Products Act 47 of 1996 has the objective roles of: creating access to markets; developing and enforcing compliance; providing the necessary infrastructure; and monitoring these services. The Agriculture Development Fund Act 1993 (Act 175 of 1993) serves to align agricultural programmes and identifies funding requirements. The Conservation of Agricultural Resources Act 43 of 1983 serves to create awareness through agricultural education, assessment and approval of development rights.

4.3 ANALYSIS

4.3.1 The Water Crisis in uMkhanyakude District's Jozini Local Municipality: An Analysis of the Case Study

The water crisis in the Jozini area of the uMkhanyakude District Municipality is perplexing because, during severe shortages of water both for consumption and farming, there exists one of South Africa's largest dams, the Jozini Dam. Accordingly, the purpose of this section is to provide an analysis of the water crisis in the uMkhanyakude District Municipality, focusing primarily on the Jozini area.

4.3.2 The Dire State of Water Affairs in uMkhanyakude District Municipality

Water is a crucial resource that societies need for direct human consumption (such as drinking, cooking and washing) and indirect consumption (such as farming and construction). The inefficiency and ineffectiveness of water services in the uMkhanyakude District Municipality and specifically in the Jozini (sub) municipality, is lamentable. Nkuna; 2012 cites Dayem & Odeh (2010) stating that "water policies and management paradigms in most developing countries can no longer be sustained in an era of water scarcity exacerbated by climate change." Nkuna (2012) further states that "water service institutions are not well equipped to deal with this reality and this contributes to poor understanding and consequently poor responses to challenges posed by climate challenge, partly relating to rising temperatures and absence of rain, consequently, the crisis in the water sector has remained because of the weakness/lack of institutions that can effectively deal with the new realities of water resource scarcity." The uMkhanyakude

District Municipality, like many other parts of South Africa, has not escaped climate-change-induced spells of droughts (see Section 3.1.5). Naturally, a drought means the absence of rain for an abnormally long period of time, and, as such, the importance of dams and the management of dam water becomes fundamentally a ‘game changer’ insofar as the impact of drought is concerned. This is so in a sense that a municipality’s ability to manage dam infrastructure and water will determine whether it would be able to continue the reliable supply of water to end-users or not in the times of dry seasons or droughts.

According to Dovi (2007), “just like agricultural development assistance, water services are often financed through government funding and taxes and relies mainly on external donors where available, he further stipulates that most water institutions are not run on a for-profit basis; as a result, communities are either not paying for water services or tariffs are minimum for piped connections.” In the context of South Africa, and specifically uMkhanyakude District Municipality, the introduction of the ‘pay as you use’ approach is problematic in many ways. Firstly, the uMkhanyakude District Municipality is largely a rural area and, consistent with country-wide demographics, the population residing there is mostly poor. Secondly, agricultural activities - particularly subsistence farming, livestock and small businesses - form the main economic activities of the Jozini inhabitants. Consistent water supply as financed and administered by the local government or authority (the uMkhanyakude District Municipality) is pivotal. However, as indicated by the data, the supply of water to municipalities that fall under the uMkhanyakude District Municipality, including Jozini, is haphazard and insufficient. The inability of the uMkhanyakude District Municipality to provide consistent and reliable water supply highlights the prevailing lack of good governance as previously discussed in Chapter 3, and the absence of resilient political and administrative institutions necessary to deliver services. Governance shortcomings in the public sector, because of the aforesaid challenges amongst others, are a painstakingly omnipresent feature of post-apartheid South Africa.

Furthermore, and in relation to the Jozini Dam, the dire state of water supply is further compounded by the existence of a multilateral agreement between South Africa, Mozambique and Swaziland for the sharing of the water resource. The agreement certainly reduces the amount of water available for use by the residents and farmers of the uMkhanyakude District Municipality, as it commits South Africa to release water for Mozambique and Swaziland, respectively. However, leveraging of the multilateral platform provided by this agreement, and mechanisms/tools emanating wherein, such as PRIMA, could assist these countries to work collaboratively in managing the water resource of the Jozini Dam.

Notwithstanding the abovementioned challenges, this state of water affairs is more concerning when the existence of the massive Jozini Dam is taken into consideration. The Jozini Dam is located on the Pongola River, the biggest feeder to the dam in the province of KwaZulu-Natal. The dam has a total capacity of 2 445 900 000 m^3 and was the largest dam in South Africa when it was first impounded in 1972. Although the initial intention or purpose of the Jozini Dam was to supply farmers with irrigation, the water can be purified to supply consumable water to all residents of the uMkhanyakude District Municipality, and even others who reside outside this area. With such abundant water reserves near the uMkhanyakude District Municipality, the fact that the people of this area do not have a reliable and sufficient supply of clean water is bewildering. Regardless of natural constraints, such as drought, with an effective water management approach, that includes advanced water conservation and state-of-the art pumping systems, the possibility of successfully eliminating the said water challenges or significantly improving supply of water to end users in the concerned district becomes increased manifold.

It is important to examine and understand the role of the institutions and their officials tasked with the responsibility for water management and provision of water or major stakeholders in the water sector in the uMkhanyakude District Municipality. At the institutional level, there is the national Department of Water and Sanitation and the Department of Agriculture and Rural Development headed by political principals (ministers) and complementary, and localised similar provincial departments headed by

provincial political heads (MECs), and institutions such as the Mjindi Farming or Irrigation, ADA, and UMDA, amongst others, being the specialised agencies of local development with keen interest in water supply. The working relationship between these institutions is hierarchical and complementary.

The national departments, herein referred to, provide the overall vision consistent with the national government's policies (i.e. NDP) regarding water management and the contribution of water to local economic development. The provincial departments, through their agencies, are directly involved in the managing and supplying of water, and the alignment of water provision with local economic development imperatives. In uMkhanyakude District and the province of KwaZulu-Natal broadly, sugarcane farming is one of the most important sectors of the economy as highlighted by the thriving sugarcane processing activities (agro-processing) spearheaded by industry giants such as Illovo and Tongaat-Hulett Sugar.

Therefore, the disruptive potential of unreliable water supply to sugarcane farmers on the provincial and ultimately national economy cannot be understated. At the human capital level, various officials are involved in implementation of water management and provision policies as well as policies of local economic development. The presence of such water resources during water starvation indicates that the authorities, specifically the relevant officials within the uMkhanyakude District Municipality (under which Jozini Local Municipality falls), have fallen short of their responsibility to supply water to residents; it is not necessarily a case of complete unavailability of water, but a case of inability to deliver clean water to the people. Furthermore, and perhaps more tellingly, the Jozini Local Municipality has failed to strategise and install and manage, a well-functioning water infrastructure, including bulk water pumping pipes, purification plants and end-consumer water supply pipes. Again, this points to poor water governance concerning water resource development and management in the Jozini Local Municipality.

Moreover, aside from the dam and related to the Jozini Local Municipality's lack of capacity to supply water to its residents, is the existence of numerous boreholes that have

been allowed to fall into dereliction; and seizing operational functionality in various villages/areas falling within the uMkhanyakude District Municipality, is equally problematic. For instance, as highlighted in preceding sections, of the ten boreholes installed for purposes of supplying water to Mpondweni, only one of them remains functional. Accordingly, and considering this, can it be argued convincingly that the water provision crisis in the district is downright due to strain imposed by the natural disaster that is drought? Not quite.

The inability to keep boreholes functional and running has commonality with the inability to ensure that the Jozini Dam provides consistent water services as envisioned. If anything, it indicates that there is a lack of water infrastructure management systems being rolled out and presided over by the uMkhanyakude District Municipality. If there was effective infrastructure maintenance, the nine boreholes would not have broken down, thus further reinforcing the argument that at the centre of the water crisis is an absence of good governance generally and sound water governance specifically.

Droughts are natural disasters that cannot be prevented, but can be managed. The role of boreholes is to alleviate or eliminate water shortages caused by dams and rivers drying up. However, the area concerned has abundant water in the form of the Jozini Dam (the dam obviously fills up in times of rain) and boreholes, which unfortunately cannot adequately be used due to poor infrastructure and lack of sound governance. Thus, the problem does not lie in the absence of water as a natural resource, but in human failure to adequately exploit the existing water resources: it is a failure of policy formulation of the uMkhanyakude District Municipality to ensure sustainable water supply to its affiliate municipalities. This is not caused by natural events such as droughts, but by the poor water infrastructure management systems (a governance issue) that are in place.

In the following section, the role played by water in sustaining farming activities, and the residents' lives in general, is discussed, considering the unfortunate water situation in the uMkhanyakude District Municipality.

4.3.3 Water and its Role in Sustaining Farming and Lives

The uMkhanyakude District Municipality encompasses large swathes of inhabited and uninhabited land, the development of which reflects the nature and shape of the rural communities and their lives. The link between farming and life in rural communities is obvious, and the weakening of farming through deprivation/insufficient availability of crucial input resources, such as water, can even threaten the very existence of the inhabitants. It is considering this fact that an analysis was conducted of the role played by water in sustaining farming, and ultimately life, in the uMkhanyakude District Municipality.

As an entity responsible for distributing irrigation water to farmers in KZN, the Mjindi Irrigation Scheme has struggled to provide farmers with sustainable supplies of irrigation water. In accordance with the view/account of a sugarcane farmer, Mr Jele, one of the constraints that sugarcane farmers highlight is the worn-out and leaking pipes that pump water from the Jozini Dam to their farmlands. This reinforces the argument that poor management of water infrastructure is also a major contributor to the acute water shortage in the uMkhanyakude District: leaking pipes means that a sizeable amount of this valuable resource is wasted before it could reach the intended users.

The poor water supply to farmers becomes even more problematic when the fact that farmers pay for this unreliable water supply is considered. They (the farmers) are required to pay a total of R 3000 monthly for each farmed hectare that is supplied with water, in terms of the applicable water payment rates. In the case of Mr Jele who owns twenty five hectares of a sugarcane farm, the total amount payable for the provision of water is R75 000 annum. Considering that Mr Jele, and others like him, need water to sustain their farming as they supply their sugarcane to mills in KZN under agreement; the negative repercussions of poor water supply not only impair their personal livelihoods; but the local, provincial and ultimately national economies. In addition, and as previously indicated, the provincial government has prioritised local economic development as one of the definitive objectives to be pursued by the government, as seen with the establishment of

specialised development agencies, like the ADA. As such, the aforesaid challenges to do not bode well for the much needed economic development in the region.

The post-apartheid ANC-led government regards transformation of land ownership and of the commercial agricultural sector as priorities. Thus, Mr Jele is one of the emerging black commercial farmers integrating into a sector that has been dominated by white South African farmers for many years. The inability or failure of the Department of Agriculture and Rural Development to support these farmers, goes against the strategic objectives and goals of the governing party and of the state, which includes developing black commercial farmers.

Moreover, there are smallholder farmers in the uMkhanyakude District Municipality who do not rely on the Mjindi Irrigation Scheme for the supply of irrigation water due to their financial constraints. These farmers, in terms of an account, as related by Mr Mtimbane, who is also one of the farmers, rely on water that is released from the Jozini Dam to ensure access for Mozambique and Swaziland; as per the existing agreement between these countries and South Africa. This provides an opportunity for them to by-pass the system, which requires the following of the necessary procedure, which includes payment for accessing water from the dam and source water for farming purposes - water they would otherwise be unable to access due to financial constraints. When water is not released from the dam for long spells by the officials, this category of farmers suffers as they do not have water to irrigate their crops. The option of harvesting water from rainfall is not viable as there is no appropriate water catchment infrastructure in place, and rainfall is a rarity.

Another point, as related by Mr Mtimbane, is that the process of acquiring a water license is not known in his farming circle; but there is a concern that it is lengthy and time-consuming. Educating farmers of the procedures to be followed to apply for water permits is the responsibility of the KZN Department of Agriculture and Rural Development. And, as previously stated, they are responsible for agricultural services and development in the area through the operationalisation and functions of the Mjindi Irrigation Scheme as

well as the agribusiness development agency; therefore, as is their function, the department needs to ensure that farmers have this information at their disposal. However, the current status quo reflects that this has not been done; the department has not engaged its customers (farmers) relating to accessing water for crop irrigation, as gleaned from the negative feedback from the interview respondents.

Since one of the key elements of good governance is effective stakeholder participation, this shortcoming of the DWS - insofar as instituting effective communication methods to engage key stakeholders about the relevant and applicable procedures that are followed in securing access to water - highlights that the water governance system is not working as it should. The consequences for farmers are devastating, as farming is extensively and intensively water-reliant. The result is loss of agricultural production, loss of market-share and ultimately loss of livelihoods.

Emerging smallholder (black) farmers are usually poorly resourced, making the intervention and assistance of government (or financial institutions) a prerequisite for successful commercialisation of farming. As both Mr Hadebe and Mr Mtimbane related during the interviews, they sell their agricultural produce to local buyers such as Shoprite Checkers, Spar, Pick ‘n Pay and Tongaat-Hulett Sugar; and, as such, play an important role in the local economy. The ADA declares that livestock farming, fruits and vegetables and sugarcane farming should be advanced and strengthened; ultimately becoming the bedrock upon which the province’s development is hinged. Unfortunately, poor access to irrigation water impacts the lives of these farmers and their communities. Their farms boost local economies through employment and the localisation of capital. Therefore, and in the context of the alarming unemployment and poverty in South Africa, it is vital that government comes to the aid of these farmers.

The poor supply of farming water will further serve to condemn emerging farmers into obscurity within the economic structure. “It is indeed problematic that smallholder farmers remain trapped within the informal economy due to a lack of market infrastructure - such as, pack houses, abattoirs, silos and processing plants” (http://www.kzndard.gov.za).

Chikazunga (2012) states that “most agriculture markets are impermeable to small producers, for example, processors and retail chains have stringent procurement policies, such as, international quality standards (GlobalGAP), labelling and exclusive contractual arrangements.” The Department of Agriculture and Rural Development, as part of its mandate to drive and coordinate the implementation of rural development, is focusing on infrastructure-building, agro-processing, value-adding and agri-business. Some of our larger infrastructure provision projects will be based on a ‘build’, ‘operate’, ‘train’ and ‘transfer’ (BOTT) model. Accordingly, the challenges confronting the emerging farmers in the uMkhanyakude District Municipality are not only limited to access to water but are varied, ranging from value-addition (processing) to access to markets for their products.

Equally concerning is the fact that residents in the uMkhanyakude District Municipality do not have reliable access to clean drinking water. The municipality supplies cans of rationed water to the inhabitants for three weeks in a month. This is clearly insufficient. According to the South African Constitution, people should have reasonable access to water for basic needs. Because the water supply is infrequent, community members are forced to fetch water from the Pongola River for consumption. The use of non- purified water poses many health risks, such as malaria and diarrhoea. However, it is important to note and acknowledge that the lack of access to adequate clean water exists for many rural communities across South Africa. Water for drinking, cooking and washing is fundamental to people’s well - being. Not having access to this basic right threatens the ability of a people to maintain a dignified and healthy life. Globally, access to water has become a human rights issue, with countries committing to guarantee their citizens access to water. South Africa is no exception; the 1996 South African Constitution has made access to water a human right, and not a privilege.

4.3.4 Water Strife: Perspectives of *Indunas* and Community Leaders

In the South African context, traditional leaders or *Indunas* still play a (significant) leadership role in rural areas. They work closely with local ward councillors to address

service delivery challenges that confront their communities. Mr Nyawo, the *Induna* of Mpondwane, views circumstances around the Jozini Dam as problematic. The (mis) perception of Nyawo is that the creation of the dam has not brought any noteworthy improvement in the lives of his people, and access to water is more difficult than in the past.

The prevailing view amongst traditional leaders in uMkhanyakude District Municipality is that local government has not brought development to their communities. This is particularly illustrated by *Induna* Nyawo's contention that his people have neither benefited from the Jozini Dam nor have they been connected to any electricity grid. The mooted proposition by the UMDA to construct a hydropower facility off the dam could assist the authorities to address the shortage of electricity underlined by *Induna* Nyawo. Furthermore, the local municipality is castigated for its failure to resolve the issue of water shortages, thus prolonging the use of water cans, which essentially strip residents of their dignity. The shortages that the traditional leaders highlighted were not limited to water: they included a variety of fundamental social issues important for living a dignified life, such as electricity and employment.

Induna Nyawo bemoans the high level of unemployment in his jurisdiction. In South Africa, unemployment tends to be high in rural areas and the jobless situation in *Induna* Nyawo's constituency is thus consistent with national unemployment dynamics. However, the fact that the unemployment situation in Mpondwane is not unique does not imply that it is acceptable. If government were to work towards alleviating the pervasive unemployment in Mpondwane and the uMkhanyakude District and invest in its agriculture by alleviating the water shortages and also by providing platforms for emerging farmers to have farming skills transferred to them, the problem of unemployment would stand a realistic chance of improving.

Furthermore, it appears that there is very poor communication between the local communities and local government authorities regarding developmental activities in the uMkhanyakude District Municipality. This is highlighted by the fact that *Induna* Nyawo, a

representative of Mpondwane people by his chieftaincy, perceives that the placement of dangerous wild animals into the White Elephant Nature Reserve was unwise. He argues that these animals threaten the safety of his community and of livestock herders generally. This relates precisely to a point previously made: that it constitutes the neglect of key stakeholders who are most affected by the government's intervention policy, and by the impoundment of the dam.

Even Councillor Mokheni, who represents the people of Mkhuze, bemoans the fact that the Jozini Dam has not provided the necessary water or aided the creation of job opportunities for the area's residents. As a member of the local legislature representing the Mkhuze constituency, Councillor Mokheni is part of the political cohort entrusted with addressing service delivery challenges. As such, his venting of complaints, instead of strategising to address the water and job opportunities crises, is problematic. In terms of the 1996 South African Constitution, water is a resource to which every person must have access, and it is the responsibility of elected public representatives to ensure that citizens have access to water sufficient for their basic needs.

In the section below, the nature of the uMkhanyakude District Municipality's water management's top-down approach (designated by government officials) is discussed.

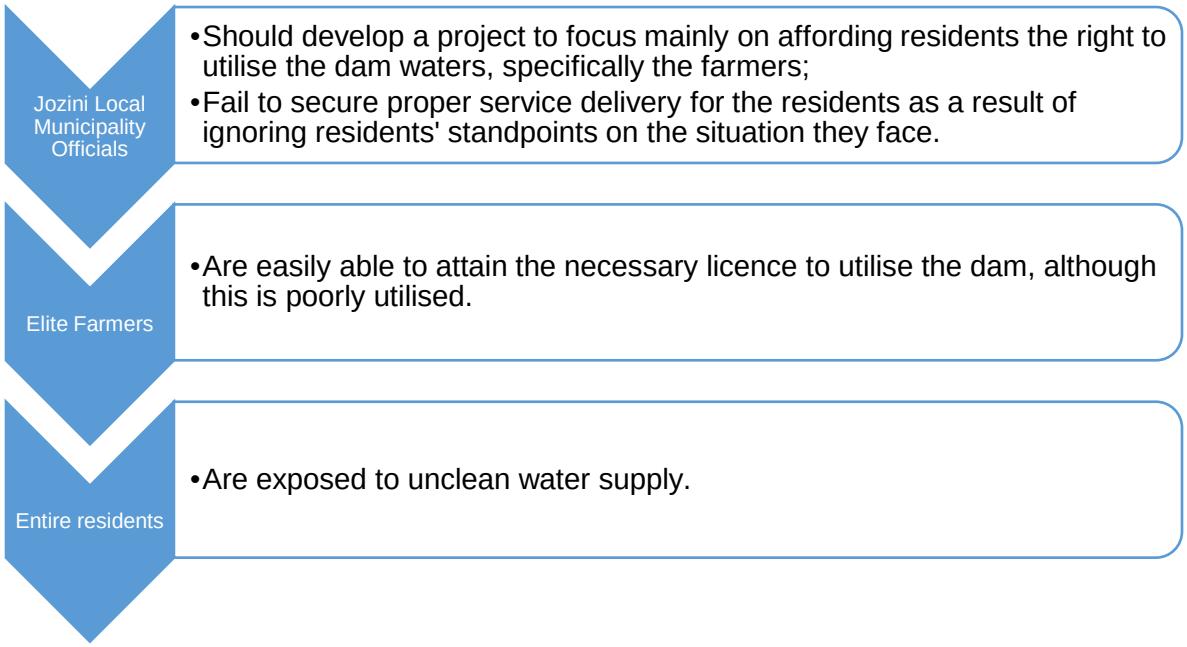
4.3.5 The Top-Down Approach

As with most developing states, South Africa has adopted decentralisation as an approach. In this case, the South African national government decentralised power to enable provincial and local governments to be positioned for decision-making. The mandate of the South African local government is to deliver quality service to citizens and fulfil other elements of decentralisation in a democratic manner by ensuring that public participation in their decision-making is carried out on a legitimate platform (Edoun & Jahed, 2009: 4).

Converse to decentralisation, exists the top-down approach. Dodds and Paskins (2011: 52) argued that the top-down approach in government service delivery fails to realise

public participation in the government's decision-making. Furthermore, they state that top-down implementers control the system of command of projects that impact the citizens.

Table 8: The Top down model of the governance of the Jozini LM



To elaborate on the above model, the uMkhanyakude District Municipality's officials dictate the matters upon which they focus their attention. These limits public participation in decision-making; since, in practice, the views of the residents are not considered; thus, for this conception, it is plausible to state that the top-down approach is practised in the district. The exercise of the top-down approach is the result of the lack of monitoring and evaluation of the practices of government institutions. Political Pipeline (2013) supports that the practice of decentralisation is criticised, and one of the criticisms is that, in most cases, the street bureaucrats are not accountable as are not monitored effectively, further stating that it however, results in disregarding the effective practice of decentralisation, advocating the top-down approach. This can be seen in the ongoing failure to supply sufficient clean water to the residents and the provision of licences to solely elite farmers. In due course, the following cases will exist under uMkhanyakude District Municipality:

(a) Relocation

In due course, the Jozini Local Municipality will see a mass relocation of its residents. Due to most residents' dissatisfaction on the supply of basic services, this has a chance

of causing an out-flux of its residents; seeking support from another urbanised municipality for the hope of job opportunities, and better access to basic services. In this scenario, the relocating residents will impact their new municipality's plans to enhance the living standards of their poor. For instance, planned projects of that municipality's administrative arm will have to be put on hold to accommodate the influx of residents relocating from the Jozini Local Municipality. The new municipality will consequently be regarded as ineffective and disorganised, due to the disruption of their planned strategies.

(b) Insurrection

Poor service delivery by local municipalities often results in violent protest. The residents who are unable to relocate from the Jozini Local Municipality may well protest violently to forcefully bring home their notion of public participation and inclusion in government decision-making. This will result in officials of the Jozini Local Municipality being unable to administer government's agenda in service delivery in an effective manner. In summary, community unrest may become prevalent in the Jozini Local Municipality because of conflict between residents and municipal officials.



Figure 22: Social Protests in Jozini

The picture above is taken from the IOL News Report dated 5 November 2015, wherewith the residents of Wards 2 and 7 of the Jozini Municipality Ngubane (2015) reports that “rampaged and barricaded the main access roads connecting Jozini to the N2 road in a service protest demanding water. At the heart of the protest are allegations that the uMkhanyakude District Municipality had failed to provide drinking water, which were to have been delivered by water tankers, for more than two months.”

CONCLUSION

Chapter 5 sought to present the case study of Jozini Municipality and the Jozini Dam, presenting the findings collected through fieldwork conducted in and around the Jozini Municipality; further, providing an analysis of the findings to provide an optical view of the water provision and supply services in Jozini. The following chapter provides closing remarks to the research and offers subsequent recommendations to remedy societal issues highlighted herein.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUDING REMARKS

The problem uncovered and explored by the researcher is the perplexing circumstance of the Jozini Dam. Wherewith, an area with the presence of the fifth largest dam in South Africa is contradictory or otherwise faced by the historically disadvantaged local residents who, even after years of democracy and policy amendments, still live in poverty, manifested by a lack of access to basic services and amenities such as clean running water and electricity connections. The lack of water reticulation systems is exacerbated by a lack of clear planning procedures and a lack of funds ring fenced particularly for water supply and the provision of electricity, this lack of electricity is despite the possibility of generating hydropower has been examined by the UMDA (the results of this study have not been made available).

Further, to understand the community's demands for electricity and potable water, the researcher conducted exploratory research on the municipality's institutional arrangements, its policy orientation, applicability of implementation, and read existing literature on dam infrastructure and water governance systems and further conducted interviews with relevant key stakeholders such as municipal officials, farmers, local traditional leadership, local councillors and general residents residing within the local municipality.

The researcher reviewed the procedures that the municipality follows to ensure the supply of water services and found them to be lacking in process to allow future proper planning. For instance, the challenges facing the Jozini Local Municipality regarding delivering safe water to its residents is erratic and unstable water supply systems, this denotes a lack of alignment between the institutional bodies responsible for water service delivery, a strong element of good governance is planning, processing procedures and interaction of these.

5.2 CONCLUSION

The prevailing view held by the interviewed respondents regarding water availability for both household consumption and commercial farming purposes is that although there is a huge water resource within the Jozini local Municipality, there has been no apparent measure taken by the uMkhanyakude District Municipality to ensure reticulation for the residents of Jozini to have access to clean drinking water.

This is exacerbated by the fact that the District Municipality has an imminent institutional shortfall to ensure the widespread provision of water to all residents efficiently and timeously. This shortfall is as a result of insufficient internal personnel, technical capacity, inability to plan for future water supply and also, a dire state of financial resourcing to ensure water service delivery and to ensure the services procured from WSSA are paid for timeously to enable their services to be uninterrupted.

The dire condition of water scarcity negatively impacts the resident's livelihoods, leaving the residents unsure where to collect water for domestic use, this in turn affects mostly the historically disadvantaged in the area, who still are living under dire states of poverty. The District municipality, therefore, should manage water in a way that ensures a consistent supply even during times of drought.

More importantly, during times of drought, water should be governed and managed properly to ensure consistent supply to farmers even during the dry season. With the right mechanisms put in place by the District municipality, the now paradoxical situation of the existence of the big water resource in Jozini and the lack of consistent supply of water for household consumption and for farming will be eliminated.

This report unravels that the uMkhanyakude District Municipality and the DoA, Mjindi Irrigation Scheme has failed to deliver on its constitutional mandate by not ensuring that they consistently supply water services to residents, both for drinking and for farming needs. The Mjindi Irrigation Scheme should ensure it has sufficient institutional support

from the KZN Department of Agriculture, to ensure seamless relations with the farmers in which they support and undertake an evaluative study to determine the areas in which their support to the farmers is failing and strengthen those, currently, however, their mechanism for farmer support is flawed, this leaves farmers vulnerable to environmental problems that arise during the eminent drought period.

The research further, established that water governance processes and policy formulation, i.e. the IDP and WDP processes aimed to solicit inclusiveness in governance are not inclusive enough of all residents and therefore does not encompass the population at large. Elements of good governance such as stakeholder participation, effective partnerships and political will are sorely lacking or tilted to a top down approach wherewith the governing officials formulate policies to implement to the masses. Without good governance, particularly an effective water governance system coupled with the drought management in the Municipality the output and outcome of water services will remain at its dire state and the poor residents without water for domestic use and the farmers lacking water for irrigating farms. This reiterates Nkuna (2012) who states that institutions responsible for water services should be equipped with understanding the realty of water supply in communities, as a lack of this understanding contributes to an insufficient response to water challenges.

The Jozini Dam is under-utilised, the use of the dam should be to be expanded to its maximum potential of 45 000 hectares. Much more water from the dam should be prioritised for allocation to water users who use the water for irrigation, industrial and domestic use, more information should be disseminated to farmers on procedures to follow in order to acquire water use licenses and Mjindi should prioritise this provision, the dam should be largely managed in conjunction with the Department of Agriculture by allocating a higher water quota to the Mjindi Irrigation Scheme in order to ensure there is sufficient water for irrigating farms, this is notwithstanding the fact that Mjindi has to ensure that the amount of water from the dam is reticulated to the farmers and the water spillages wastage that occurs in the process through leaking water valves at the farming plots or at the source of the water to the farms. If the abovementioned mechanisms are

in place, this can render the water from the dam as a state asset by ensuring clean water and through direct and indirect job creation which will produce much-needed food for the people of South Africa far beyond uMkhanyakude District.

5.3 RECOMMENDATIONS

5.3.1 Irrigation

The irrigation potential of Jozini Dam is huge. Currently the water for irrigation supplied by the Mjindi Irrigation scheme covers just 3 500 hectares of land where the dam water capacity has the potential to cover 45 000 hectares of land. The below is recommended:

- The installation of new water pipes in the canal will expand the potential for irrigation in the Makhathini area to about 40% of the 45 000 hectares of land. This system is successfully used in the Hoedspruit area of Mpumalanga and therefore should be benchmarked and borrowed for use by the KZN Department of Agriculture Through the Mjindi Irrigation Scheme.
- There should be gravity irrigation systems installed at the dam and the surroundings, this utilizing the water pressure from the dam.

More measures for irrigating water provision allows for less costly ways of farming, resulting in expanded ways for hectares of land being irrigated, the production of more food produce and ultimately a reduced cost in farming. The less the famers pay for water the more they may have capital to allocate for investing in more sophisticated crops, and also allocated to transport costs, which currently has been a problematic area for farmers.

5.3.2 State Institutions: DWS and Municipality

The uMkhanyakude Municipality should stipulate in the Water Development Plan how it plans to further expand the use of the water from the dam, also, how funds will be allocated as needed for the continuation of the bulk water system that began construction in the year 2014, and make amends to continue this already good work.

5.3.3 Agriculture and Processing

Transport costs for farmers to transport their produce from their farms to the sugar mills or the processing plants are a major issue and concern for the farmers. Currently, farmers hire trucks from Sentrans Company which is owned by Mr. Senekal, to transport their sugarcane to nearby sugar mills.

An international company named Bunge, that has been working with Mr. Senekal has proposed funding the construction of a sugar mill at the Jozini locale, which would greatly reduce farmers' transport costs as farmers will not need to transport their produce to a far distance, however, the application for the necessary water license for the mill was declined by DWS. It is recommended that the Department of Agriculture and the Department of Water and Sanitation undertake a feasibility study on this possibility, as it would economically benefit all concerned.

5.3.4 Investments

Partnerships need to be established between the farmers and commercial outlets in the areas, confirming that they will accept and sell what is produced by the black local smallholder farmers. Such partnerships could be of benefit to both parties and encapsulate economic development and growth in the area.

In the year 2001, Mr Senekal established an organisation called Nhlanhla Yethu which aimed at uplifting struggling black farmers in the area. Nhlanhla Yethu comprised 70 smallholder famers who collectively produced 30 000 tons of sugarcane. The project, however, suffered government and political interference and as a result was terminated, this, to the dismay of the smallholder farmers whose livelihoods depended upon it.

It is recommended that the Mjindi Irrigation Scheme create a knowledge, skills and capacity transfer platform between established commercial farmers and smallholder farmers to facilitate knowledge, skills and capacity transfer through an organised programme akin to Nhlanhla Yethu.

5.3.5 Fishing

There is a market in the community for fish from the dam, although currently much of the fishing is done illegally, without authorised licencing.

It is recommended that fishing in the dam be regulated in a reasonable manner to not strangulate the farming activities that take place in the dam but be legislated to create a livelihood for the unemployed.

5.3.6 Mjindi Irrigation Scheme

It is recommended that the Mjindi Irrigation scheme works in alignment with both its mother department, the Department of Agriculture for agricultural services for the agricultural support and with the Department of Water and Sanitation for ensuring water supply is adequate for the entire agriculture programme. This collaboration from the two (2) departments can allow for the Mjindi Irrigation Scheme to expand its support structure and mechanisms as a means of aiding to the farmers.

5.3.7 Pro Poor policy

Pro poor policy is concerned with the formulation and enactment of policy programmes that are meant to directly benefit the poor in society, in the instance of water provision, the FBW policy has been formulated and implemented for citizens to not pay for water under a certain quota, this is directly aimed at those who cannot afford to pay for this basic service. More pro poor policies should be put in place to ensure residents have provision of consistent access to supply water supply.

The residents of Jozini will immensely benefit from having such water governance policies, provided however, that there is a stable water supply. It is however, noteworthy that for water reticulation to occur, revenue is necessary to fund it. Therefore, it is recommended that the District Municipality ring fences funds to support pro poor policy and its provision to residents with an initial focus on the residents who are in dire need,

particularly in secluded areas such as Mpondweni, which is estimated at about 12 or 15 kms from Jozini Town, this would require conducting an economic censor with the aim to understand the neediest in society.

Pro poor policies allow residents to have access to water, generally the advantages of having access to clean water are of nutritional value and economic value, also, as predominantly in rural areas where long distances are travelled to fetch water, as this is also, predominantly the role of women and the girl child, provisioned water within 200m radius of households and even within the vicinity of the households may immensely reduce the time girls take away from school and educational activities in order to fetch water, that time can and should in turn be invested towards schooling related activities. For women, the travelling time to fetch water could provide excessive time for the women to take part in other communal matters such as attending IDP policy formulation gatherings in their local town halls, this then giving a sense of gender inclusion in policy deliberation and formulation and therefore, proper representation and potentially the right diagnoses to remedying societal ills.

As water law is concerned with human right to water access and the concomitant duties of others, Bachelor (2007) states that “the challenge of achieving pro-poor water governance can be met by initiatives such as” provisioning and strengthening water policies and laws for the needs of the poor; in particular women and children and mainstreaming gender and development aspects in the water sector; making information accessible for the poor and ensuring inclusiveness in decision-making and also, ensuring there are pro-poor safeguards such as river basin planning and management.

In conclusion, all of the above recommendations would help to alleviate poverty in the Jozini community and provide the residents opportunities to earn a living, enabling them to educate their children and feed their families. This, along with access to clean drinking water is surely a basic right to which all South Africans are entitled.

6. REFERENCES

Agterkamp J. 2009. Allocating contested Water A case study on the (non)compliance with Environmental Water Allocations in the Sand subcatchment, South Africa. Wageningen University, the Netherlands

Agribusiness Development Agency, Annual Performance Plan. 2013/14. Kwa Zulu Natal

Africa, E, Magwaza, E & Patel Y. (1999). IDP Guide Pack. Department of Provincial and Local Government (DPLG).

Ariatti C. 2013. Agriculture and Local Economic Development: A case study of the uMshwathi Local Municipality. Dissertation, University of Kwa- Zulu Natal.

Asante Y, Ndiritu J. 2009. The simple modelling method for storm- and grey-water quality management applied to Alexandra settlement. School of Civil and Environmental Engineering, University of the Witwatersrand. Water SA Vol. 35 No. 5

Ashton P. (2000). *Southern African Water Conflicts: Are They Inevitable or Preventable? Division of Water*. Environment & Forestry Technology. CSIR. Pretoria, South Africa.

Ashton, P.J, Earle, A, Malzbender, D et al. (2005). A Compilation of all the International Freshwater Agreements Entered into by South Africa with Other States. Water Research Commission.

Asmal K. 1997. White Paper on a National Water Policy for South Africa A new South Africa and a new Water Law. Minister of Water Affairs and Forestry

Batchelor, C. (2007). *Water Governance Literature Assessment: Report Contributing to the Scoping Exercise Managed by IIED*. International Institute for Environment and Development. London, UK.

Bartik, T.J. (1991*). Who Benefits from State and Local Economic Development Policies?* Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Bembridge, T. J. (1991). *Farmer Characteristics, Innovativeness and Cotton Production at Makhatini Irrigation Scheme, KwaZulu*. Development Southern Africa. 8 (1), 66 - 77.

Bentley, L. (2013). *A Massive Task to keep Makhathini Green*. Agric-Eco Zululand.

Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology,* 3 (2). pp. 77 - 101. ISSN 1478-0887.

Brown, J. & Woodhouse, P. (2004). *Pioneering Redistributive Regulatory Reform: A Study of Implementation of a Catchment Management Agency for the Inkomati Water Management Area, South Africa*. IDPM, University of Manchester, UK.

Cameron, R. 2012. Verticle decentralization and urban service delivery in South Africa: Does politics matter? WIDER Working Paper, No. 2012/87, ISBN 978-92-9230-551-2

Chiluwe, Q and Nkhata, B. (2014). Analysis of water governance in Malawi: Towards a favorable enabling environment. *Journal of Water, Sanitation and Hygiene for Development*. 4 (2), 313 – 323.

Chikazunga D. 2012. Rescuing emerging farmers in South Africa. Institute for Poverty, Land and Agragrian Studies (PLAAS)

Cloete, C. 2013. Institutions and Agricultural Development: The Case of the North-West Province in South Africa Unit for Environmental Sciences and Management, North West University, Potchefstroom, South Africa.

Cooperative Governance and Traditional Affairs. (2011). uMkhanyakude District Municipality Profile.

Denzin, Norman. K. and Yvonna S. Lincoln. *Handbook of Qualitative Research*. 2nd edition. Thousand Oaks, CA: Sage, 2000

De Coning. 2006. Overview of the water policy process in South Africa. 8 (6) 505-528; DOI: 10.2166/wp.2006.039. IWA Publishing

Department of Agriculture, Forestry and Fisheries (DAFF). (2015). Irrigation Strategy for South Africa. Pretoria, South Africa.

Department of Agriculture and Rural Development: KZN. (2015). *Strategy for Agrarian Transformation in KwaZulu-Natal.* Pretoria, South Africa.

Department of Water Affairs and Forestry. (2002). The White Paper on Water Services. Pretoria, South Africa.

Department of Water Affairs & Forestry (DWAF). 2008. The Strategic Framework for Water for Sustainable Growth and Development Discussion document. Pretoria, South Africa

Department of Water Affairs. (2013*). The National Water Resource Strategy: Water for an Equitable and Sustainable Future*. Pretoria, South Africa.

Department of Water & Forestry. (2011). National Water Resource Strategy: Our Blueprint for Survival. Pretoria, South Africa.

Department of Water Affairs. (2003). Business Case for the Pongola-uMzimkhulu Catchment Management Agency. Pretoria, South Africa.

Department of Water and Forestry. (2002). Tripartite Permanent Technical Committee between the Republic of Mozambique, the Republic of South Africa and the Kingdom of Swaziland.

Department of Economic Development and Tourism, KZN. (2011). *KZN Investment Strategy Promotion and Facilitation Imperatives: Investment Strategy and Implementation Plan*. DEDT-KZN.

Department of Environmental Affairs. 2011. South Africa: a water scarce country. South Africa; Pretoria

Department of Provincial and Local Government (2006) *National Framework for Local Economic Development in South Africa*. Pretoria. Accessed at www.dplg.gov.za.

Dodds, A and Paskins, D. (2011). Top-down or bottom-up: The real choice for public services. *Journal of Poverty and Social Justice*. 19(1): 51 – 61.

Edoun, E. I and Jahed, M. (2009). *The Merits of Decentralisation and Local Economic Development in South Africa*. Global Action for Africa's Development: Pretoria, South Africa.

Farrar L. & Rivett U. (2014). *Is South Africa's Free Basic Water Policy Working? A Quantitative Analysis of the Effectiveness of the Policy Implementation*. Department of Civil Engineering: University of Cape Town, South Africa.

Fraser, A. (2009). Harnessing Agriculture for Development. Oxfam International.

Galvin, M. (2013). *Dam Truths: A Compilation of Case Studies about Popular Struggles against Dams*. Blue Planet Project, Council of Canadians.

Gericke, A. (2011). *Application for the Third Operational Phase Grant for the uMhlosinga Development Agency*. uMhlosinga Development Agency.

Government Gazette. (1996). The Constitution of the Republic of South Africa (Act 106 of 1996). Cape Town, South Africa.

Graf W. 2003. The changing roles of Dams in Water Resource Management. University of South Carolina; Water Resources Updates.

Haigh E, Fox H, Davies- Coleman H. 2010. Framework for local government to implement integrated water resource management linked to water service delivery. Institute for Water Research. Grahamstown.

Hallowes J, Frezghi M, Jonker V, Manley R. 2010. Consulting services for System Operating Rules for the Incomati and Maputo Watercourses. Prepared by DHI and Aurecon, Mozambique.

Howlett, M & Ramesh, M. (1995). *Studying Public Policy: Policy Cycles and Policy Subsystems*. Oxford University Press: London.

International Conference on Water and the Environment (ICWE). (1992). *The Dublin Statement and Report of the Conference*. Dublin, Ireland.

Integrated Development Plan (IDP). (2012). *A Practical Guide to Municipalities*. SALGA.

International Commission on Large Dams; 2011. Constitution

Keeman, H & Woldendorp, J. (2016). *Handbook of Research Methods and Applications in Political Science*. Edward Elgar Publishing: Cheltenham, United Kingdom.

Kvale S. 2006. Dominance through interviews and Dialogues. Volume: 12 issue: 3, page(s): 480-500. Issue published: June 1, 2006

Kaplan B. & Zitzer H. (April; 2016). Parts of KwaZulu-Natal declared a disaster area as drought continues. *Africa Geographic*.

Kasrils R. 2001. Keynote Address Water-Resources Management, Policies and Reforms: A South African Perspective. Pretoria, South Africa

Mbeche I & Kumssa A. (2004). The role of institutions in the development process of African countries. *International Journal of Social Economics*. Vol. 31, No. 9.

Motswaine, B. (2009). The Role of Local Economic Development on Poverty Eradication in South Africa's Rural Municipalities: A Case Study of Greater Tubatse Municipality (Master's Dissertation). Maastricht School of Management.

Mjindi Farming, Pty Ltd. (2012). Annual report for the period 1 April 2012 to 31 March 2013.

Midgley W. et al. (Eds.) Echoes: Ethics and Issues of Voice in Education Research, 111–121. 2014. Sense Publishers

Muller, M. (2008). Free basic water: A sustainable instrument for a sustainable future in South Africa*. Environment & Urbanization*. International Institute for Environment and Development (IIED). 20 (1), 67 – 87.

Muller, M. (2009). Amanzi, Wabenzi and the National Democratic Revolution: The Politics of Water Supply during South Africa's First Decade of Freedom. Wits University Press, South Africa.

Ngubane T. 5 November 2015. KZN drought sparks violence. IOL, www.iol.co.za/news/crime

Nkuna, Z. W. (2012). Water governance challenges for rural water supply: A case study of two local municipalities in South Africa. Department of Geography, Geoinformatics and Meteorology, Faculty of Natural and Agricultural Sciences, University of Pretoria (Master's degree thesis).

National Water Act 54 of 1956. Statutes of the Republic of South Africa – Water.

Oxfam South Africa. (2016). *A Harvest of Dysfunction: Rethinking the Approach to Drought, its Causes and Impacts in South Africa*. Johannesburg, South Africa.

Ogunwale S. A, Maurya, P.R, Owunubi, J.J. (1994). Institute for Agricultural Research, Ahmadu Bello University, Zaria, Nigeria.

Palys, T. (2008). Purposive sampling. In L. M. Given (Ed.) The Sage Encyclopedia of Qualitative Research Methods. (Vol.2). Sage: Los Angeles, pp. 697-8.

Plummer & Slaymaker. 2007. Rethinking governance in water services. Overseas Development Institute. London.

Pretorius H. 2012. A practical assessment of Spatial Development Frameworks in terms of water resources for development. The Potchefstroom Campus of the North-West Universit. Magister Artium et Scientiae in Urban & Regional Planning

Rogerson, C.M. (2009). Report on strategic review of local economic development in South Africa, Submitted to Ministry of Cooperative Governance and Traditional Affairs. Pretoria

Russ L. 2005. The right to water and sanitation: A Useful Tool for Universal Service Delivery. University of California. Los Angeles. Master of Arts in Urban Planning

SADC. (2005). *Regional Water Policy*. SADC.

Scheepers, L. An Institutional Capacity Model of Municipalities in South Africa. September 2015. Dissertation presented for the Degree of Doctor of Philosophy in Public Management and Development Planning in the Faculty of Economic and Management Sciences at Stellenbosch University, South Africa.

South African Government. (2011). National Development Plan: Vision for 2030.

South African Human Rights Commission. (2001). 3rd Economic & Social Rights Report.

Taylor J. Bogdan R. DeVault M. Introduction to Qualitative Research Methods: A Guidebook and Resources, 4th Edition. ISBN: 978-1-118-76721-4. February 2016.

Tewari, D. D. (2009). *A Detailed Analysis of Evolution of Water Rights in South Africa: An Account of Three and a Half Centuries from 1652 AD to Present*. School of Economics and Finance, University of KwaZulu-Natal. 35 (5).

Terrascope, (initial?). (e.d.). Mission 2017: Global Water Security. *Water for All.scripts.mit.edu/mission2017.*

Thoening, J. (2002). Institutional Theories and Public Institutions: Traditions and Appropriateness. *Handbook on Public Administration*. London: Sage.

uMhlosinga Development Agency (UMDA). (2014/15). Annual Report.

UN-HABITAT. (2005). *Issue paper on pro-poor governance for delivery of basic services: Sixth global forum on reinventing government towards participatory and transparent governance*. Seoul, Korea.

UN-HABITAT. (2006). Framework for Promoting Pro-poor Water and Sanitation Governance in Urban Programmes and Projects: Meeting Development Goals in Small Urban Centers.

Van Vuuren, S. J, Blersch, C. L & van Dijk, M. (2011). *Modelling the Feasibility of Retrofitting Hydropower to Existing South African Dams*. Department of Civil Engineering, University of Pretoria. Pretoria. South Africa.

Van Averbbeke, W, Denison, J & Mnkeni, P. (2011). Smallholder irrigation schemes in South Africa: A review of knowledge generated by the Water Research Commission. South Africa. Vol. 37 No. 5.

Van Averbeke, W & Mohamed, S. S. (2006). *Smallholder Irrigation Schemes in South Africa: Past, Present and Future*. Centre for Organic and Smallholder Agriculture, Department of Crop Sciences, Tshwane University of Technology.

Wagner M., Valls – Passola J Burger Helchman W. 2012. The Global Management of Creativity. Routledge

Viljoen G. 2016. Water as Public Property: A Parallel Evaluation of South African and German Law. Potchefstroom Campus of the North-West University. Docrate Degree

Water Research Commission (WRC). 2007. IWRMP Guidelines for Local Authorities. South Africa. WRC Report No TT 304/07 WRC Report No TT 304/07

Williams, G. (2006). 'Infrastructure of Responsibility': The Moral Tasks of Institutions. Blackwell Publishing. Vol. 23, No. 2, 2006.

World Bank Institute. (2005). *Introduction to Poverty Analysis*. Poverty Manual, All, J H Revision.

Xaba, C. 22 April, 2015. Media Statement on KZN MEC for Agriculture and Rural Development. Budget speech. KwaZulu-natal Provincial Legislature.

Xavier, A. F. (2012). *Improving Water Resources Management through Integration of Community-based Actions: The Case of Black Volta Basin.* Kwame Nkrumah University of Science and Technology. Kumasi Ghana (doctoral dissertation).

7. APPENDICES

7.1 Fieldwork Plan (Scheduled Interviews)

Time Schedule: 5 - 15 March 2017

INTERVIEWS:

The researcher seeks to interview small scale farmers as well as large scale farmers, 1 large scale farmer, 2 small scale farmers, one association of farmers called Mjindi farming which provides water to farmers. Farmers are divided based on commercial farmers and Smallholder farmers, those who are able to farm and those who are limited. Also, I seek to interview employed and unemployed household residents.

The researcher will undertake a counterfactual study whereby I interview households that have been living in the areas since before the impoundment of the Dam and also those families that have been living there ever since after the Dam was impounded and compare the two based on variables such as;

1. Understanding of their provision of water
2. Understand water payment structure
3. Where they are getting the water (water source)
4. Whether water is easily assessable in the area or not

Objective 1: To assess the impacts the Jozini Dam has had on the economic activity and development for poverty alleviation in the area.

Interviewees:

1. Commercial (Vegetation) Farmer: Samson Hadebe) in Mkhuze
2. Commercial (Sugar Cane) Farmer: Mr Senegal in Mkhuze
3. Fish industry (Mr Vusi Mnyeni)
4. Tourism industry Mr Senegal in Mkhuze

Questions to address Objective 1:

1. How much hectares/land do you farm in total?
2. How much ha/land do you target to plant?
3. What enablers /constraints exists for you to realise your target?
4. What is the consideration on the availability of water to achieve the targets of ha/land?
5. Where do you get water for irrigation?
6. Are you a small scale farmer?
7. Under which farming association do you fall under?
8. It would be interesting to know, amidst the decline of cotton farming from factors such as lack of investment and drought,

- What has affected farming in the area?
  Has the management of the dam affected farming? If so, how has it affected it?

Objective 2: To assess the changed political environment pertaining to the Pongolapoort Dam and the tracking towards development and attainment of water rights and provision of water.

Interviewees:

- Commercial Farmer and Business owner in Mkhuze: Mr Senegal
- Mjindi Irrigation Scheme: Mr Xolani Fihlani
- Traditional leader (Induna at Mpondweni) Peter Nyawo

Questions to address Objective 2:

1. Please give me an overview of what your organisation does?
2. What mechanisms do you have in place to upgrade the current 3,500ha currently under irrigation?
3. As part of your stakeholders, what relations do you have with the local department of agriculture?

Municipal officials:

1. What is the role of the municipality in relation to water supply?

2. How is the payment system for the water supply? Is it a pay as you go/ prepaid?
3. Do residents pay for water?
4. What is the role of the municipality in relation to the management of the Jozini Dam and what is the role of the dam in proving water?
5. Does the municipality have a defined 'water management system'?
6. How is the Municipality ensuring the provision of water?
7. Where does the water supplied to residents coming from?
8. Does the Municipality have the mandate and capacity to provide for water?
9. To what extent is the Jozini Dam as a water resource beneficial/ impactful on local economic development?
10. What measures have been put in place to include the residents in economic activities?

Objective 3:

To record a case study of the Jozini Dam in Kwa-Zulu Natal with an analysis of its changing Environment, the management of the Dam and its impact on the use of the Dam today, from the period between inception (why the Dam was built) versus (What the Dam has come to be used for), exploring the potential socio economic benefits of the Dam going forward

1. Currently the Jozini Dam is used for irrigation of 3000 ha/land in contrast to the 50 000 ha/land that was aimed for at the impoundment of the Dam, what causes this deficit between the amount of water that was intended for irrigation and the actual amount of 3000 ha/land that is currently used for irrigation?
2. What is the Mjindi Irrigation Scheme?
3. Are there any current

Interviewees:

Department of Water Sanitation: Provincial Water Department Water Resource Management Department: Surface Water Bongani Mdluli

Questions to address Objective 3:

1. What tools are used to manage the Jozini Dam?
   With regards to the water agreement between South Africa and Mozambique;
2. How has the relation through water provision to Mozambique been managed and up kept since the signing of the agreement, has the agreement with Mozambique had any impact on the use of the water in South Africa

Objective 4: To highlight and explore ways in which the Dam can be further exploited, (hydropower generation)

Questions to address Objective 4:

1. Is there a defined energy supply strategy for the Jozini and the surrounding areas?
2. Dams as water resources can be utilised through different avenues, these being: agriculture- irrigation, the generation of hydropower, the controlling of floods along a floodplain, currently the Jozini Dam is not used for the generation of hydropower, what are the potentials of exploring the used of the Dam for the generation of power to supply Jozini and the surrounding areas
5. What are the enablers?
6. What are the constraints?
   Can this be done?

4. Jozini Residents: -

1. Where are you currently getting water?
2. How do you pay for the water supplied to you?
3. How often do you get water?
4. How much water do you get?
5. Is there visible accessibility/ ways you in which you are able to access the water?

(If they do not have enough water, what needs to be done (to find out whether they think the dam should make a difference)

6. Is there easy accessibility of water? Atholakala kalula amanzi?
7. Do you pay for the water? If yes, how much do you pay for water?
8. What are you using the water for?
9. Do you feel that the municipality is providing sufficient water for your residential use?
10. Do you feel that you have enough access to water?
11. How has having the Dam in the area impacted on your socio-economic status?
12. Impacted on job creation avenues for you/ your family members?
13. Impacted in small business creation?
14. Do you use water from the Dam? How do you use it?
15. How are jobs/ work opportunities availed to the people related to the Dam /in general?
16. In which sectors are jobs created?

7.2 Interviews conducted

1. Community Leaders

In this section, the views of community as gathered and documented from interview responses related to the water supply challenges and concomitant challenges are discussed.

a). Traditional Leader in Mpondwane in Othokothini (15- 20 km from the Jozini Dam): Induna: Mr. Peter Nyawo

The role of a traditional leader (Induna) is to represent the local people to the political circle of leadership, he gathers the needs and grievances of his subjects and relays this to the local ward councillor to communicate the service delivery concerns of his ward (as a geographical jurisdiction) to the local municipality, accordingly. In the case of Mpondwane, the local municipality then communicates any feedback or progress update with regards to developments concerning submitted service delivery complaints or any sort of communication with the Mpodwene village through community forums that are held in the local town hall which are usually summoned by the local councilor (Mr. Mavundla from Thokothini) an area (near Msiyeni High School) about 7kms from the Jozini Dam.

Mr. Nyawo gave historical inclinations of the Dam, stating that the community of Jozini, residents of Mpondwane were not informed about the impoundment of the Dam when it was impounded years ago, he stated that before the Dam wall was constructed they had free flowing water adjacent to a big river. During that time residents of this area practiced subsistence farming, that is growing and irrigating their own crops, they also had their livestock grazing at the river. Specifically, the construction of the dam commenced in the 1960s and impounded in the year 1973, and Mr. Nyawo narrates that their lives changed as a result of this impoundment, as the water was now zoned and was not as free flowing, affecting their subsistence farming and the grazing of their livestock.

Furthermore, Mr. Nyawo states that the zoned Dam area used to be where they lived and as practice they buried their deceased loved ones on the backyards of their homes (this is still the practice in the area and also in rural areas in general).

As such and according to his view, the zoned water from the Dam affected them negatively as it covered the graves. Historically, this community lost their old residential area when it was zoned into a natural reserve (upon completion named Golele/White Elephant Nature Reserve) in the 1970s by the pre-democracy government. Wild animals such as elephants were moved into the area, effectively displacing local residents for the sake of animals. Thus it can be discerned that the local residents of this part of South Africa have suffered injustice centred on their land. The following specific question was poised to Mr. Nyawo to solicit further information:

Asked what in his view should be supporting livelihoods for people living in the area, Mr. Nyawo, articulated that land should be given back to its original inhabitants and owners as was before the Dam was compounded. There should be a programme of redistribution of land, redistribution of the very land taken and used as a reserve. With regards to water supply services in the area, he articulated that the only means they have with regards to getting water for their residential use or for grazing their livestock is:

- They take their livestock to the nearby reserve to graze them there, giving them water;
- The municipality brings water cans occasionally, without a defined scheduled;
- Through (isigwedlo) a water pump, pumping water from boreholes (in the area there are ten boreholes and of those there is only one borehole that is in working order) and;

  Rain harvested water, in the rare occasions when it does rain

Furthermore, Mr. Nyawo also state that they do not have electricity in the area; pointing out that they use candles to light up their homes, and cook outside with fire. He stated there is no electrical connection despite various promises for both water and electricity. There are electricity stations and posts in the area, however these were built for use at

the nearby reservoir, which was built in the year 2015 to assist with the connection of a water supply system, although the goal has not yet been realised. The presence of a reservoir and electricity posts brings about major contestations between the people and the local municipality, the grievance being that the residents can visibly see infrastructure that could remedy their lack of electricity and free flowing water yet they live without these amenities.

As a community leader, Mr. Nyawo articulated they are despondent and hopeless by empty promises by the municipality. There are little job opportunities for the people accept those few who work in farms, local lodges and those that migrate to the cities for work. There are a few who work through a local ‘zibambele’ programme manned by women cleaning the main road around the area with a R600 monthly stipend, this is not a permanent solution to the plight of unemployment in the area. Moreover, he emphasises that people in his area need basic needs such as water, electricity and inclusive avenues for creating widespread job opportunities.

Mr. Nyawo narrated the community does not pay for the little or insufficient water they get through water cans provided by the municipality, they also do not pay for the water they get from the boreholes, the water is provided for free. Mr. Nyawo narrates that four months prior to this interview, without prior warning to the residents there have been more elephants and crocodiles brought into the reserve, this makes their lives much more difficult than it currently is as they are now not able to take their livestock to the reserve for grazing without any possibilities of danger from the wild animals, which feed on the livestock. In an attempt to resolve this problem, Mr. Nyawo states he had a meeting with the Board of Directors from the reserve about these dangers, particularly regarding how the wild animals feed on the community’s livestock.

Moreover, there is also concern in the area about compensation for the livestock killed by the wild animals which is yet to be adequately addressed by the relevant authorities. Summarily, If the community do not take their livestock to the Nature Reserve where there is water the alternative is rain water (if and when there is rain), but even this option is

rendered less appealing by the fact that the Jozini Dam is dysfunctional, the KZN is a dry area and has been experiencing droughts lately, and the current low water levels (57%) at the Dam.

b). Interview: Mr. Prince Radebe, community activist, 9 March 2017. 13:00pm

Mr. Radebe is the president of the local business chambers and also part of the board of Kwa-Zulu Natal association of businesses as the chairperson for UMkhanyakude. Moreover, he is also the chairperson for the water user association, involving all Chiefs in the areas affected by the Dam and everyone who uses and is affected by the Dam. According to Mr. Radebe, the major abuse with the impoundment of the Dam is that it was built on residential areas, the effect of that being that it disturbed long-established patterns of existence and obliterated the residents' heritage.

He further explains that the people in the area are under the impression that the Dam was impounded in 1972 and was planned for by the then Apartheid government to be used by black farmers, stating this as misinformation as the Dam was impounded for white farmers – as depicted in the 1956 national water act no. 54.

Mr. Radebe however, claims that white farmers never actually got to farm in Makathini Flats even though it was planned and impounded for them. The Dam construction finished in 1972, the Soweto uprising occurred in 1976, influencing events that led to the seminal 1989 and 1990 release of political prisoners, creating space for negotiated settlement that led to the first all race democratic election in 1994.

According to Mr. Radebe, these political events are the reason attention was not given to the Dam, it was due to political turmoil resounding the country, another reason as cited by Mr. Radebe for the failure to maximise the use of the Dam is the exchange of political power between the National Party (NP) and the African National Congress (ANC). According to him, there was no proper handover, particularly related to debriefing on the Dam and its use, of power from the NP to the Government of led by ANC.

He further expands that during apartheid, black farmers in uMkhanyakude District Municipality were evacuated from their plots in Vryheid by the then government and later compensated with land from Makathini Flats, creating a mismatch of land reallocation.

Mr. Radebe explained that a traditional cleansing ceremony was necessary to be performed at the Dam area, as the impounding of the Dam has the water covering many of what was graves, thus a cleansing ceremony was held around the area in the year 2015, accompanied by the Minister of Water Affairs Ms. Nomvula Mokonyane.

Mr. Radebe asserts that there is a water system that started installation in 2014/15 and the work is still underway. In his view, the new water system might help to improve access to water from Jozini Dam.

c). Interview: Councilor Mokheni in Mkhuze, date: 22 March 2017 time, 11:30

As a councilor in Mkhuze, Mr. Mokheni states that the Jozini Dam is not sufficiently helping villagers in Nhlonhlela in a way that the residents anticipate it to help with water and electricity provision as well as job creation. This is despite the fact that they are living close to or in the vicinity of the Jozini Dam. With regards to water supply generally, he states that the water tanks that are filled by a water can twice a month is not enough to sustain the households, and that there is also the issue of lack of consistent and stable supply of water.

He states, a household with 10 individuals is given (4) 25 litres each time the water cans are delivered. As an alternative to this (as the supply is not stable) they source water from Mkhuze town in the Sekangi river, or alternatively from boreholes (although they are not always in working order) confirming that the water they are supplied with comes from uMkhanyakude District Municipality

2. Households

In this section, the interviews conducted focused on the accessibility of water by residents for household use only.

d). Interview: Gina Family in Mhlekazi in Mkhuze (20 km from Jozini)

In the Gina household, Mr. Bheki Gina a son of Mthobisi Gina who is the head of the household, is the breadwinner of the family. Mr Gina states that although there is the Jozini Dam in the area, they, however, do not have tap water, pointing out that the Dam is mostly used for tourism purposes and recreation without an apparent prioritization of the supply of clean water for household use. He indicated that they get water through the following:

- uMthonjeni, little water ponds which is not healthy or hygienic- adjacent to animal treatment;
- If there is a drought these little ponds dry up, limiting access to water. In this situation for those households that can afford, they buy water from the local town, that is 26kms away from their residence;
- They have one Jojo tank in the area, which are refilled once a year, without a clear schedule communicated to the residents and;
- When there is rain, they harvest the rain water.

With regards to job opportunities about 5% of the population works in the fields picking weeds. Others rely on vending and hawking. He states there are no hopes for further development in the area, and although the municipality promises to development the water infrastructure, there are no actions that indicate implementation of such plans. Moreover, he points out that there is no electricity connections for households, which leaves the community dependent on candles and wood fires for lighting, and cooking.

e). Interview: Mnyeni family in Mhlekazi, Mkhuze. 6 March 2017, 12:00pm

Mr. Sibonelo Mnyeni is one of three (3) breadwinners in his homestead of fourteen (14) members. He works at Sentrans Transport Company as a driver controller in Mkhuze, owned by Mr. Senekal a successful well known commercial farmer in the area. Mr. Mnyeni states that there is no clean water for household/residential use. He further points out that the municipality has not made means to connect them to the current water pipelines that pass through Mkhuze connecting Nongoma and according to him, this reflects lack of planning, comprehensive thought processes and consideration for the local people on the part of government officials. In his area, residents acquire water through the following means:

- Water cans that arrive twice a week are poured into the Jojo tanks;
- Rain water harvesting and;
- Boreholes which is 3 km away.

Moreover, he states that as far as employment in his area is concerned, most people work for Mr Senekal (the large commercial farmer and business man in the area), and that also an estimated 1 500 people work in sectors such as transport and logistics. In addition, others work for other farmers within the area and tourism generally. Mr. Mnyeni indicated the difficulty they experienced when attempting to infiltrate sectors like farming or tourism due to inaccessibility of funding and lack of water in the area. He views the government and local municipality as having failed the community, by not initiating measures that would ensure residents have enough clean water for residential use. Although people are politically involved and aware, they are not given information on development plans in the area. People have increasingly registered complaints with the municipality but they are given responses such as that the municipality lacks funds to build the necessary water supply system.

3. Farmers

In this section the views of farmers and others in regard to access to water for farming purposes specifically are discussed. The section details the responses of the relevant interviewees.

f). Interview: Commercial Farmer and owner of the Truck Transport System for farmers, and the sole Water Service Provider. Mr Andre Senekal. Date: 07 March 2017; 09:30. Interviewed at Sentrans Transport Company in Mkhuze

Mr Andre Senekal is the son of Mr Charles Senekal and has been living in the area for the past 36 years and has been utilizing the Jozini Dam water for recreational purposes throughout his life. He perceives that the Dam is currently under-utilised and poorly managed partly because of insufficient control of the Dam office site which has also led to development in the area being currently stagnant. He further states his concern regarding further development in the Makhathini Flats, due to informal settlements in the area which deem it almost impossible to further develop. Another concern identified by Mr Senekal is the current drought evident in the fact that the Dam level presently is at 39%. As a water service provider, he supplies water to the Zululand district for residential use, and to the Mkhuze town. As part of this mandate they pipe bulk water (for irrigation) to Jozini and areas around Jozini in the radius of 15/20 kilometres, with the role of the municipality in the water supply system being limited to purification of the water and also expansion of the supply system to households. The municipality is not able to fulfil this responsibility adequately; in fact it falls far off from achieving anything close to sufficient. The Municipality indicates that it would not be able to ensure steady water supply without adequate funding.

g). Interview: Charles Senekal 07 March 2017; 10:30, Interviewed at his home at the nature reserve in Mkhuze

Mr Senekal has been living in the area since before the Dam was built, he states the Dam was completed in 1965. He further indicates he also farms in Mpumalanga and Kwa - Zulu Natal in sugarcane farming.

The construction of the Jozini Dam was completed in 1972 yet it was not filled with water for a period of 12 years, the Dam was filled to capacity only after the Cyclone Domoina in the year 1984 The estimated cost incurred for building the Dam was about R45m yet has stood unused for its intended purpose of irrigation. In the past the area comprised of cotton farming, this has however, changed due to changes in cotton prices and more attractive returns from competing crops such as maize as a result, there has been a shift mainly towards sugarcane farming. A positive impact the Dam wall has had in the area is that it has played a lifesaving role to Makhathini Flats residents in the times of the time of the Cyclone Domoina.

h). Interview: Farmer Nathi Jele, local smallholder farmer in Makhathini Flats, date: 08 March 2017, time: 14:00pm. Interviewed at his farm in Makhathini Flats

Mr. Jele farms 25 hectares of land, farming sugarcane, beans and maize. However, currently he is struggling with accessing the market so he doesn't have a stable income through farming. Mr. Jele states that sugarcane farming is most sustainable throughout the seasons as compared to other types of farming as it has a huge market such as uMfolozi, River Vie, Hullet in eMpangeni, and TSB Sugar mill in Pongola.

According to Mr. Jele, water from the Jozini Dam is the responsibility of DWS and water flows are likewise controlled by DWS. He perceives that the Mjndi Irrigation Scheme have has water license, permitting them to extract water from the Dam to the farms, the water flows from the Dam to a nearby canal through to the pump stations, however, these pump stations are not regularly maintained, thus they leak, which in turn means less water for the farmers.

Themes covered:

- **Agriculture and Irrigation**

Mr. Jele and fellow farmers farm sugarcane in Makhathini Flats with the assistance of the Mjindi Irrigation Scheme whose role includes provision of irrigation services and advisory services to farmers. They also provide some irrigation facilities to farmers like pipes and other irrigation material and also, assist farmers with land preparation for planting. Mr. Jele acquired the land through Mjindi Irrigation Scheme without a prescription on what he should farm.

The water meters installed by Mjindi Irrigation Scheme do not work any longer and as a result, farmers are not able to read them, regarding their water usage. Therefore farmers cannot tell how much water they receive from Mjindi Irrigation Scheme; they gauge water available to them by how much land the water is able to irrigate. Moreover, water pumps installed by Mjindi Farming also do not work properly resulting in a slow supply of water. The farmers pay for the irrigation services provided by Mjindi Farming in the following formula: – R3000 per annum for one (1) hectare of land/ R3000x25 hectares=R 75000.

- **Land**

Mr. Jele rents the land that he farms from either the state (state land) or a trust, for instance the iSilwane Trust. He points out that land is paid for as follows: (i) state land= R 1800 per annum for one hectare of land/ R1 800x 25=R 45 000 and; (ii) trust land= R 300 per annum per annum/ R 300x25=R 7500per year. However, Mr. Jele states he would like to transition from being a smallholder farmer to a commercial farmer by acquiring more land to farm.

- **Logistics**

On harvest, they use transport services from Sentrans Transport (a logistics company located in Mkhuze Town (7/8km from Jozini), the trucks transport the sugarcane to a sugar mill in eMpangeni town, about 100kms from Jozini – the sugar mills subsidizes the farmers with transport costs which lowers logistical charges for the famers.

i). Interview: Samson Hadebe, farming in Pongola and Jozini. Date: 08 March 2017. Interviewed at his farm in Makhathini Flats

Mr. Hadebe has been farming for many years, first in Pongola and recently moved to Jozini 4 years ago. He farms vegetables such as butternut, cabbage, tomatoes, and green peppers. He is a commercial farmer, supplying agricultural produce to the local Shoprite, Checkers, Pick & Pay and Spar retail stores and, also has informal hawkers buying agricultural products from him. According to Mr. Hadebe, he has not had any negative reservations about the Jozini Dam; the Dam is enormous in size and feels there is enough water to supply all farmers in Makhathini Flats.

He has 24 hectares of land in Jozini, Makhathini and 43 hectares in Pongola, wherewith water supply is directly from the Jozini Dam through the Mthokostwana River. The land is fertile, very conducive for farming and is easily irrigated, which makes it an important asset for farmers around the area. He feels there is a potential to grow, to have more hectares to farm, but the challenge would be insufficient water supply. Other challenges also, are that the area is very dry and is currently under a drought. Furthermore, he states that there has been no assistance from the state, particularly drought relief funds. The land also has army worms and currently there are no chemicals/pesticides to relieve the issue. However, he indicates that the Mjindi Farming entity has ascertained that they will offer assistance.

The water that is used for irrigation by Mr. Hadebe comes solely from the Jozini Dam, through the services of Mjindi Farming/ Irrigation Scheme. The Mjindi Farming entity is an agricultural services agent that links the farmer to their water supply. It charges water on a monthly basis this depending on the crops farmed per season. The payment system from farmer to Mjindi Farming entity is based on crops season rather than the amount of water used. Although there have been droughts the recent cyclone storm in the area has assisted with water relief for irrigation to a certain extent. Mr. Hadebe is not just a farmers who is only focused on his farming business but also assist smallholder farmers through mentoring and guidance broadly.

According to Mr. Hadebe, there has also been a change in terms of farming dynamics, which has seen white farmers – farming everything in the area, Chinese farmers focusing on rice and black farmers specialising mainly in sugarcane and vegetables farming. He believes that these changes in farmer specification have been propelled by the fact that South Africa has seen political changes over the years.

j). Interview: 22 March 2017, 12:30. Interviewee: Mr. Simon Mtimbane- in Nyawo, Kwashukela, close to Makhathini, farms sugarcane

Mr. Mtimbane is a sugarcane farmer, he has been farming Sugarcane for 10 years in a 5 hectare farm, and he would like to expand the number of hectares he farms. Unfortunately, due to lack of water supply he has been unable to increase the hectares he farms. The water he uses is from the Pongola River, which comes directly from the Jozini Dam. They do not pay for the water they use as the water supply is not systemized. The water they use for irrigation is released from the Jozini Dam, which is the only source of water for irrigating their farms, and these ranges from the area of Kwashukela to Ndumo (close to Mozambique).

If there are no flows from the Dam, they have no means of getting water for irrigation and drinking. As a result, farmers in this area are increasingly abandoning farming because of lack of sufficient water supply. Another way they get water for irrigation is through rainwater harvesting, but this is reliant on rain, which is an occasional occurrence. Unlike the farmers supported by the Mjindi Irrigation Scheme, they rely on themselves to secure irrigation water.

Mr. Mtimbane sells his sugarcane to the Mtubatuba, Mfolozi sugar mill, and sometimes to the Tongaat Hullet in eMpangeni. He states, that Mr Senekal who has the sole water license from the department and hence operates as a WSP, controls access to water in the area, rather than small holder farmers from Makhathini.

Mr. Mtimbane has the perception that it is a lengthy and difficult process to acquire a water license and as a result majority of the farmers in the area have not undergone the process of applying for a water permit as they are unaware of the requirement of the process, they would like to undergo this process. He has the understanding that the Dam has a role to provide them with water as per the mandate of the Dam and the reason this assistance has not been in place, there has been a disjuncture caused by a lack or neglect of proper planning processes of water supply systems by the Department of Water Affairs. He states that although their land is fertile, the lack of water prohibits seamless farming.

Furthermore, even the residents do not have fresh water for drinking, they receive water from municipality provided in water cans, however this is not consistent, with the supply ranging from 3 weeks to a month, during which as an alternative they fetch water from the Pongola River with buckets.

k). Interview: Xolani Fihlani, 09 March 2017. Works at Mjindi Farming: Irrigation Control technician. Manages operations, maintenance of water services and infrastructure

The Mjindi Irrigation Scheme transports water from the Jozini Dam to various farms in Makhathini Flats, and provision irrigation equipment, water provision for irrigation and maintenance of the equipment provided to farmers. The Mjindi Irrigation Scheme has a water license, which permits them to draw water from the Dam and supply the water to the farms; the drawing of water is done on a weekly basis. Moreover, the Mjindi Irrigation Scheme is a state owned enterprise, under the Department of Agriculture, Forestry and Fisheries.

The Mjindi Irrigation Scheme has an agreement with the (DWS) to draw water from the Dam and provide it to farmers. The farmers sign a service agreement (water supply agreement) with Mjindi Irrigation Scheme that is renewable annually. They do not provide water to residents for residential use.

The Mjindi Irrigation Scheme does not operate without challenges, as they draw water from the Dam, when the Sluices (Flood gates) get closed by the DWS they have problems with a closed circuit of water, which affects water supply to the farmers.

The Mjindi Irrigation Scheme charges the farmers for the services they provide. The charge is based on a flat standard rate predicated on the number of hectares of land the farmer has. Nonetheless, this constitute an operational challenge for Mjindi Irrigation Scheme as it causes conflicts between Mjindi and farmers, as the calculation is based on the number of litres required per one hectare. This flat rate exists despite the fact that the farmers interviewed expressed they do not have a precise measure of how many litres they use. This is highlighted by the fact that Mjindi uses Bulk water metering to measure the outflow of water to all the farmers collectively rather than individually.

The water metre is installed in the flow metre which measures the amount of water farms get from Mjindi Irrigation Scheme. However, the challenge that emanates from this is that Mjindi farming has difficulty with measuring precisely how much water is going to the farms. In the near future Mjindi farming has planned to install new meters to the farms to replace the broken ones.

Furthermore, the water extracted is as follows: per week they extract 2m3 per second, with 33m3 per week. But there are issues with infrastructure leaking, and with the water canal running through Jozini being open for the public the people living in the surrounding areas divert the leaking water and use it for household purposes.

The Jozini Dam was primarily for farmers and irrigation. Mr Senekal is the water service provider (with a water licence) to the District municipality who in turn provides water to the local municipalities, through a procurement system, including the Jozini local municipality. The municipality does not have a water licence with the Department of Water and Sanitation to get water from the Dam.

There are also other water extraction points besides the Jozini Dam such as the Pongola River. The water supply system varies, water is extracted from the Dam by the service provider, and transmitted to the municipality for purifying and distribution. Water for irrigation is transported through the canal by the Mjindi Farming entity to the client farms.

l). Interview: Department of Water and Sanitation, an interview with Mr. Bongani Mdluli, 27 March 2017, at 10:00am

Mr. Bongani Mdluli is an official of the Department of Water and Sanitation (DWS) situated at the DWS's Regional Office in Durban. The duty of the Regional Office relating to the Jozini Dam infrastructure and water is to ensure the issuance of water use licences and water quota to those who apply for it. The office is responsible for, amongst others, ensuring that the Dam is well maintained with regards to water levels before authorising usage, opening of floodgates, and the latter enables them to fulfil the mandate/obligation South Africa has to Mozambique and Swaziland.

The Jozini Dam Manager reports to the Regional Office with regards to the control, maintenance and the overall upkeep of the Dam, and also ensures the right water quality and quantity. Furthermore, he/she reports on the ecosystem as a whole such as the upkeep of the aquaculture, approving or assessing Professional Service Providers (PSPs), assessing business entry to tourism, assessing the quality of recreational resources such as boats (petrol leaks etc.), and this is checked on a daily basis.

Moreover and as it pertains to illegal activities in the Dam, there are also those who engage in activity of fishing in the Jozini Dam without documentation that authorises such fishing. For example, Ngwanase is a fisherman who fishes illegally in the Dam and sell his fish harvest to consumers. However, the DWS does provide licences to fishermen when they follow through with the appropriate fishing permit application procedure.

4. Municipal officials

m). Interview: uMkhanyakude District Municipality: Technical services an interview with Mr. Bheki Temba, Regional Manager

The Operation and Management of water services for the uMkhanyakude DM is done at the district level only, not by the LMs. He states the municipality as a WSA has a water permit from DWS to extract water.

Identified Issues:
Mr. Tembe asked to refrain from talking/ answering questions regarding the relationship between Mr. Senekal and the Municipality, only stating that Mr. Senekal owns a farm and land in Mkhuze and surrounding areas.

Water Service Provider for the DM:
Mr. Tembe states the WSSA is a competent contractor, which is mainly a construction company, doing really well regarding its contractual duties with the municipality. However, he states there are many challenges such as non-payment of funds to the WSP, when funds are paid they are irregular as per their signed contract, as a result the municipality owes the WSP a large amount of money.

How WSSA was appointed:

The procurement of the WSSA happened through a tendering process of which they were appointed. Their duties are to monitor the sewerage and water plants, of which the municipality overseas the functioning and the work done by the WSP. They operate similarly to Rand water and Johannesburg water. In terms of the work coverage, they operate where the municipality cannot reach capacity wise, monitoring the blue and green drop, they have competent people like chemical engineers to undertake this technical work. Municipality is not capacitated to run a water plant, chemical engineers. As a result of non-payment, WSSA slowed down (like rand water), they had to relook the contract in terms of delivery, they are still operating but the municipality has considerably revised the outputs to be delivered by the WSP.

Challenges to water delivery:

Mr. Tembe indicated there are Illegal water connections in the area, disturbing illegal connections, affecting the billing system and in turn negatively affects the municipality's revenue collection. Bills are sky high. Also, residents in the area do not pay for water, they want free water without the consideration of the FBWP.

They use the revenue collection for operations and maintenance, insufficient funds means not much of the required monies are available to finance operation and management. The Revenue is collected from water users such as clinics, households, etc. The monies collected is not enough as not everyone is not billed properly, also, pointing out issues with the house meters and with illegal water connections.

He indicated that they not only collect water from the Jozini Dam but there are other rivers in which they get water from. Another challenge they are facing is the eminent drought in the area, which makes it difficult to operate. They are working hard to ease the drought situation.

A huge challenge the municipality is facing is regarding political will and direction, there is one, dominant political party that is caucus, therefore decisions are not infiltrated by other views which places issues of impartiality in the making of decisions. Also, the issue of staff continuity is a huge problem in the area that affects service delivery, municipal managers come in but do not stay in the positions for a long enough in order to implement their plans.

They get the Municipal Infrastructure Grant (MIG) which is allocated exclusively to new projects, e.g. Jozini regional water plant and the sewerage line in the area, and it is not used for maintenance and operations but for upgrading of infrastructure. As a result of the continuing drought and lessening of water on the water resources Mr. Tembe advocates for water Desalination as the best solution to the current problem.

7.3 Themed framework for document analysis

The framework for identifying and analysing documents was guided as follows;

1. **Sub- question;**

a). What was the main purpose of the Jozini dam. How drastic has the change in the utilisation of the dam water been? What has caused the drift?
b). How has the political environment changed in the new dispensation? What has caused the trajectory the dam has gone through?

Literature theme;

- Literature on the history (political, social and economic) transition of the Pongolapoort dam
- Literature on shared water resources, specifically S.A, Mozambique and Swaziland

2. **Sub – question;**

c). The SA Constitution of 1996 provides for the basic human right to water services. With Jozini boasting a big national water resource, how have the residents of Makhathini Flats and surrounding areas benefited regarding access to water and the trajectory to attaining economic development?

Literature theme;

- Literature on Local Economic Development
- Literature on the policy environment that governs water distribution, agricultural practices in South Africa, specifically Kwa - Zulu Natal and the political transition (trajectory)
- Literature on the trajectory of Irrigation Schemes in South Africa
- Literature on Governance and water governance

3. Sub – question;

d). Over time, how has the change in political leadership and management affected economic development?

Literature theme;

- Literature on Institutional arrangements pertaining to UMkhanyakude District, Department of Water and Sanitation, Jozini Municipality, Irrigation schemes (Mjindi farming)