

UNIVERSITY OF ZULULAND



**INVESTIGATING SMALL-SCALE COMMERCIAL AFFORESTATION IN QUATERNARY
CATCHMENT W70A AREA, MANGUZI, KWAZULU-NATAL: LIVELIHOODS, POLICY
AND CONFLICT.**

BY

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the Masters of Arts in Geography (Department of Geography and
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DECLARATION

It is my declaration that this research study entitled: “INVESTIGATING SMALL-SCALE COMMERCIAL AFFORESTATION IN QUATERNARY CATCHMENT W70A AREA, MANGUZI, KWAZULU-NATAL: LIVELIHOODS, POLICY AND CONFLICT”, except where specifically indicated to the contrary in the text, is my own work both in conception and execution. All the sources that have been used or quoted have been duly acknowledged by means of complete references. I further declare that this research project has not been previously submitted to any institution for degree purposes.

.....
LINDOKUHLE DENIS SIBIYA

.....
DATE

DEDICATION

This dissertation is dedicated to my parents Mr L.M and T.C Sibiya for their unwavering support and prayers. They have always been everything to me, always striving to see me succeed academically. They were very protective and cautious about my safety during the data collection process.

Dedication also goes to my siblings, Sihle, Bright, Thobe, Philani, Mxolisi and Xolisile Sibiya who have been helpful in everything.

I also dedicate this dissertation to my senior Pastor Dr N.D Ngema for his constant prayers and intercession.

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It must be boldly stated that this mammoth research project was completed through the power of God, who gave me strength and perseverance ***(Have you not known? Have you not heard? The Lord is the everlasting God, the creator of the ends of the earth. He does not faint or grow weary, his understanding is unsearchable. He gives power to the faint, and to him who has no might he increases strength. ISAIAH 40 V 28-29)***. Undoubtedly, there are a few individuals who deserve special mention and they include:

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ABSTRACT

The study investigates the nature and dynamic of the conflict over small-scale commercial afforestation for livelihood sustainability between the local communities of Manguzi and the Department of Water Affairs and Sanitation (DWS). The source of the conflict is the divergent priorities of the two parties involved. The rural communities practice small-scale commercial afforestation to earn and achieve sustainable livelihood, on the other hand the DWS perceives such practice as illegal because of the legislation such as Water Use License Application (WULA) which were not followed by these farmers. The study used mixed methods to get to the deepest understanding of the conflict. The researcher conducted semi-structured interviews with the DWS` official and with the rural communities. The study also used statistical data from the DWS to draw a correlation graph in order to understand the impact of this afforestation on water resources in Manguzi.

The study found that small-scale commercial afforestation in Manguzi is the main economic activity and some farmers have been involved in it for more than 20 years. This afforestation has physically contributed to the rural livelihoods through improved housing quality in this settlement area. It has also contributed socially through the improved state of health and a variety of skills gained. Lastly it continues to improve their socio-economic life through creating job opportunities, and the establishment of other businesses which serve as income diversification to the rural communities as per the Sustainable Rural Livelihood Framework which was employed as the theoretical framework guiding the study.

The DWS has an enforcement tool to deal with any non-compliance and illegal practices in South Africa. The DWS has proposed to use this enforcement tool to control this increasing development of afforestation. The enforcement tool will force rural people to refrain from these plantations and the existing plantations will be removed. This is the cause of the conflict because the DWS as the custodian of the country`s water resource, has a mandate to control any water-related activities, but this is the only economic activity that has proven to be successful in Manguzi. This has caused the rural communities to be highly dissatisfied with the governance of forestry in Manguzi.

Keywords: *small-scale commercial afforestation, rural livelihood, conflict, legislation.*

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Acronyms and Abbreviations

AFI	-	Awethu Forestry Investment
CBNRM	-	Community Based Natural Resources Management
CMA	-	Water Catchment Area
CME	-	Compliance Monitoring and Enforcement
DWS	-	Department of Water and Sanitation
FAO	-	Food and Agricultural Organisation
FSC	-	Forestry Stewardship Council
Ha	-	Hectares
IWRM	-	Integrated Water Resource Management
JFM	-	Joint Forest Management
KFD	-	Karnataka Forest Development
LED	-	Local Economic Development
MAR	-	Mean Annual Runoff
NWA	-	National Water Act
NWRS	-	National Water Resources Strategy
PAIA	-	Promotion of Access to Information Act 2 of 2000
PAJA	-	Promotion of Administrative Justice Act
PTO	-	Permission To Occupy
SFRA	-	Stream Flow Reduction Activity
SRLF	-	Sustainable Rural Livelihood Framework
TC	-	Traditional Court

TTA	-	Tembe Tribal Authority
Umhlabuyalingana LM	-	Umhlabuyalingana Local Municipality
UTDS	-	Umhlabuyalingana Tourism Development Strategy
WBZ	-	Watercourse Buffer Zone
WMA	-	Water Management Area
WULA	-	Water Use License Application

CHAPTER 1: ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Worldwide, approximately 1.6 billion rural people derive their livelihoods fully or partially from products derived from local forests FAO [Food Agricultural Organisation] (2018). These rural people live within or next to the forests and have depended on forests to meet their basic needs for survival and livelihoods from generation to generation (Shackleton et al, 2007). The substantial contributions of forest products to the income of rural households, including the reduction of poverty cannot be ignored; however, this dependence has indicated negative impacts on the environment such as forest resource depletion, soil erosion, water pollution, and climate change. Shackleton et al, (2001) states that forests provide three types of benefits to the rural communities, namely; the supply of basic needs, a saving of cash resources, and a buffer or safety-net during times of misfortune.

In many countries such as India (Das, 2012), Uzbekistan (Bobojonov et al, 2013), Canada (Colchester 2006) and Argentina (Vertessy et al, 2000), the practice of small-scale commercial afforestation especially by local people for livelihoods has led to conflict with laws which regulate such practices. Some of the conflicts are based on the fact that the small-scale commercial farmers destroy the environment and reduce stream flow. A case in point is that of India. The government of India (2002) stated that the afforestation by local communities in some hilly country catchments was not controlled; therefore, these forest plantations interrupted rainfall by collecting water through its canopy. Some of this water was then evaporated back into the atmosphere and thus prevented from entering rivers and streams. This process is known as interception loss or wet leaf evaporation (The Government of India, 2002).

In South Africa, afforestation has been declared as a stream flow reduction activity (SFRA) regulated by means of a licensing system in terms of Chapter 4, Section 36 of the National Water Act (No. 36 of 1998). In the development of the National Water Resources Strategy [NWRS, 2004] (a process that included extensive public participation) 19 Water Management Areas (WMA) were defined for the country. It was

envisaged that in each WMA a Catchment Management Agency (CMA) would be established. This was a significant departure in approach to the management of water resources. However, there were concerns raised during the gazetting of the original water management areas as to the capacity of the country to support 19 CMAs. Taking these matters into consideration, a decision was made to reduce the number of water management areas to 9, concurrently requiring the establishment of 9 CMAs. In 2012, The Minister of Water and Sanitation approved the establishment of 9 Catchment Management Agencies, which are; 1. Limpopo, 2. Olifants, 3. Inkomati-Usuthu, 4. Pongola-Umzimkulu, 5. Vaal, 6. Orange, 7. Mzimvubu-Tsitsikamma, 8. Breede-Gouritz and 9. Berg-Olifants. The aim of these CMAs was to decentralise responsibility for managing water resources so that water users and the public at large can also play a part.

This study examines how the rural communities derive their livelihoods through Small-scale commercial afforestation in Manguzi within CMA No. 4 (Pongola-Umzimkulu) particularly in the North-eastern part which is quaternary catchment W70A. Manguzi is located in Umhlabuyalingana Local Municipality (uMhlabuyalingana LM) in the North-Eastern part of KwaZulu-Natal in South Africa. This CMA is currently managed by the Department of Water and Sanitation (DWS) as it has not been declared operational (DWS, 2017). The area was chosen for this study because it is where the DWS has identified unlawful development of afforestation being practiced by the local communities for their livelihoods. The study analyses the role of this small-scale commercial afforestation in livelihoods generation. The response of local authorities to this so-called illegal afforestation is also analysed. The study uses the Sustainable Rural Livelihood Framework (SRLF) as a theoretical framework.

1.2 PROBLEM STATEMENT

Most rural communities in developing countries including South Africa derive and sustain their livelihoods through farming, ranging from subsistence farming, cash-crop farming as well as small-scale commercial farming (Khathiwada et al, 2017). However, there are areas that are regarded as CMAs in South Africa, these areas are protected by the

Department of Water and Sanitation. Jele (2012) states that the CMAs are governed by laws such as National Water Act which emphasizes the need to protect the natural ecosystems to ensure that they stay in good condition for the benefit of the current as well as the future generation.

The rural communities in Manguzi practice small-scale commercial afforestation in the North-eastern part of CMA Pongola-Umzimkulu (which is not yet operational) in order to sustain their livelihoods. If this CMA was operational, there would have been a designated Catchment Management Agency to manage all water related issues emanating on that catchment. With the absence of the Catchment Management Agency, the DWS is the custodian for the management of such catchments. These small-scale commercial practices create job opportunities for rural people who include forest owners, timber cutters, truck loaders and others.

On the other hand, the Department of Water and Sanitation regards these practices as the unlawful development of afforestation, leading to conflict. The main concern of the Department of Water and Sanitation is that the area is ecologically sensitive. It consists of forest reserves and heritage sites which among include; iSimangaliso Wetland Park, St Lucia Lake System, turtle beaches and coral reefs, Lake Sibhaya, Kosi Lake System, Ndumo Game Reserve; Sodwana Bay; and Tembe Elephant Park. As a result of this afforestation activities, some wetlands have been reported to be drying up, and stream flow reduction has been noticed in the Department of Water and Sanitation gazette (Notice 1027 of 2015).

Bobojonov et al (2013) states that in Uzbekistan (Central Asia), the livelihoods of rural communities highly depend on forests. Afforestation in Uzbekistan is seen as one of the livelihood diversification options, as it provides a range of employment opportunities which improve the household's income. This dependence on forests was also found in the study conducted by Hlaing et al (2017) in Myanmar, which indicated that rural people depended over four times more on forest products for their direct consumption than for their cash generation on the basis of the monetary values of forest products. Bobojonov et al (2013) states that communities depend on small-scale commercial forestry but the governmental policies and laws prohibit forestry in some places, except if its large-scale

commercial afforestation. As it appears that even in other countries, where there is high dependence on forests, there are concerns with the regulatory authorities, it is of high importance to investigate such scenario to find the underlying factors causing conflicts between the communities and authorities. This is why this study analyses the response of the local authorities to the small-scale commercial forestry in Manguzi. This analysis is important because Sustainable Rural Livelihood Framework (SRLF) states that the institutional processes and organisational structure somehow limit rural people's access to certain livelihood resources through some laws and regulations (Scoones, 1998). Understanding the root cause of this conflict can contribute towards finding amicable solutions to both involved parties.

This study investigates this scenario with the aim of unpacking the conflict and its implication on the livelihood of the people involved. This is important to emphasize because unemployment and poverty in Manguzi is very high and people practice small-scale commercial afforestation in an attempt to earn a living (Ndlovu, 2018). From the point of view of the authorities such as the DWS, this is illegal but, according to the local communities, this is the only way to earn a living. Since afforestation is regarded as a stream flow reducing activity, the DWS has a mandate of regulating any afforestation by means of licensing and by analysing the sensitivity of the location of those plantations to minimise negative hydrological issues. It is for this above reason, that the DWS regards these small-scale commercial afforestation practices as illegal because legislation in place has not been followed by these local communities and the area has been declared ecologically sensitive.

1.3 RESEARCH AIM, OBJECTIVES AND RESEARCH QUESTIONS

1.3.1 Aim of the study

The study aims to investigate the nature and dynamics of the conflict over small-scale commercial afforestation for livelihood sustainability between the local communities and the Department of Water Affairs and Sanitation.

1.3.2 Objectives of the study

The specific objectives of the study are to:

- a) Examine the role of small-scale commercial afforestation in livelihood generation.
- b) Explore the response of the local authorities to the unauthorized development of afforestation.
- c) Analyse the perceptions of the local communities towards the regulatory authorities.

1.3.3 Research questions

The study was based on three research questions:

- a) How does small-scale commercial afforestation aid in livelihood generation?
- b) Why should the local authorities respond to this unauthorized development of afforestation?
- c) What are the perceptions of the local communities towards the regulatory authorities?

1.4 SIGNIFICANCE OF THE STUDY

Recent studies suggest that many forestry laws and regulations discriminate against small-scale producers and that a large number of people depend on the small-scale illegal forestry activities to survive (Colchester, 2006). It is possible that enforcing these laws might potentially socio-economically harm poor people. It is also possible that some government authorities would selectively target small producers, truck drivers, and forestry workers rather than the big players who are responsible for most of the real problems (Colchester, 2006). Given this, it is important to understand what greater forest law enforcement might imply in different contexts. This study sheds light on the impacts of government policies on local people and rural livelihoods. This study contributes to the body of knowledge because it reveals the perceptions of the local communities towards the regulatory authorities, and concerns of whether the local communities are included or excluded in the process of formulating the policies.

1.5 OUTLINE OF THE STUDY

The study consists of seven chapters. Chapter one introduces the reader to the research and problem statement. It also states the aim and objectives of the study. Chapter two discusses the conceptual and theoretical framework, on which the study is built upon. Chapter three discusses the literature review related to small-scale commercial afforestation as a source of rural livelihoods. Chapter four is a detailed description of the physical setting of the study. Chapter five is the research methodology, and it explains the research design which was followed in this research. Chapter six analyses data and by these means respond to the study objectives and research questions. Chapter seven concludes the overall study and also provides recommendations.

1.6 CONCLUSION

This chapter has introduced the reader to the study and its background. The problem statement was discussed. The aim, objectives and research questions were explained in this chapter. This chapter also covered the significance of the study and lastly the outline of the study. The next chapter discusses the theoretical and conceptual frameworks of the study.

CHAPTER TWO: THEORETICAL AND CONCEPTUAL FRAMEWORKS

2.1 INTRODUCTION

This chapter focuses on the conceptual and theoretical frameworks which guide this research. To achieve this, the chapter is organised into two parts. The first part defines the concepts, which inform this study. The second part discusses the theory which underpins this study which is Sustainable Rural Livelihoods Framework.

2.2 CONCEPTUAL FRAMEWORK

There are several concepts which inform this study and these are; Small-scale commercial afforestation, Rural Livelihood, Sustainable Rural Livelihoods Framework, Policy and Conflict. These concepts are briefly explained to show how they have been applied in this research.

2.2.1 Small-scale commercial afforestation

Afforestation is the establishment of a forest or stand of trees in an area where there was no previous tree cover. It can also be defined as an act of converting open land into a forest by planting trees or their seeds (Siyag, 2014). Afforestation can be done through tree planting and seeding naturally or artificially. Afforestation can be either commercial or subsistence (Siyag, 2014). For the purpose of this study, afforestation refers to small-scale commercial afforestation which is planting the trees mainly for small-scale trade, however characteristics that define small-scale commercial farming are debatable and context-specific. One of the sources of incongruity regarding the definition is the size of the plot, for example Karumbidza (2005) states that any farming activity practiced on a plot that is 20h or less falls under small-scale commercial. Other scholars bases the definition on the location of the plot, for example Jele (2012) asserts that small-scale commercial farming takes place just outside people` homes on their pieces of land.

This study adopted the definition by Howard et al (2005), It must be noted that this definition of small-scale commercial afforestation is only limited to the South African context.

According to Howard et al, (2005), a farmer must possess some or all the specific characteristics in order to be regarded as a small-scale commercial farmer. A small-scale timber grower is an individual who has less than 50 ha of plantation. He or she should be a “previously disadvantaged individual” (PDI), meaning someone who was disadvantaged by the policies of the previous apartheid government in terms of access to land, education, business opportunities, etc. Most black people in South Africa are considered to be previously disadvantaged. Women, irrespective of their race, are also considered to be PDIs in some contexts Jele (2012). Small-scale commercial timber grower is also an individual who does not have formal title to the land on which the trees are grown but has a lesser tenure status such as a “permission to occupy” or simply permission from the INkosi (chief) or tribal authority to use the land.

These are the characteristics that this study is based on, when mentioning small-scale commercial afforestation.

2.2.2 Rural Livelihoods

A rural livelihood is defined as: “the capabilities, assets (stores, resources, claims and access) and activities that rural people require for a means of living”. It is considered sustainable “when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future while not undermining the natural resource base”, (Carney 1998: p4). Mphande (2016) defines rural livelihood as the activities, the assets and the access that jointly determine the living gained by the rural dwellers. Chinangwa et al (2016) further states that rural livelihoods comprise both material and social resources that rural residents have access to. Though the definition of a rural area is of conceptual debate, this study adopted a definition by Mphande (2016) which states that rural area is an open piece of land sparsely populated with scattered homes and minimal infrastructure. Therefore, this study wanted to find assets and access that rural farmers in Manguzi have to earn a living as a result of small-scale commercial farming.

2.2.3 Water Catchment Area (CMA)

A catchment is an area where water is collected by the natural landscape. In a catchment area, rainwater run-off will eventually flow to a creek, river, dam, lake, ocean,

or into a groundwater system (Hunterwater, 2017). Hill Country Alliance states that water catchments are widely recognized as the most effective management unit for the protection of water resources, both water quality and supply. A water catchment (commonly referred to as a “watershed”) is an area of land where all water flows to a single stream, river, lake or even ocean.

Natural boundaries of water catchments can be very small for a single creek or stream or quite large for example, the Colorado River basin. Hill Country Alliance encourages the use of the term “water catchment” over “watershed.” A water catchment area is home to a complete water-cycle system. Hill Country Alliance further states that in order to manage these systems for a healthy future, one must learn to catch, conserve and make wise use of all water in the system, rather than “shed” that water away as the term “watershed” implies. This is where illegal afforestation takes place in uMhlabuyalingana LM, which is why there is a conflict between the DWS and the local communities.

In South Africa, there are 9 CMAs, although some are not yet operational (Cole et al, 2018). This study is only limited to CMA No. 4 which is known as Pongola-UMzimkhulu, one of the largest CMAs. Within this CMA, the study is narrowed to quaternary catchment W70A where Manguzi is located. Quaternary catchment is known as a fourth order catchment in a hierarchal classification system in which a primary catchment is the major unit (Cole et al, 2018).

2.2.4 Policy

Pal (2005) asserts that policy refers to a distinct path of action which is suitable for the pursuit of desired goals within a particular context, directing the decision making of an organization or individual. A policy often comes in the form of general statements about priorities, written regulations or guidelines, procedures and/or standards to be achieved. The above view of policy corresponds with the Centers for Disease Control and Prevention [CDCP], (2020) which explains policy as a law, regulation, procedure, administrative action, incentive or voluntary practice of governments and other institutions. For the purpose of this study, policy refers to all the regulatory set of laws and restrictions imposed by the government departments which has impacts on the rural

livelihoods. This is very important to include because, it is widely known that rural communities depend on small-scale plantations for their livelihoods, however, these communities are often sidelined in making decisions on how the forests they depend on are used and governed (Hlaing et al 2017). As a result, their livelihoods and often, their way of life are severely threatened

2.2.5 Conflict

Conflict can be defined as a state of discord caused by the actual or perceived opposition of needs, values and interests (Royal Geographical Society). Levi (2013) postulates that conflict is a situation in which conditions, practices, or goals for the different participants are inherently incompatible. Thakore (2013) defines conflict as a struggle or contest between people with opposing needs, ideas, beliefs, values or goals. The above three definitions are used in this study because the study is based on the discord and incompatibility of goals, needs, values, ideas and practices by the rural communities and the DWS. Rural communities practice afforestation in Manguzi in order to derive livelihood, on the other hand, the DWS regards this practice as illegal according to water governance policies in South Africa, and these plantations are said to be causing water-related disturbances. Therefore, opposition between the two parties involved is a source of a conflict that was investigated in this study.

2.3 SUSTAINABLE RURAL LIVELIHOODS FRAMEWORK (SRLF)

Binder et al (2013) states that theoretical framework is known as the structure that can hold and support a theory of a research study. It plays an important role in guiding the entire process of research study, because it limits the scope of the relevant data by focusing on specific variables and defining the specific viewpoint (framework) that the researcher will take in analysing and interpreting the data to be gathered (Binder et al, 2013). This chapter discusses the elements and application of Sustainable Rural Livelihoods Framework. The Sustainable Livelihoods Framework is a way of understanding how households derive their livelihoods by drawing on capabilities and assets to develop livelihood strategies composed of a range of activities (Krantz, 2001).

The framework defines and categorises the different types of assets and entitlements which households have access to.

The framework examines the different factors in the local and wider environment that influence household livelihood security (Krantz, 2001). The SRLF basically shows how, in different contexts, sustainable livelihoods are achieved through access to a range of livelihood resources/ capital (natural, economic, physical, human and social capitals) which are combined in the pursuit of different livelihood strategies (agricultural intensification or extensification, livelihood diversification and migration). Central to the framework is the analysis of the range of formal and informal organisational and institutional factors that influence sustainable livelihood outcomes (Scoones 1998).

Scoones (1998) further summarizes this framework as an analytical tool for answering some questions which include; how can one assess who achieves a sustainable livelihood and who doesn't? In other words, what are the relevant outcome indicators? The outcome indicators include reduction in poverty, increased numbers of working days and lastly, improved well-being and capabilities. What are the livelihood resources/ capital, institutional processes and livelihood strategies which are important in enabling or constraining the achievement of sustainable livelihoods for different groups of people? What are the practical, operational and policy implications of adopting a sustainable livelihood approach?

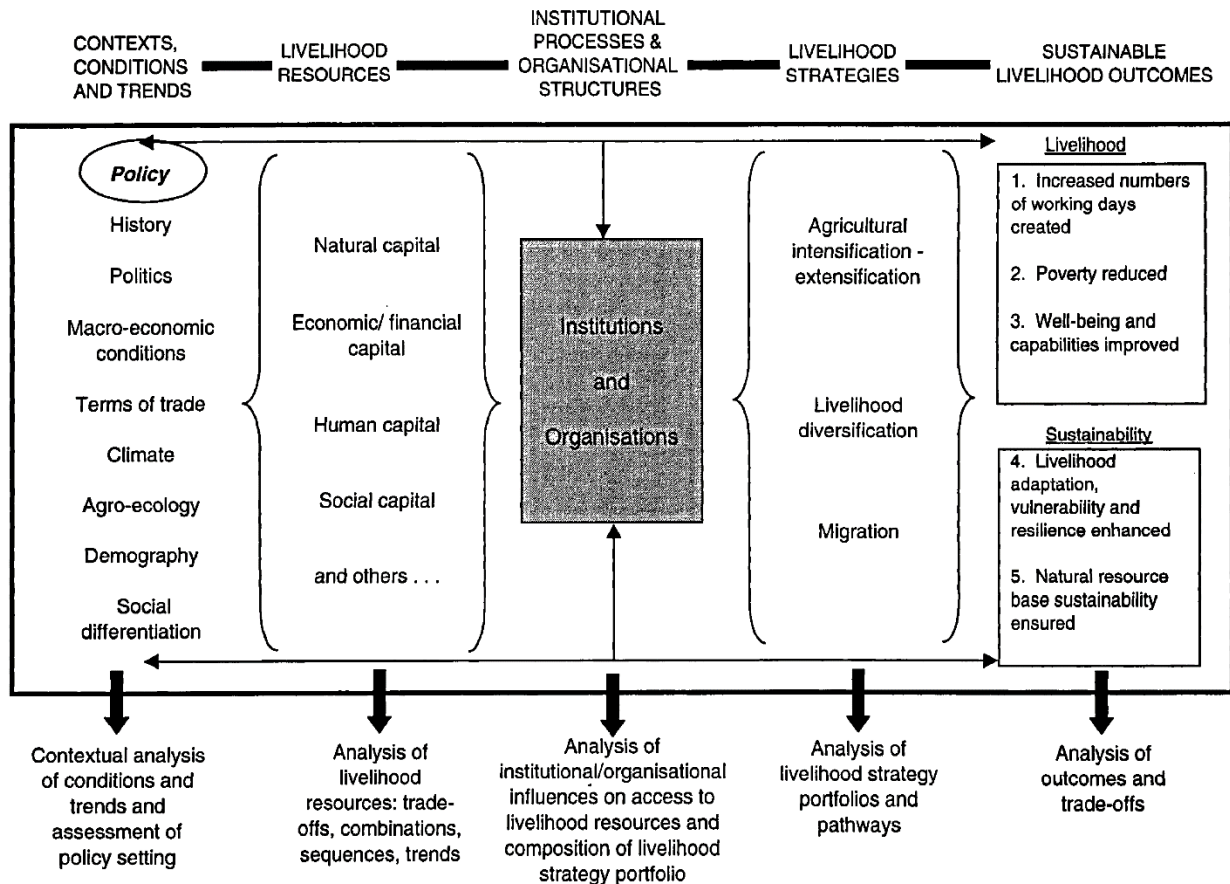


Figure 2.1: The Sustainable Rural Livelihoods Framework (Carney 1998: 48)

The SRLF is explained using a diagram by Carney (1998), which shows components that must be critically understood before one can conclude about rural livelihoods and their sustainability. This framework highlights five interacting elements: contexts or trends; resources; institutions; strategies; and outcomes.

The first component encompasses contexts, conditions and trends. This states that although there will always be global trends about rural livelihoods; there are different conditions and contexts which must be clearly and uniquely defined when studying rural livelihoods (Carney 1998). Given a particular context (of policy setting, politics, history, agro-ecology and socio-economic conditions), different and feasible combination of livelihood resources (physical, natural, economic, social and financial) are required, which will then result in the ability to select the realistic and achievable livelihood strategy

or the perfect combination (agricultural intensification/ extensification, livelihood diversification and migration) with a different but unique outcome. Scoones (1998) further states that of particular interest in this framework are the institutional processes (formal and informal institutions and organisations) which mediate the ability to carry out such strategies and achieve (or not) such outcomes. One of the objectives of the study is to examine the role of small-scale commercial afforestation in rural livelihood generation and their sustainability, therefore the SRLF is suitable as it provides range of factors which contribute to livelihood generation.

According to FAO (2018), about 300 million people depend directly on forests and 1.6 billion indirectly. Therefore, forest communities play a fundamental role in the conservation of tropical forests worldwide. However, there is a common tragedy on these communities, they are often side-lined in making decisions on how the forests they depend on are used and governed. As a result, their livelihoods and often, their way of life are severely threatened. That is why the second objective of this study is to assess and analyse the response of the local authorities to this so called “unlawful development of afforestation”.

The third objective of this study is to analyse the perceptions of the local communities towards the regulatory authorities. Since this study seeks to zoom in on the case study of rural communities in Manguzi, it is imperative to hear the voice of the local communities concerning these DWS responses. This is important to find out because the SRLF states that there are institutional processes and organizational structures which can impose some threats to the livelihoods of rural communities (Scoones, 1998). Institutional processes and organizational structures include government departments and their operational laws as well as regulations which affect the rural livelihoods. The Department of Water in this case represents such government departments, therefore the study hopes to find the legislation in which the DWS operates under, which influence their response to the afforestation taking place in Manguzi, because based on the SRLF that legislation can either promote or compromise the rural livelihoods.

The ability to pursue different livelihood strategies including agricultural intensification/ extensification is dependent on the basic material and social, tangible and intangible

assets that people have in their possession (Scoones, 1998). Drawing on an economic metaphor, such livelihood resources may be seen as the `capital` base from which different productive streams are derived from and on which livelihoods are constructed (Scoones, 1998). In Figure 2.1, five different types of capital can be identified.

Natural Capital

This refers to the range of natural resources that are not only available but also accessible to the rural dwellers in order to execute any livelihood strategy (Carney 1998). Examples of natural resources include but are not limited to soil, water, air, genetic resources etc. As the study is concerned about the small-scale commercial afforestation taking place in the Quaternary Catchment W70A, it is important to take note of the natural resources that the rural dwellers have in their possession or those that they have access to. This cannot be ignored because rural communities require land and water to practice their small-scale commercial afforestation.

The cause of the conflict between the rural communities and the Department of Water and Sanitation is over the land and water use, because the main argument of the DWS is that these small-scale commercial afforestation practices are taking place inside the protected area, and they cause a reduction in the volume of water in the wetlands around the area. Since the first objective of this study is to examine the role of this small-scale afforestation on the livelihoods of these rural communities, the ramifications of the intention by the DWS to stop these plantation practices on rural livelihoods are discussed in this research.

Economic or Financial Capital

This refers to economic assets available and accessible to the rural dwellers. These include; cash, credit/debt, savings and other assets which are essential for the pursuit of any livelihood strategy (Carney, 1998). This is important to investigate because if rural dwellers have access to financial institutions' services, they are likely to successfully implement agricultural intensification/ extensification through forestry. In most cases, if rural communities do not have access to financial capital, they are less able to

implement their small-scale commercial afforestation properly, thus leading to their livelihoods being unsustainable.

Human Capital

This looks at the necessary skills, knowledge, ability to labour and good health and physical capability crucial for the successful pursuit of different livelihood strategies (Scoones 1998). People with skills and knowledge in any field are likely to be proficient and successful (Farrington, 1999). It is also important to check if these people who practice small-scale commercial afforestation have the necessary skills and knowledge to keep their small business running smoothly, thus creating an enabling environment for sustainable livelihoods. It might happen that these rural communities do not have skills, perhaps that's why there are negative environmental impacts that the DWS is linking to these practices.

Social Capital

The social resources (networks, social claims, social relations, affiliations, associations) upon which people draw when pursuing different livelihood strategies requires coordinated actions (Carney, 1998). This is very important to incorporate because, currently, the government invests in groups, co-operatives and associations not individuals. It must be investigated if these growers belong to any small scale growers' association because it is easy to get government funding if they belonging to an already well-established structure.

Physical Capital

This capital consists of tangible materials that can be helpful to the rural dwellers to implement any livelihood strategy (Carney, 1998). These include infrastructure (buildings, roads) and production equipment and technologies. If people do not have proper physical resources such as roads and necessary equipment, their practices of trying to earn a livelihood and make it sustainable will be impeded. Even if these small growers have a market, it will be difficult to reach the market on time, and transportation costs would perhaps be higher. Since previous studies (Karumbidza, 2005) show that

rural communities receive assistance from companies such as Sappi and Mondi, the concept of physical capital as advanced in the SRLF, is helpful in analysing the physical resources available to the communities. The above 5 factors are essential for directing rural people as to which livelihood strategy is feasible and attainable, thus using this framework in this study leads to the in-depth understanding of the role of this small-scale commercial afforestation in livelihood generation.

Other elements of the framework include institutions, organisations, policy, politics and history (Carney, 1998). This is very important to describe because different people clearly have different access to different livelihood resources because of institutional arrangements, organisational issues, power and politics (Carney, 1998). Livelihood resources need to be combined to pursue any livelihood strategy. In Figure 2.1, the Framework has given particular emphasis to the study of institutions and organisations, policy and politics because somehow they limit rural people's access to certain livelihood resources through some laws and regulations.

The institutions and organisations that can influence these small-scale commercial afforestation practices are; Umhlabuyalingana Local Municipality, Department of Water and Sanitation, Department of Agriculture, Forestry and Fisheries (DAFF), Ezemvelo KZN Wildlife, Department of Environmental Affairs Natural Resources Management Unit and Wildlands Conservation Trust. One must note that the study is only based on the DWS. This institution has its own policies, power and politics which can have impact on the rural livelihoods (Scoones, 1998). This constituent of the framework also focuses on different policies that the institutions and organisations have in place which can hinder rural dwellers from accessing different resources especially natural ones such as land and water. Since this study also aims to explore the response of the local authorities to this small-scale afforestation, this constituent of the framework is very important to accentuate because any action taken will affect rural livelihoods in many ways.

According to the Sustainable Rural Livelihoods Framework shown in Figure 2.1, there are three livelihood strategies available to the rural dwellers; namely agriculture intensification/ extensification, livelihood diversification and migration (Peterson and

Pederson, 2010). This study only uses agricultural intensification/ extensification focusing on forestry because the rural communities in Manguzi practice small-scale commercial afforestation as a livelihood strategy. History reveals that many rural dwellers within Umhlabuyalingana Local Municipality have been growing small blocks of timber for more than 30 years with assistance from Sappi and Mondi's small grower programmes. This shall be explained in details in chapter six (Tembe, 2012).

This last concept about the SRLF is about answering a question on how can one assess who achieves a sustainable livelihood and who does not? In other words: what are the relevant outcome indicators (Carney, 1998)? This is important to take note of because one of the core objectives of this study is to find the role of small-scale commercial afforestation on the livelihoods of the local community. In order to find the role one has to identify some outcomes that will make it possible to conclude on the role. Amongst other desirable outcomes of this framework include but not limited to increased number of working days, poverty reduction wellbeing and improved capabilities (Carney, 1998).

2.4 CONCLUSION

This chapter has explained the concepts on which this study revolves and these being; Small-scale commercial afforestation, Rural Livelihood, Sustainable Rural Livelihoods Framework, Policy and Conflict. The chapter has also explained the Sustainable Rural Livelihoods Framework and how it guides this study in terms of focusing on different resources/ capital that people have access to. It is believed that, if people have access to a variety of these resources, they are more likely to achieve any livelihood strategy especially agricultural intensification/ extensification with the focus on forestry. The next chapter discusses the literature review in which this research is situated.

CHAPTER 3: LITERATURE REVIEW

3.1 INTRODUCTION

This chapter discusses the trends and patterns of small-scale commercial afforestation in rural areas across the world. This chapter also outlines the impacts associated with small-scale commercial rural afforestation on rural livelihoods, and its implications on the environment. Policies and governance associated with small-scale commercial afforestation are also reviewed in this chapter. The history of small-scale commercial afforestation and water governance in South Africa is also discussed.

3.2 OVERVIEW

Forestry has always served the basic needs of human beings, even in earlier centuries, in terms of providing shelter, medicine, fuel, protection, shade and tools, and meeting various other needs (Shrivastava et al, 1996, Ali and Keil, 2007). It has the potential of boosting the livelihood standards of local people and contributing to rural development (Le et al, 2012) and this is why many rural communities are becoming more involved in forestry (McIlveen and Bradshaw, 2009). One of the objectives of this study is to examine the role s of small-scale commercial afforestation on rural livelihoods of people who are involved in this type of forestry in Manguzi. This is important to investigate because in earlier centuries although rural communities were involved in small-scale forestry, the motive was not merely the selling of the forest products to the reliable markets such as companies which produce paper as it is the case these days.

The focus was mainly on meeting their needs such as shelter, fuel and medicine etc. Employment opportunities in rural areas are finite and households depend on natural resources for income to meet their daily livelihood needs (Jele 2012). Small-scale commercial farming is aimed at making a profit which contributes to the household's average total income (Karumbidza, 2005). Research in different parts of the world shows that households engaged in small scale-tree farming, as opposed to producing alternative crops in partnership, proved to be the most profitable initiative (Vermeulen et

al, 2008). This is why one of the objectives of the study is to analyse the role of small-scale commercial forestry in livelihood generation in the rural area of Manguzi.

Colchester (2006) outlines that even in a developed country like Canada, forests are central to the livelihoods of indigenous peoples, both in terms of non-cash income and for cultural reasons. Forests are used intensively for game, non-timber forest products (NTFPs), farmland and forest fallows, fuel-wood, timber extraction, environmental services, subsistence, barter and trade. Forest residents are often also engaged as wage labourers or as small-scale suppliers in local timber industries (Colchester 2006). This study reveals how rural people in Manguzi are involved in small-scale commercial forestry. In Canada, some people are involved as forest owners, cutters, truck-loaders and drivers.

Biswas (2003) states that in India it has been observed that wherever there is a large concentration of forests, there is also high concentration of tribal people in particular, and of the rural population in general, who are dependent on forest resources for their livelihoods. For many of them, not only do the resources provide economic sustenance, but the forest is also a way of life socially and culturally. It meets basic needs like fuel wood, fodder and small timber that are important for them and their livestock. Biswas (2003) further elaborates that wherever restriction to the access of forest resources is imposed, poverty and suffering among the rural people increases. The Department of Water and Sanitation (DWS) gazette (2017) states that these small-scale commercial farming activities in Manguzi are illegal and they must be stopped. This leaves a question which shall be answered later on in this study; what other viable alternatives are available to the local communities that will sustain their livelihoods?

Healy and Ascher (1995) affirm that indigenous, plantations and savannah forests are an important resource, serving as the basis of economic activity for some people in the rural areas, and thereby helping to reduce and alleviate poverty. Trees planted in woodlots provide timber and non-timber resources, and ensure the conservation of small wildlife for households (Healy and Ascher, 1995). When rural people have no other sources of income, they usually turn to the forest for their survival, so that forests often provide a safety net for the poorest South Africans (Department of Water Affairs and Forestry,

2005). However, people need to be living close to the forest to be able to access such benefits. For those households who cannot access credit, trees and forests offer a significant way of obtaining income.

A study that was conducted by Jele (2012) in the rural community of KwaSokhulu in KwaZulu Natal (South Africa) asserts that small-scale commercial afforestation is one of the few activities which proves to be successful in earning rural dwellers a living. (Jele, 2012) points out that this type of farming contributes income, employment and business opportunities towards alleviating poverty rather than providing a complete solution. Some employment opportunities arise during tree harvesting, which then support households during financial hardship and reduce vulnerability through diversified livelihood strategies. This target of the study is to find out the business opportunities brought by the plantations to the rural communities and their contribution to livelihood sustainability.

Even though forest resources, like other activities that rural people engage in, cannot remove millions of rural people from a situation of poverty, they can help in reducing the intensity of poverty for some (Shackleton, 2004). Forestry is seen as the main potential role player in alleviating or reducing poverty in rural areas, where in most cases it constitutes a significant economic activity (Shackleton et al., 2007). Trees provide a wide range of products which include ornamental flowers and medicinal oil, over and above timber, poles, firewood and charcoal. Eucalyptus is one of the best honey plants globally (Keith and Robin, 2011). Most eucalyptus species are able to coppice, which allows for a number of harvests in one planting (Keith and Robin, 2011). The variety of uses offered by forestry has served as an incentive for households to embark on small-scale forestry, enabling them to cater for some of their needs.

3.3 THE ROLE OF SMALL-SCALE COMMERCIAL AFFORESTATION IN RURAL LIVELIHOOD GENERATION

It has been found in many countries that wherever there are forest plantations, impacts are two fold (Farrington, 2013). There are impacts on the rural livelihoods which are considered positive, on the other hand, there are impacts on the environment which are considered negative. Although the role of forests to the rural livelihoods cannot be

ignored, environmental systems are disturbed. Yang et al (2015) states that, the sub-watershed of the Mekong River Region in China, is a very important resource in Xishuangbanna but is now threatened because there are significant indigenous populations living within or near its boundaries. These people are engaged in monoculture crop plantations, especially rubber and tea which benefit them but disrupt water ecosystem (Yang et al, 2015). This is similar to what is reported to be happening in Manguzi, as rural communities are engaged in small-scale commercial timber plantations in the Pongola-Umzimkulu CMA, which has raised a concern for the DWS because water systems are disturbed, some wetlands are drying up. It is important to zoom into this case, especially on how is it going to be resolved, and the impacts of such resolutions to the rural livelihoods.

Despite the benefit of forests to the livelihoods of rural communities in India, their use also brings negative environmental impacts. The main issue of concern to the Indian government is that tall vegetation such as forest plantation has the potential to interrupt rainfall by collecting water on its canopy. Some of this water is then evaporated back into the atmosphere and prevented from entering rivers and streams. The reduced flows would have a negative impact on in stream ecological, cultural and amenity values and reduce the reliability of supply for existing water uses (Government of India, 2002).

The research studies in India conducted in three districts of Bengaluru Rural, Kolar and Chikkaballapur pointed to eucalyptus and acacia plantations as the main culprits that have turned the districts into barren lands today. Large scale planting of eucalyptus and acacia trees not only squeezed the districts of its rich underground water table, but also made annual rainfall in the region a mirage of its former self. Even though the state government had directed the Karnataka Forest Department (KFD) not to create Eucalyptus plantations back in 2011 saying it would have a serious impact on the ground water levels, there was no proper documentation on the damage caused to the ecosystem (Kaggere, 2017).

After putting together various research papers, studies and observations by forest officials, agriculture and geology researchers belonging to various organizations, an expert committee headed by the Minister for Forests, Ecology and Environment in India

studied the subject in detail in January 2017. They were shocked to learn that eucalyptus and acacia were responsible for the present day parched condition of these districts (Kaggere, 2017). Which is why, despite the benefits to the rural livelihoods, the government has then banned farmers and the general public from planting eucalyptus and acacia groves in Karnataka since February 2017. The study in Manguzi is important because in areas where forest plantations have been banned, the poverty levels increase, therefore since DWS Gazette, (2017) states that forest plantations taking place in Manguzi will be stopped, it is important to find out the alternatives in place that will steer the affected livelihoods towards sustainability.

Where there is poor forestry management, including poor road construction, timber extraction and site preparation, forestry can have a negative impact on the water quality since large quantities of suspended sediments result in clogged river systems (Department of Water Affairs and Forestry, 2005). Forestry has been said to improve the quality of water (Herbohn et al. 2000) by reducing surface run-off, evaporation and loss of topsoil (Thoms, 2008). Nevertheless, concern has been raised about the impact of exotic plantations on the water supply in water poor countries such as South Africa. This study in Manguzi will show the impacts of forest plantations on water resources, because it can bring positive impacts on one hand and negative impacts on the other.

Mahlangu (2015) states that in recent years, there has been a proliferation of commercial timber farming at an alarming rate in the province of KwaZulu-Natal. About 5.5% (504 393 ha) of the land mass has been dedicated to forestry. Between 1980 and 2009, afforestation in the province increased by 54.3%. By 2013, it was estimated that there were about 20 000 small growers in KwaZulu-Natal (SA Forestry Magazine, 2013). Of major concern was that small-scale timber production seems to be taking place outside planned land use, making it almost impossible to evaluate the outcomes, manage bad practises and replicate successful ones. It was hoped that this study would reveal the criteria that the Department of Water and Sanitation bases its argument on when it claims that the development of afforestation in the area is unlawful.

3.4 THE HISTORY OF SMALL-SCALE COMMERCIAL FORESTRY IN UMHLABUYALINGANA LOCAL MUNICIPALITY

Forestry is not new in this rural municipality, with the existence of the Mbazwana and Manzengwenya pine plantations which were established by the then KwaZulu Department of Forestry in the 1960s. However, the pine did not do well and most areas were subsequently re-established to gum, mainly *Eucalyptus grandis*. Tembe (2012) states that forestry is the only economic activity in this region that had proved to be an effective means of generating income and jobs for the local people. Many of the local communities such as Tembe, Mbila and Mabaso communities have been growing small blocks of timber for more than 15 years with assistance from Sappi and Mondi's small grower programmes.

Sappi's Project Grow is actively involved with almost half of the small growers. A local forestry company Awethu Forestry Investment (AFI) is supporting independent growers through timber marketing linkages with, amongst others, Khulanathi, a business set up by Mondi Zimele. AFI is also investigating alternative support initiatives for the benefit of the small scale grower community (South African Forestry, 2013).

Sappi's policy was to establish a minimum of five hectares per grower, as this would provide a meaningful cash injection for the owner when the trees are harvested. Many of these five-hectare stands were planted adjacent to each other in blocks and were well maintained. Sappi provides support to the growers who are part of the Project Grow programme by supplying free seedlings, technical advice as well as assistance with harvesting and transport. The growers have access to interest-free loans to enable them to work in their plantations. These loans are repaid when the timber is sold to Sappi at market-related prices. Dozens of small timber contracting and transport businesses have sprung up around these plantations, creating a pool of forestry entrepreneurs who have learnt how to survive in this remote environment (South African Forestry, 2013).

3.5 THE HISTORY OF FOREST PLANTATIONS AND WATER GOVERNANCE IN SOUTH AFRICA

South Africa is a semi-arid country with a very limited area of natural forest. The previous colonial governments encouraged the establishment of plantations to supply wood for local uses, thus South Africa consequently has a long history of plantation forestry (Chevesich et al, 2017). However, the growth of the man-made forests soon led to conflicts with downstream water users, mainly farmers (Mahlangu, 2015). The simmering debate about the positive and negative effects of plantations of exotic tree species became a high level political issue, and this led to the establishment of a large and intensive forest hydrological research programme in 1936.

The results of the research programme were incorporated between 1970 and 1995 into several management policies for these plantations and the humid mountainous catchment areas (watersheds). One policy element was that the extent of the plantations was regulated, based on the estimated effects of the plantations on regional water resources (Chevesich et al, 2017). The study in Manguzi is intended to reveal if the effects of these small-scale commercial plantations were estimated prior to the establishment of small-scale plantations, and if these communities are even aware of such regulations. The study also aims to reveal who is responsible for conducting these environmental assessments. This is important to emphasize because most rural people lack skills and their education is limited.

After drought events in the 1960's, two government committees looked into water matters and addressed the role of forestry in water supply (van der Zel, 1995). Consequently, the Forest Act was amended in 1972 to regulate further afforestation for water conservation purposes. The Act put the Afforestation Permit System in place (van der Zel, 1995), which was administered by the central government's Department of Forestry. Catchments (drainage basins) were placed into one of three categories that would determine whether further forestry was possible or not. Category I catchments were considered already fully allocated (because of existing water use demands) and no permits were granted within these. Category II catchments had sporadic water shortages

and afforestation would be capped so as to use no more than an estimated further 5% of mean annual runoff (MAR). In Category III catchments, covering the bulk of the country, afforestation would be permitted to the extent that would use an estimated additional 10% of MAR. Since objective 3 of the study examines the responses of the local authorities towards so called “illegal afforestation”, it is hoped that the Pongola-uMzimkhulu catchment was also assessed and categorised accordingly, which will help in assessing the responses of the DWS.

A major revision of the water law was undertaken after the democratization of South Africa in the 1990’s leading to the National Water Act of 1998. This innovative legislation changed the basis for the regulation of forestry (Meissner, 2013). Forestry is now classified as a “stream flow reduction activity” (SFRA), on the basis of its estimated effects on stream flow, which requires that it should be licensed. The location of the plantations was also regulated, resulting in some areas which are regarded as ecological sensitive, plantation is prohibited.

Even though the CMAs were reduced to 9 but the issues of water resource management, funding, capacity, skills and expertise in regulation and oversight still hinder some to be established and operational, which is why only 2 CMAs are operational (the Breede-Gouritz and the Inkomati-Usutu). The remaining seven CMAs are considered to be the so-called proto-CMAs since they are in the process of being established. Those proto-CMAs are managed by the respective regional offices of the DWS. The fact that the National Water Act of 1998 restricts plantations in CMAs because of their ecological sensitivity, and yet Pongola-UMzimkhulu is one of the 7 proto-CMAs might be the driving cause of the discourse between the local communities and the DWS.

The South African Constitution (Act 108 of 1996) states that everyone has the right to have access to sufficient water. It further states that the environment must be protected for the benefit of all people living presently and in the future. It further stated that the national government is the custodian of all the sources of water, such as rivers, groundwater and dams. It is imperative to conduct a study of this nature in the rural context because it will reveal if these laws can be really applicable in rural context, where

levels of unemployment and poverty are high. Most people in rural areas are concerned with earning a living rather than environmental concerns of sustainability. A Guide to the National Water Acts acknowledges that this act as well as other acts are written in legal language that is difficult and not easily accessible to readers. This then raises a question; are rural communities even aware that such laws exist?

The National Water Resource Strategy (NWRS) insists that water should meet basic human needs and also socio-economic development both now and in the future. In order to achieve these goals, the NWRS emphasizes the great need for consultation and participation by all stakeholders including rural communities because they are the most affected by any decision taken and any act enacted. It is hoped that the study will reveal if these laws of governance can be practically applied in the rural communities.

The NWRS is complimented by the Integrated Water Resource Management (IWRM) which is known as a process for co-ordinated planning and management of water, land and environmental resources. It takes into account the amount of available water (surface and groundwater), water use, water quality, environmental and social issues as an integrated (combined) whole to ensure sustainable, equitable and efficient use. The IWRM simply states that water cannot be managed as a single factor as it is interconnected with other factors such as social issues (poverty). In achieving objective 3 of this study, which is about responses of authorities towards afforestation, the IWRM will be accessed to find out if it was incorporated in any decision taken by the DWS, as it is supposed to.

3.6 POLICIES AND GOVERNANCE OF SMALL-SCALE COMMERCIAL AFFORESTATION

Globally, the benefits of forest to the livelihoods of rural people cannot be ignored, however, these communities are often side-lined in decisions on how the forests they depend on are used and governed (FAO, 2018). As a result, their livelihoods and often, their way of life are severely threatened. Djanibekov et al (2013), in an attempt to address environmental challenges arising as a result of small-scale commercial afforestation, Environmental Canterbury in New Zealand identified the various

catchments within the region that were thought to be most susceptible to reduction in stream flows.

This included those catchments that naturally have low water storage capacity, commonly experience low rainfall and are generally below 600m altitude. Fifty-nine areas were identified as "flow sensitive catchments". Of these 59 flow sensitive catchments; nine were identified in a separate schedule within which plantation forestry was subject to certain specific controls. Having thus identified those catchments areas, the Environmental Canterbury imposed some restrictions. With regards to the previously existing forests in the area, afforestation could occur provided that it did not exceed the area of forest that previously existed. With regards to new forest, the total area of new plantation forest was limited to between 5 and 20% coverage of the property on which it is located and should not occur without the consent of Environmental Canterbury. The effect of these controls was to impose tough and extensive restrictions on new plantation forestry in the Canterbury region. Although it only applied to a limited number of catchments, the land within these catchments was the most suitable land for plantation forestry due to its location, characteristics and value (Djanibekov et al, 2013).

By limiting the amount of afforestation based on a small percentage of each individual property, the controls would effectively prevent the establishment of larger consolidated blocks. With limits as low as 5%, it would simply not be feasible to acquire a large enough property to generate the economies of scale necessary for commercial planting. The only new forest that could be established would be smaller dispersed forests with reduced economic benefits and increased environmental effects. The proposed controls were a serious threat to the future of plantation forestry in Canterbury and one which could not be ignored. This threat would directly affect rural communities who are earning their livelihoods through forestry (Djanibekov et al, 2013).

The National Forest Policy 1988 of the Government of India envisaged people's involvement in conservation, protection and management of forests including illegal afforestation. It emphasized that forest produce must go first to the people living in and around forests. Furthermore, the June 1990 Government resolution supported the involvement of non-governmental organizations and the creation of village level

institutions in forest management. With the active support and participation of local organizations' members in forest management, the Joint Forest Management (JFM) was initiated in India. Now, it is recognized that participatory management of forests is key to sustainable development for both people and forests. This was developed with the hope that if local communities are involved in the forest management, they are unlikely to engage in illegal afforestation which brings negative environmental impacts (Biswas, 2003).

After all, forestry is about people (Westoby 1989). Forestry and Forest Policy should concern itself in every conceivable way in which, forests, wood loots and trees can contribute to the livelihoods of people in particular and human welfare in general. In fact, the future of human society is intrinsically linked to the future of the forests. Reyes and Nelson (2014) state that over the past 40 years Chile has implemented a set of forest policies that have been very successful in generating economic benefits. Yet the reasons for that success are also at the root of the growing conflicts around forestry. The main policy has been the promotion of exotic plantation forests. This expansion of plantations has had negative socioeconomic and environmental impacts on local communities and indigenous peoples, resulting in growing inequalities and conflicts at the local level. In ensuring that rural livelihoods in China are not threatened, the implementation of China's reform and opening-up policy stressed that environmental policy should not impede economic expansion (Yang et al, 2015).

A study conducted by Mahlangu (2015) in Entembeni rural community in KwaZulu-Natal investigated the sustainability of small-scale timber farming. The study found that small-scale timber production is either hindered or enhanced by the nature and effectiveness of existing institutional arrangements. Unequal distribution, lack of assets such as land, water and infrastructure threatens the sustainability of small-scale timber farming. The study then concluded that viability and sustainability of small-scale timber production can be enhanced through a holistic land use plan and management. The holistic land use plan and management takes place in a bottom-up approach which takes into consideration the perceptions of local communities (Mahlangu, 2015). This is why this study is conducted in rural communities in Manguzi to find out what issues relate to the

governance of this type of activity, thereby addressing the second objective of this research. In most cases institutional arrangements leave the local communities dissatisfied because of the policies and laws in which they operate.

The viability and sustainability of a livelihood activity, such as small-scale timber production, depends on the nature of land rights and the function of institutions established to manage land resources (Hall, 2011). Land in rural areas is mostly accessed through non-market arrangements such as through negotiations with local tribal authority (INkosi) based on customary laws (Mahlangu, 2015). In Entembeni community it was found that small-scale farmers used land that had already previously been allocated to their fore fathers for building houses, grazing and crop farming. They did not acquire new land specifically for timber plantation.

Mahlangu (2015) states that all respondents (small-growers) confirmed the view that no negotiations were entered into for the acquisition of new land for planting timber. A subsistence farmer who wants to plant timber informs and gets approval from the tribal authority. This was seen not only as courtesy but to put the INkosi in a position to manage conflict that may arise. This land allocation did not involve formal demarcation. Land allocation was based on verbal agreements between the applicant and the Tribal Court (TC). It was found that not even the Permission to Occupy (PTO) was issued to local people. Despite the fact that there are no written-records, the TC was fully aware of farm boundaries and as to which land belongs to whom. It was also found that some small growers dealt with the fear of land encroachment by neighbours by keeping the land in constant use (Mahlangu, 2015).

Studies of this nature shed light as to why land governance is a contentious matter especially in rural areas. It is important to find the local communities' perceptions before making any decision regarding land use management and governance. This because often the community believes that through verbal arrangement with TCs, they have full ownership of the land. This might not be the case with the government institutions which expects them to have a written document declaring the ownership and size of the land.

A study conducted by Walelign (2016) on rural livelihood dynamics found that livelihood strategies are failing to lift poor out of poverty trap because they are restricted from accessing more remunerative environmental resources. Walelign (2016) further states that access restrictions should be loosened in order to enhance small-scale commercial afforestation and environmental resources towards sustainable rural livelihoods. In some places this is achieved through co-management of forest and other natural resources.

Chinangwa et al (2016) states that forest co-management approaches are gaining popularity among governments as one way of improving the livelihoods and welfare of rural communities, however, the evidence for their livelihoods and welfare impacts has been found to be weak, due to limited rigorous impact evaluation studies. Nevertheless, in countries such as United Kingdom these approaches are accepted by governments and as a prerequisite for conservation and development policies (Chinangwa et al, 2016). It is one of these reasons, this study explored the response of the DWS to see if there are any co-management approaches influencing the DWS's response, or it is influenced by top-down approach which according to Woldie and Tadesse (2019) has proven unsuccessful in Ethiopia. Bodonirina et al, 2018 corroborate that top-down approach in Madagascar left the rural farmers highly dissatisfied with the management of natural resources.

3.7 THE PERCEPTIONS OF THE RURAL COMMUNITIES ON THE RESPONSES OF REGULATORY AUTHORITIES

Identifying the main sources of conflict and understanding the relationships between protected areas and local communities are critical to conflict resolution related to protected area management (Yang et al, 2015). A study conducted in China which surveyed and assessed the perceptions of the local communities about forest values and forest management found that local residents preferred the economic value of forests rather than the environmental. This was because forest plantations contributed directly to their livelihoods. The study also suggested that local communities' perceptions and attitudes show dissatisfaction with the management and governance of natural

resources. This is the case because local communities are side-lined when it comes to decision making, which is why they are always dissatisfied.

Yang et al, (2015) further states that previous studies such as; Wallner and Hunziker, (2007) in Ukraine and Sturgeon (2007) in China have shown that protected areas can successfully protect biodiversity over broad geographic areas, through empirical coarse-scale assessments of biodiversity at regional or global scales. However, finer-scale studies have reported that the effectiveness of protected areas is problematic at a local scale. Finer scale studies have often identified problems that were mainly attributed to the interests of local communities during the establishment of protected areas. In fact, those variable interests often caused conflicts between protected area management and the needs of local people in order to gain a livelihood. It is anticipated that as long as local communities are not consulted and included in any decision-making that they will be expected to comply with, there will always be conflicts between government and local communities across the world.

A study conducted in Madagascar by Bodonirina et al, (2018) which aimed at investigating farmers' perceptions and practices regarding forest use under various forest governance systems found that the negative environmental impacts remain unclear. This was the case because the local communities were involved in the form of Community Based Natural Resources Management (CBNRM). It is believed that when the local people are included in the decision-making the negative impacts are minimal, although the positive outcomes of CBNRM are yet to be proven in Madagascar (Bodonirina et al, 2018). Local people voiced out their dissatisfaction regarding its governance because this CBNRM took place through Top-Down approach which also leaves local people susceptible and powerless. This is the reason why one of the objectives of the study conducted in Manguzi aimed at analysing the perceptions of the local farmers towards regulatory authorities regarding small-scale commercial afforestation. It is regarded as one of the finer-scale studies that wanted to show the effectiveness of the governance laws in the rural context.

A study conducted by Woldie and Tadesse (2019), which investigated views and attitudes of local people towards community versus state forest governance in

Tehulederi District, South Wollo, Ethiopia found that there are problems between the local communities and the state. The source of the problem was associated with the top-down approach of forest management. The top-down approach to policy-making can be understood as the upper management imposing already enacted policies, without considering views and perceptions of the grassroots level. The study conducted in Manguzi investigates the conflict between the state and the local communities about forest and land governance. It attempts to explore the views of the people on the ground who are involved in small scale commercial forestry in terms of their thoughts about the responses of the DWS. Studies of this nature are important towards the revision of the policies that are biased against the poor.

3.8 CONCLUSION

This chapter has covered the overview of small-scale commercial afforestation across the world. The chapter also covered the history of water governance in South Africa and also the history of small-scale commercial afforestation in Umhlabuyalingana Local Municipality. The impacts of this type of afforestation on rural livelihoods and on the environment have been discussed. The chapter also covered the policies and governance associated with small-scale commercial afforestation. The perceptions of the rural communities regarding policies and governance of small-scale commercial afforestation were also reviewed. The literature reveals that conflicts over natural resources is caused by the top-down approaches, more co-management approaches might be a solution, though they have not yet proven to have impacts on rural livelihoods. The next chapter discusses the physical setting of the study.

CHAPTER 4: SETTING OF THE STUDY

4.1 INTRODUCTION

This chapter discusses the background of the study area and the physical setting of study. It also discusses the socio-economic characteristics, biodiversity and climate, topography, hydrology, evaporation and groundwater. Finally, the chapter discusses the land-cover within the municipal area.

4.2 BACKGROUND OF THE STUDY AREA

This study area is located in Manguzi, which is a small rural area in Umhlabuyalingana Local Municipality (Umhlabuyalingana LM). Umhlabuyalingana LM is one of the five municipalities within the jurisdiction of uMkhanyakude District Municipality, situated in the North-Eastern corner of KwaZulu-Natal in South Africa. It is within CMA No. 4 which is known as Pongola-Umzimkulu, one of the largest CMAs (Figure 4.1). The Umhlabuyalingana LM encompasses an area of 3 621m², approximately 90km long in a north-south direction and 55km wide in an east-western direction (Umhlabuyalingana LM Spatial Development Framework [SDF], 2018). The area is influenced by the influx of people who migrate from Swaziland and Mozambique.

According to the Statistics South Africa (SSA) Community Survey (2016) the total population of the Umhlabuyalingana LM is approximately 172 077 people. The average household size is 6 people per household of which more than 99% are black Africans and the other races make up a percentage of less than 1%, {Statistics South Africa (SSA) Community survey, 2007}. The Municipality has a rural classification of 99%, hence the referral to rural Municipality. The distribution of households is mainly along the road infrastructure, particularly along D1834, a gravel road that runs from South to North all along the Pongola River Floodplain and the western boundary of the Umhlabuyalingana Municipal Area. Concentrations of households are evident around the nodes of Manguzi, Mbazwana and Mseleni, as well as along the P447 between Mbazwana and Sodwana Bay. The towns and major settlement nodes in the area also include Kwangwanase, Maputa, Mboza, Mseleni and Skhemelele. Very few households,

at low densities, are visible in the Central areas of the Municipal Area. Denser scattered settlement (still at very low densities) is evident to the north of Manguzi Node, up to the Municipality's northern boundary with Mozambique (Umhlabuyalingana LM Spatial Development Framework [SDF], 2018).

THE QUARTENARY CATCHMENT W70A



Figure 4.1: The study area

4.3 PHYSICAL SETTING OF THE STUDY

The Pongola-Umzimkulu CMA is bounded by the Indian Ocean to the East, Mozambique, Swaziland and the Inkomati-Usuthu CMA to the North, Lesotho and the Vaal CMA to the West and the Mzimvubu-Tsitsikamma CMA to the South. The study area is limited to quaternary catchment W70A. Quaternary catchment is recognised as a fourth order catchment in a hierarchical classification system in which a primary catchment is the major unit. Quaternary catchments are the principal water management units in South Africa. The W70A quaternary catchment forms part of the Mozambique coastal plain and comprise a broad, flat to undulating, sandy region about 60km in width (Umhlabuyalingana LM Spatial Development Framework [SDF], 2018). The study is located in Manguzi, which is a small rural town community in KwaZulu Natal province of South Africa. The town's location is 15km shy off the Mozambique-South Africa border neighbouring Kosi bay (Ndlovu, 2018).

4.4 SOCIO-ECONOMIC CHARACTERISTICS

According to Umhlabuyalingana LM final Integrated Development Plan (IDP) [2018-2019] agriculture is one of the two key drivers of economy in uMhlabuyalingana LM, the other being tourism. The majority of the population in uMhlabuyalingana LM is involved in these two sectors. Ndlovu (2018) further states that agriculture in Manguzi is mainly commercial agriculture (small-scale and large scale) and subsistence agriculture which is directed towards meeting consumption needs of the population in this town. A range of different wetland types occur in the area and these are extensively used for the production of agricultural (domestic and commercial) and forestry crops as well as for reed harvesting and livestock production. The tourism sector in the municipality is also a key driver of economic development in the present and in the future. Tourism sector in this municipality is favored by the existence of various tourist destinations such as the Hluhluwe Umfolozi Park, iSimangaliso Wetland Park, Ndumo Game Reserve; Sodwana Bay; and Tembe Elephant Park and the various cultural Activities and Museums.

Umhlabuyalingana LM Spatial Development Framework [SDF], (2018) states that the tourism sector contributes greatly to the local economic development (LED) as it creates job opportunities for the members of local communities in spite of limited education. Some are involved in craftworks which they sell to the tourists. With Umhlabuyalingana Tourism Development Strategy (UTDS) in place, there are various projects that have been identified both at a local and regional scale to stimulate the LED. Tourism resources and activities include but are not limited to; Snorkeling at various places along the coast, Dolphin viewing, Turtle viewing and Bird watching. The increased risk of contamination from non-point sources, crocodiles and hippos in Lake Sibaya limit recreational activities. Other economic opportunities in Umhlabuyalingana LM include displays of; Zulu Culture, Tonga Culture, Tonga Cultural Village and Traditional fishing at Kosi Bay Umhlabuyalingana LM final Integrated Development Plan (IDP) [2018-2019]. Ndlovu (2018) asserts that for those local residents who cannot find means of living migrate to urban areas. With little employment options and high poverty rate in Manguzi, fresh graduates have to settle for jobs such as supermarket security guards and small scaled local mechanics, for as little as nothing salaries.

4.5 BIODIVERSITY AND CLIMATE

Umhlabuyalingana LM Spatial Development Framework [SDF] (2018) states that the municipality has a rich variety of both flora and fauna, making it an important attraction for eco-tourism development in this area. In addition to its abundance of natural assets, it includes magnificent sand forest patches, the Pongola River along the western boundary, Kosi Bay to the East, and Maputaland marine reserve to the East. Umhlabuyalingana LM is also part of the Elephant Coast of Northern KwaZulu-Natal, which is an important tourism drawcard in KwaZulu-Natal. The entire coastal strip of Umhlabuyalingana is made up of natural environmental assets which are administered by the Greater St Lucia Wetland Park Authority (GSLWPA).

The area's climate has been described as subtropical with an annual average temperature of 21.5 °C. While summers are warm to hot, winters are generally cool to mild. The annual rainfall ranges between 600mm and 700mm on the western areas

which are predominantly rural in nature and between 1201mm and 1250mm on the eastern side, along the coastal sea belt (Umhlabuyalingana LM Spatial Development Framework [SDF], 2018).

4.6 TOPOGRAPHY, HYDROLOGY, EVAPORATION AND GROUNDWATER

The topography is mainly dictated by the so called recent flood plains, forming the major portion of the area of the municipality being relatively flat and ranging up to less than 100m in height. Umhlabuyalingana LM has fairly flat land with good soils and weather conditions that influences the agriculture. The general topography within Umhlabuyalingana Municipal area is flat to gentle undulating. This normally implies that there are limited hindrances to development as far as topography or slope is concerned. The slope in the area is gentle and within acceptable limits for development. However, given the sandy nature of the topsoil, any removal of ground cover may result in erosion, especially in areas that are moderately sloping (Umhlabuyalingana LM Spatial Development Framework [SDF], 2018).

The most significant part of the hydrological system in the area are wetlands. Most of the wetlands in the area appear to be functional wetlands with little disturbances. It is known that wetlands function to provide several ecosystem goods and services which for the area under investigation will to a large extent, be provision of grass for crafts and other household uses as well as flood attenuation. Thus maintenance of the integrity of the wetlands and assurance of their functionality are important management considerations during development planning for the area.

The municipality is bounded by the Pongola River on the western boundary and the Indian Ocean on the eastern boundary. The area consists of heritage site which among them are; iSimangaliso Wetland Park, St Lucia Lake System, turtle beaches and coral reefs, Lake Sibhaya, Kosi Lake System, Ndumo Game Reserve; Sodwana Bay; and Tembe Elephant Park. Amongst other water bodies and catchments within the Municipality, there is the perennial Pongola River. The maximum elevation of land within

the Umhlabuyalingana LM is 200m above sea level. This constitutes some 5% of the total area of the Municipal Area. The remaining 95% of the Municipal Area is between 0m and 100m above sea level [Umhlabuyalingana LM final Integrated Development Plan (IDP) 2018-2019].

The river eco-system status was determined by Ezemvelo KZN Wildlife in conjunction with a programme called the River Health Programme of South Africa. Based on the assessment of the condition of biological communities in and around rivers (such as fish, aquatic invertebrates, and riparian vegetation and river habitats) this programme provides an integrated measure of the health of river systems. All the rivers in Umhlabuyalingana are classified as vulnerable, which indicates that there are human influences impacting on the river and that needs to be managed to ensure that the negative impacts be minimalized [Umhlabuyalingana LM final Integrated Development Plan (IDP) 2018-2019].

The average evaporation is linked to height above sea level which also affects other meteorological conditions such as wind occurrences. In Umhlabuyalingana evaporation from Lake Sibaya exceeds rainfall (Ndlovu, 2018). Its water supply relies mainly on net seepage inflow, as Lake Sibaya is largely fed by groundwater. Groundwater vulnerability refers to the potential pollution of groundwater by various factors including agricultural practices, industrial waste or influences that settlements have on the water. Groundwater vulnerability in Umhlabuyalingana Local Municipality ranges largely from Low to Very Low, with selected pockets with a vulnerability rating of Medium Low (Heike and Mayer, 2016).

4.7 LANDCOVER

It is stipulated in Umhlabuyalingana LM final Integrated Development Plan (IDP) [2018-2019] that the dominant landcover of the Umhlabuyalingana LM is natural vegetation; covering 58% of the total area. The majority of natural vegetation occurs within the formally protected areas. The second most dominant land cover is degraded areas with 18% coverage. These areas generally occur in the central regions of the municipal area

near settlements. Only a small portion of the municipal area is under cultivation (2%). This comprises of the Macadamia / Cashew nut farms near Manzengwenya and traditional agriculture.

Approximately 5% of the municipal area is covered by forestry plantations, mainly gum. These are generally located in the vicinity of Mbazwana and Manzengwenya. There are also several small growers scattered throughout the municipal area. About 14% of the total area is covered by waterbodies, which is largely due to Lake Sibaya, the pans on the Pongola River floodplain, and the near-shore ocean [Umhlabuyalingana LM final Integrated Development Plan (IDP) 2018-2019].. Only a small portion of the municipal area (3%) is classified as urban built-up or settlements. These generally occur in the central regions along the main transport routes. The two largest urban centres are Mbazwana in the south and Manguzi in the north (Heike and Mayer, 2016)

4.8 CONCLUSION

This chapter has discussed the background and the physical setting of the study area. This chapter also covered the study area's socio-economic characteristics, biodiversity and climate, topography, hydrology, evaporation and groundwater. The land-cover within the municipal area has also been discussed. The next chapter discusses the methodology employed in this study.

CHAPTER 5: RESEARCH METHODOLOGY

5.1 INTRODUCTION

The chapter discusses the research methodology. To achieve this, it starts by outlining the research paradigm which this study followed and this is post-positivism. The chapter also discusses the research design which this study followed as well as data gathering and analysis strategies.

5.2 RESEARCH PARADIGM

The term research paradigm is used to describe a researcher's 'worldview' (Mackenzie & Knipe, 2006). This worldview is the perspective, or thinking, or school of thought, or set of shared beliefs, that informs the meaning or interpretation of research data. Kivunja and Kuyini (2017) explain the research paradigm as the conceptual lens through which the researcher examines the methodological aspects of their research project to determine the research methods that will be used and how the data will be analysed.

The methodological paradigm of this study is post-positivism. Post-positivism came to existence as a modified version of positivism which stood on the grounds that research should be based on the observations, scientific experiments and hypotheses tests (Tanlaka et al, 2019). This was criticized as it limited the in-depth information on the case studies. In the post-positivist paradigm, the positivist's focus on experimental and quantitative methods is superseded or complemented to some extent by an interest in the use of qualitative methods to gather broader information outside of readily measured variables.

This paradigm is suitable for this study because the study uses mixed methods. As to fully understand the objective number two of the study which is the response of the DWS, the study wanted to find the link between the growth of illegal afforestation and the water table in Manguzi. In achieving this, the study used quantitative or statistical data on afforestation and water table to produce a correlation graph. In addition, the study also

required the application of qualitative research as it wanted to find the role of small-scale commercial plantations on the rural livelihoods of people residing in Manguzi.

In post-positivist research, truth is constructed through a dialogue (Tanlaka et al, 2019). Informed by this philosophy, a researcher can explore and obtain information during the interviews with the participants. Post-positivists believe in opening up the interpretive discussions [to the respondents], not for them to confirm or disconfirm them (Ritchie and Rigano, 2010: 752). This paradigm is relevant to this study because one of the objectives was to analyse the perceptions of the local communities towards the regulatory authorities. Therefore, it was important to allow the farmers to freely voice out their own perceptions without being led towards a certain direction. In this sense, the post-positivist paradigm enabled a researcher to find the in-depth information about the conflict being investigated studied. Though this study required in-depth data collection from both sides, observations and quantitative data were also required in portraying the correlation in the study area.

5.3 RESEARCH DESIGN

According to Rumsey and Lovegrove (2005), research has one aim, which is the ultimate discovery of truth. Its purpose is to learn and discover what has never been known before; to ask a significant question for which no conclusive answer has been found, and through the medium of relevant facts and their interpretation, to attempt to find the answer to those questions. In order to successfully investigate the nature and dynamic of the conflict over afforestation for livelihood sustenance between the local communities and the Department of Water Affairs and Sanitation, this research adopted the mixed methods research design.

Creswell (2014) states that mixed methods are used when the researcher bases the inquiry on the assumption that collecting diverse types of data best provides a more complete understanding of a research problem than either quantitative or qualitative data alone. This study employed mixed methods to get deeper information on how the rural communities within quaternary catchment W70A generate livelihoods through small-scale commercial farming, thus adopting qualitative aspects. In addition, mixed methods

is the suitable method in this study because; the study gathered quantitative data to find correlation between the development of illegal afforestation and water table in order to get deeper understanding of the concerns pertaining to water resources raised by the DWS. The study also used satellites images from Google Earth Pro to show the establishment of forests in areas regarded as ecologically sensitive. This study is highly skewed towards qualitative research because it attempted to collect rich descriptive data with regards to how local communities sustain their livelihoods through small-scale afforestation which the DWS regards as illegal in the North-East part of KwaZulu-Natal. One of the objectives of this study was to analyse how local authorities respond to this challenge of illegal afforestation in the Pongola-UMzimkhulu CMA.

According to Creswell (2014), there are 4 research designs one can choose from when following mixed methods. These are namely; convergent, explanatory sequential, exploratory sequential and transformative, embedded, or multiphase. For the purpose of this study, convergent parallel mixed method was adopted. This is a form of mixed methods design in which the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem (Creswell, 2014). In this design, the researcher collected both quantitative and qualitative data at roughly the same time and then integrated the information in the interpretation of the overall results. This design allows for contradictions or incongruent findings to be explained or further probed. This method was relevant in meeting the objectives of the study because the researcher collected qualitative data through interviews while doing desktop analysis of quantitative data and site observations.

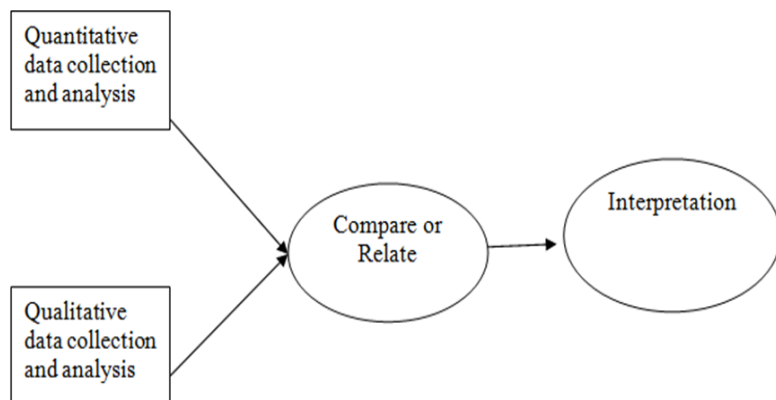


Figure 5.1: The convergent mixed method (source: Creswell and Plano-Clark, 2011)

Creswell and Plano-Clark (2011) noted that the convergent parallel design has 3 stages. In stage 1 the researcher gathers both quantitative and qualitative data, in stage 2 the researcher analyzes both datasets separately, compares the results from the analysis of both datasets, while in stage 3 the researcher makes interpretation as to whether the results support or contradict each other. The direct comparison of the two datasets by the researcher provides a convergence of data sources.

The researcher conducted the interviews with the local community members who are directly involved in the small-scale commercial farming and also with the DWS in order to gather qualitative data about the dynamic and nature of the conflict between the two sides. On the other hand, statistical data was collected including exact coordinates so as to enable the researcher to identify areas of concern and also to correlate growth of illegal afforestation with water table. The data from two sources were analyzed and merged to get a clear picture of the conflict that is where the integration occurred. In convergent design, one type of data can support or contradict the other (Creswell and Plano-Clark, 2011).

In this study quantitative data complemented qualitative data as it confirmed the rapid drop in the water table due to increasing illegal afforestation thus makes it realistic and possible to understand the impacts of these plantations on water resources. Correlation graph made it possible to understand the concerns of the DWS as everything was portrayed graphically. Satellites images with the calculated area in hectares showing

forest establishment proved why there is a conflict between the sides. Lastly the results were mixed during the overall interpretation but this integration and support is further explained in chapter 6.

5.4 RESEARCH METHODS

Since the study uses mixed methods, this part explains both qualitative and quantitative research techniques on sampling, data collection instruments and data analysis.

5.4.1. Qualitative Methods

5.4.1.1 Sampling

In meeting the aspects of qualitative research, non-probability sampling method was used. The study targeted two groups of population which are the; (a) local community engaged in small-scale commercial afforestation, and (b) representatives from the Department of Water and Sanitation. The study adopted the purposive sampling method which is non-probability and allows for the selection of participants according to preselected criteria relevant to a particular research question. Participants are chosen based on their relevance in satisfying the objectives of the study. This method is suitable since this study investigates how the rural communities in Manguzi derive their livelihoods through small-scale commercial afforestation; hence the relevant people are the community members involved in this afforestation. Since the last objective of the study was to analyse the perceptions of the local communities towards the regulatory authorities, such information could only be obtained from the local people themselves, who are affected by any decision taken by the DWS.

Relevance in this study referred to those community members who are directly involved in small-scale commercial afforestation. The criteria were those farmers who are not assisted by companies as Sappi and who do not belong to any farmers' association and who are not beneficiaries of land reform farming projects. This was based on the belief that there is high possibility of independent rural farmers not to comply with the law compared to those who are assisted by companies and associations, because they do help farmers with application processes involved. SA forestry Magazine (2013) states there are more than 8000 small-scale farmers in Manguzi. These farmers benefit from

land-reform farming projects and through Companies' grower schemes. Tembe (2012), however states that there is increasing number of small-scale farmers in Manguzi who are not known and recognized because they do not fall under any association and do not benefit from government and companies' projects, the study targeted those farmers. Since the study investigates conflict over illegal small-scale commercial afforestation, only farmers who are not registered as authorised farmers were targeted for this study, of which 15 farmers were used as sample size. 12 farmers were interviewed before reaching saturation where there was no new information generated from the respondents. 3 more farmers were interviewed to check data validity and reliability, which added up to 15 farmers.

On the side of the DWS, relevance referred to the team dealing with the afforestation and water applications, from which the senior manager was interviewed. Only the senior manager was interviewed on different occasions because he is the one who has a final voice in the team, all the reports end in his hands and he is the one who signs off all water-use application, he is also the one who is leading the team that was appointed to conduct a research on illegal afforestation in the whole KwaZulu Natal province. Data supplied by the DWS was validated and verified through site visit-observations and secondary data (satellite imagery analysis).

The representative from the DWS was selected in order to achieve the second objective of the study which seeks to analyse the response of the local authorities towards this so called illegal afforestation. The DWS is the mandatory body responsible for Catchment Management Strategy if the Catchment Management Agency is not yet established. As Pongola-Umzimkulu is not yet operational, the DWS is responsible for any water-related matters, thus these plantations take place in the zone that is within the jurisdiction of the DWS, which is why their response is important to this study.

Creswell (2014) states that sampling in qualitative research is flexible and often continues until no new themes emerge from the data collection, called data saturation. The researcher used objectives of the study to define theme in which analysis was going to be based on. These themes were used as subtopics under which findings were analysed and discussed. The researcher interviewed 15 small-scale farmers before

reaching data saturation. Data saturation was applied in the study because there was not enough new information coming from the respondents. In satisfying the quantitative aspects in this study, the researcher obtained legal and illegal afforestation data from the DWS and used it to create correlation graph. During data collection process, the researcher saw a need and further interviewed the representative from Sappi and Induna in Manguzi to get more insight into the land allocations and on Sappi Khulisa Umnotho project.

5.4.1.2 Data collection techniques

Maree (2014) state that most qualitative studies do not treat data collection and data analysis as two separate processes but see them as an on-going, cyclical and iterative process. The researcher followed six steps of qualitative data analysis, which are explained in the data analysis section in this chapter.

Documents

Most people tend to confuse literature and using documents as part of data gathering instrument. Literature review provides an overview of the scholarship in a certain discipline through analysis of trends and debates; it also describes past and current research on a particular topic. On the other hand, documents as a data gathering technique mean all types of written communications that may shed light on the phenomenon that one is investigating (Maree, 2014).

For the purpose of this study documents such as National Environmental Management Acts (NEMA) and National Water Act (NWA) were reviewed to find out why the practices of local communities in the study area are regarded as unlawful development of afforestation. Government gazettes specifically from DWS were also reviewed to find out how the department plans to respond to this issue of illegal afforestation. The study also previewed previous images of the study area to see the land-use before the development of this forestry.

Interviews

An interview is a two-way conversation in which the interviewer asks the participant questions to collect data and to learn about the ideas, beliefs, views, opinions and

behaviours of the participant. There are three types of interviews that can be used when conducting qualitative studies; namely unstructured interview, semi-structured interview and structured interview (Maree, 2014). The study used the semi-structured interviews for both the local communities and the DWS. Semi-structured interviews were used in order to enable the researcher to ask additional probe questions to analyse the issue in depth and to understand the reasons behind the participants' answers.

This data gathering technique made it possible for community members to elaborate on how they derive and sustain their livelihoods through this so called "unlawful development of afforestation". In this study, the researcher prepared themes of focus in advance but the respondents were not limited or restricted from giving additional information on the matter studied. The researcher conducted the interviews with the farmers on their homes in IsiZulu, the researcher explained every question, and the respondent was asked if the question is understood before responding. The respondents were granted autonomy not to respond to questions that they viewed as seeking private and confidential information. The interviews took about 45 minutes to an hour because farmers were caught on their convenience. The interviews with the representative of the DWS also took place at the DWS's premises on the agreed dates and time. The DWS was also free to provide more information on some questions that were not asked during the interview but added value to the research.

5.4.1.3 Qualitative Data Analysis

To some qualitative data analysis may seem like a daunting task. Some qualitative researchers openly admit they would not know where to begin if given the job, and that the unfamiliar process scares them a bit (Creswell, 2014). Unlike most quantitative methodologies, qualitative analysis does not follow a formula-like procedure that can be systematically and analytically applied. In order to analyse data collected from semi-structured interview, thematic content analysis was employed.

This is probably the most common method used in qualitative research. It aims to find common patterns across a data set. Braun and Clarke (2006) came up with 6 steps the researcher can follow when using thematic content analysis in a qualitative study.

Qualitative Data in this study was analysed using thematic content analysis which has the following steps;

Step 1: Getting familiar with the data

The first step in any qualitative analysis is reading, and re-reading the interview transcripts or documents gathered. This is the stage where the researcher becomes familiar with the entire body of data. The researcher repeatedly read the documents from the DWS, and the interview transcripts from both the farmers and the DWS official to fully understand data at hand.

Step 2: Coding (labelling) the whole text

In this stage, the researcher organizes data in a meaningful and systematic way. Coding reduces lots of data into small chunks of meaning. The researcher did the coding process guided by the research objectives, since lot of information was gathered. This happens through data reduction where the researcher collapses data into labels in order to create categories for more efficient analysis. Only data that was responding to the research objectives were kept and coded.

Step 3: Searching for themes with broader patterns of meaning

In this stage, codes are sorted into themes. Codes identify interesting information in the data; themes are broader and involve active interpretation of the codes and the data. The researcher did this by looking at the list of codes and their associated extracts and then tried to collate the codes into broader themes that represent data.

Step 4: Reviewing themes to make sure they fit the data

In this stage, the researcher reviews and refines the themes that were identified in stage 3. The researcher spent more time reading through all the extracts related to the codes in order to explore whether they support the theme or if there are contradictions and to find out if themes overlap. Braun and Clarke (2006) emphasizes that data within themes should cohere meaningfully, while there should be clear and identifiable distinctions between themes.

Step 5: Defining and naming themes

In this stage, the researcher defines the essence that each theme is about. It is where the researcher describes the theme and identifies which story the theme tells and how this story links with other themes as well as to the research objectives.

Step 6: The write-up

In this stage, the researcher created a coherent narrative that includes quotes from the interviewees. This is where data interpretation was done.

The researcher ensured validity and reliability of data by spending more time in the field. The researcher also ensure data quality by asking the respondents questions such as “can I trust this information” such questions are said to be important in social studies, however they do not apply to scientific studies. The researcher also triangulated data with field observations and data from government officials and the local communities.

5.4.2 Quantitative Methods

Water table data of the Lake Sibaya was accessed from the DWS together with legal and illegal afforestation data in order to construct correlation graph using Microsoft Excel 2016. Google Earth images were used to detect some of the practices which are regarded as illegal in Manguzi. Google Earth was also used for its ability to retrieve images dating back to more than 30 years.

5.5 ETHICAL ISSUES

This study ensured ethical considerations by making it a choice of a respondent to participate without being forced to. Anonymity and confidentiality of the respondents was considered by using pseudonyms instead of real names. A consent form (see page 103) was given and signed by the respondents acknowledging that the study was for academic purposes only, and there will not be any kind of benefits to the respondents. The respondents were cognizant that they have a respectful right to withdraw from the interview, at any time and will not be penalized for such a decision.

5.6 CONCLUSION

This chapter has discussed the post-positivist research paradigm adopted in the study. The research methodology and research design have also been discussed in the chapter covering aspects of sampling, data collection techniques and techniques for analyzing the data. The next chapter presents the research findings and analysis.

CHAPTER 6: DATA PRESENTATION AND ANALYSIS

6.1 INTRODUCTION

The aim of this chapter is to present and analyze the data collected from both primary and secondary sources. In all, the data was collected through semi-structured interviews, field observation and documents analysis. The study aimed to investigate the nature and dynamic of the conflict over small-scale commercial afforestation between the local communities and the Department of Water Affairs and Sanitation. To be able to achieve this aim, three objectives were formulated to get to the deepest understanding of this conflict. The objectives were to; (a) examine the role of small-scale commercial afforestation in livelihood generation, (b) analyse the response of the local authorities to this unauthorized development of afforestation, (c) Analyse the perceptions of the local communities towards the regulatory authorities. The chapter first describes the demographic characteristics of the small-scale commercial farmers in Manguzi, followed by an analysis responding to the above mentioned research objectives. Semi-structured interview implies that some questions were open-ended while others were close-ended, therefore one must note that statistics such as percentages were generated from the close-ended questions, thus presented and analysed quantitatively.

6.2 DEMOGRAPHIC CHARACTERISTICS

Generally, the demographic characteristics of the farmers in this study were important for understanding the role played by small-scale commercial afforestation in their livelihood generation. The researcher gathered demographic information to find if their involvement in small-scale commercial afforestation can be attributed to demographic factors such as gender distribution, level of education, types of skills they possess, employment status and others.

Results show that, 67% of the farmers interviewed were female and 33% were male. These findings are not astonishing because the Statistics South Africa (SSA) Community Survey (2016) stated that in the entire uMhlabuyalingana Local Municipality (uMhlabuyalingana

LM), females constitute 60% of the total population, a trend similar to most other local municipalities in KwaZulu-Natal. The majority (80%) of people who are involved in small-scale plantations in Manguzi are between the age of 40 and above 60. These are people who have full ownership and responsibility of their small-scale plantations. One of the reasons for a large proportion being old female farmers could be the fact that females usually remain at home while their husbands migrate for improved employment opportunities. With the limited job opportunities in Manguzi and house chores to take care of, they opted for such business which they would do at their inconvenience without having to migrate but still earn a living for the household. The other 20% which include the youth of the ages between 25 to 39 years are partially involved, during line weeding, pruning and cutting of trees, as they get part-time jobs.

A large number (53%) of the interviewed small-scale commercial growers have no form and history of schooling as shown in Figure 6.1 below. This implies that these farmers do not have school-based education to acquire marketable skills Umhlabuyalingana LM final Integrated Development Plan (IDP) [2018-2019]. The level of education can shape, limit and channel people to certain economic activities which can be pursued using indigenous knowledge rather than knowledge acquired through formal education and training. Therefore, with agriculture being one of the two main economic drivers in Manguzi perhaps that is why they opted for small-scale commercial afforestation as a way of generating a livelihood. In addition, 20% have primary education, 13% have some form of secondary education and just 7% acquired tertiary education while the other 7% consists of those who have certain skills based on formal and informal training. Poor educational levels also mean that the ability to equip the local population with skills and training in non-agricultural activities becomes more difficult.

The above findings confirm the study conducted by Jele (2012) in the rural area of KwaSokhulu in KwaZulu-Natal who states that there is normally high levels of illiteracy among small-scale farmers. Mtengu and Green (2016) states that one of the challenges stopping small-scale timber farmers from complying with Forestry Stewardship Council Certification (FSC) is the low levels of education which impede their understanding of the

language used and the complicated procedures. FSC is an independent international non-profit organization that was established in 1993 to promote responsible forestry management in the world (Mtengu and Green 2016). The Sustainable Rural Livelihood Framework (SRLF) states that rural people need human assets such as skills and knowledge in order for them to achieve sustainable livelihood (Peterson and Pederson, 2010). Skills and knowledge determine the daily activities of people (Ndlovu, 2018); therefore, low levels of education in Manguzi might be the reason behind difficulty for rural people to adopt different livelihood strategies instead they choose to stick on this small-scale commercial because it has proven successfully in earning them a living over the years.

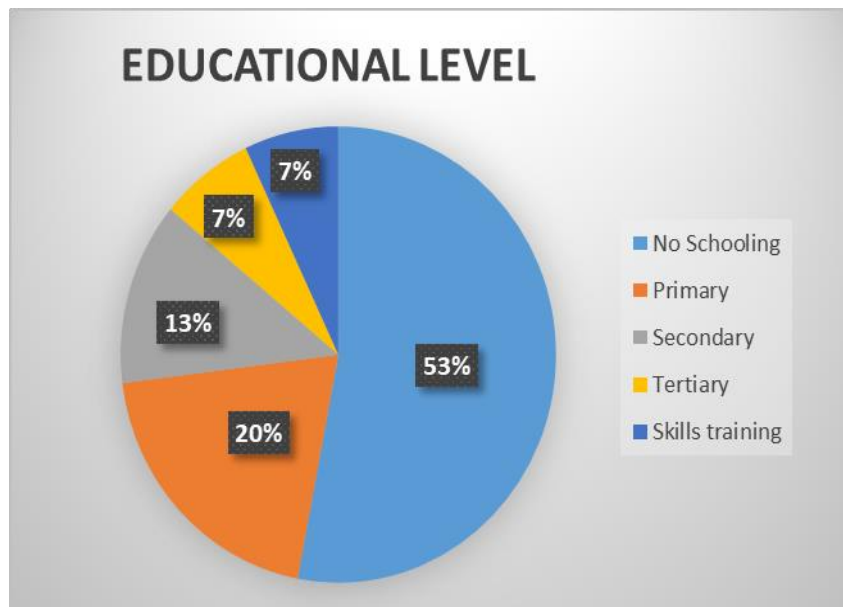


Figure 6.1: Educational level of growers

In addition, 80% of the respondents were unemployed, 10% had some seasonal and part-time form of employment, whilst only 5% were employed and other remaining 5% were self-employed. The small percentage of self-employment indicates poor levels of entrepreneurship within the area. For those who are employed, the majority occupy semi and unskilled positions with a small handful in skilled employment. It was found that in Manguzi, small-scale commercial forestry is the main economic activity. Many farmers agreed that before they got involved in forestry, they only relied on government grants, such

as social grants and pensions. This corroborates the findings of Statistics South Africa Census (2011) that in the entire local municipality household income levels are extremely low, with almost half (44, 9%) the number of households earning no income. The majority of the population survives on around R500 a month from social grant, which indicates relatively high dependence on these grants.

In addition to small scale farming, the respondents also engaged in other income generating activities like fishing and selling clothes, although most of the households practice fishing as the main source of food (Statistics SA, 2011). Many of males that were interviewed also work as builders; others drive vans to transport people to town and back homes. As an alternative means of earning a living, many females are also involved in crafting dry vegetation such as straw, water reed, sedge, rushes, heather, or palm branches, with some few individuals working as “*Onompilo*’ (home nurses). For those who are self-employed, the majority run small-scale livestock farming businesses with special focus on cattle and goats. These types of livestock are bought more often because they are widely used to perform certain traditional rituals, this can be attributed to the prodigious number of traditional healers within the area (Interviewee one [Small Scale Farmer], Phelandaba, 11 October 2019).

6.3 SMALL SCALE COMMERCIAL AFFORESTATION IN MANGUZI

The plantations in the area are not new; they date back as far as before 1970s. They however, became prominent in the early 1980s and 1990s with Sappi and Mondi out-grower schemes helping the local communities to start their own small-scale business forests. Since then more growers have been getting involved for different reasons as mentioned above. According to Forest South Africa (FSA) [2016] there are approximately 8500 ha of small-scale forest plantations in Manguzi. This clearly points to the fact that forestry is the main source of income in the area. Up to this day there are still forests which are grown with the assistance from Sappi through Khulisa Umnotho Project. In this project, the small scale grower applies for a piece of land through the traditional council, then to Sappi for assistance with planting the trees. If the farmer is successful, he then gets registered in the database of Sappi. The company does everything on that piece of land for the farmer

starting from land preparation, planting of trees, cutting of trees when they are matured and transporting to the mill. The farmer is only responsible for line weeding and pruning during the cycle.

Many growers confirmed that they got involved because there is not much work needed on a daily basis. This corroborates with findings of Mtengu and Green (2016) who conducted a study in KwaZibi (small area within Manguzi) who states that many farmers opted for forestry because of ease of management compared to other food crops. Sappi provides advance payments annually or half-yearly for the maintenance of the trees until they reach maturity. However, Sappi is reimbursed for all the expenses incurred. There is a compensation plan (see Figure 6.2 below) that is followed when a farmer reimburses Sappi. After expenses have been paid, the remainder goes to the farmer as profit.

ISIBONELO / Compensation Plan

Ithani = R765

Izindleko

Umlimi onesikweletu = R508.51

- Isikweletu = R130.05
- Ukhuwisa = R96.31
- Ugandaganda = R86.55
- Iloli = R193.60
- Tribal = R1
- Izicishamlilo = R1

Umlimi asala nakho = R256.49

Umlimi ongenaso isikweletu = R378.46

- Ukhuwisa = R96.31
- Ugandaganda = R86.55
- Iloli = R193.60
- Tribal = R1
- Izicishamlilo = R1

Umlimi asala nakho = R386.54

Figure 6.2: Compensation plan for reimbursements

(Source: Sappi farmers' manual, 2015)

Therefore, a compensation plan is a document detailing expenses incurred per tonne that a farmer has to pay back to Sappi starting from land preparation, seedlings and planting, cutting the trees, transporting with trucks or tractors. It also covers risk costs of fire fighters

and Tembe Tribal Authority (TTA). Please note that the compensation plan only applies to those farmers who are assisted by Sappi. There are private growers who are small-scale commercial timber growers in the area but are not assisted by Sappi. Their forests are not insured in case of fire incidents since they do not belong to any company. This means that, there exist legal and illegal afforestation in Manguzi, this shall be explained in detail in the following parts.

6.4 THE OWNERSHIP OF LAND IN WHICH AFFORESTATION IS PRACTICED

Most of the land in which small-scale commercial afforestation is practiced belongs to the TTA. A person communicates with the ¹*Induna* to request a piece of land. When the land is given to the person, the Induna takes that person to the land to demarcate the boundaries. The majority (73%) of the respondents acquired land through this process. Since the paper allowing a person to plant was previously hand-written, other farmers did not take it as a serious matter, so they just continued with their plantations. As a result, there are farmers who obtained permission from the TTA through verbal talks without written evidence or Permission to Occupy (PTO). This makes it impossible to apply for water-use licenses as such documents are required.

¹ Induna is a Zulu title meaning a headman, this person often acts as a bridge between the people and the king. (source: <https://en.m.wikipedia.org/wiki/induna>) (Accessed on 15-11-2019: 15H35).

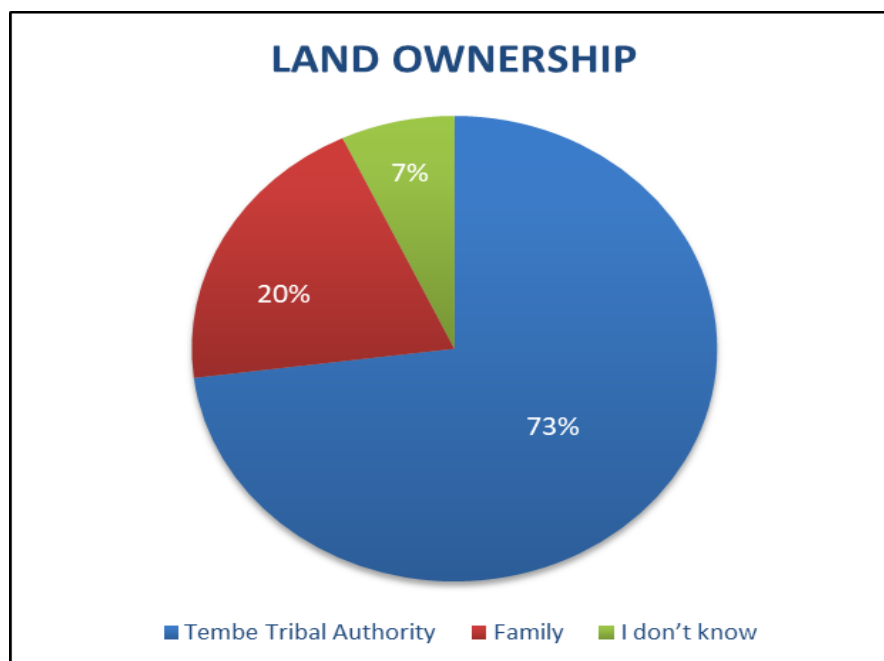


Figure 6.3: Land ownership where afforestation takes place.

Although the total area of Manguzi belongs to TTA, there are pieces of land which were previously allocated to households for residential areas. Therefore, such land belongs to that family, until the entire family dies or fully relocates, then it goes back to the TTA. Some farmers opted for establishing forests on their available land just next to their settlements, rather than requesting a piece of land from the authorities. The 20% of the farmers is practicing this type of afforestation on the land that was allocated to their families for residential purposes. One of the reasons for not using the authorities' land for afforestation was the long distance away from dwellings. The descendants or any relative member would come to the area and establish a forest woodlot with great braveness knowing that everyone in the community, even the TTA is aware that the particular piece of land belongs to a certain family. It is for this reason that in Manguzi, there are widely-spread forests within the communities, whereas the TTA had a demarcated area specifically for those who wish to establish forests, resulting in forests being scattered all over the place.

There is also a small portion (7%) of growers who do not know anything concerning the ownership of land in which they have established their forests. One farmer admitted that when he came to the area, he was demarcated a piece of land by Induna to establish a

household. Having seen an area next to him not utilized, he then planted 2ha forest. He was fined R1000 by the TTA, but his forest was not removed, today he owns 11ha plantation.



Image 6.1: Forest established outside a home

It is not surprising that the 50% of the growers who agreed that they are not aware of the exact size of the land comes from those who have planted on land that was previously for residential areas and feedlots. During the (Interviewee two [Induna], KaNyamazane, 09 October 2019), he said those forests which are found just outside homes within the residential area can trigger crime incidents in the area and they have encroached onto feedlots. Such forests can easily increase the risk of damage to households in the event of fire incidents. In some forests, the researcher observed goats grazing inside and cattle dung showing that cows also graze there because they no longer have vacant grazing land, so since many forests are not fenced, cows and goats graze there.



Image 6.2: Forest established within a relocated family`s land

This is an example of a family that relocated to other areas, but one family member came back to plant forest in this area. The yellowish flat room is a disused and vacant old room, the member left as a mark that the piece of land belongs to their family. This grower is also no longer staying nearby, he only comes during certain days for monitoring and other maintenance activities required.



Image 6.3: Forest within a relocated family`s land

The image above shows the other part of this forest which is established within a relocated family's land. On the left-hand side of the image, there is a toilet without a roof, the grower also mentioned that he left it to alert people that they are still in charge of their land.



Image 6.4: Goats grazing in an unfenced forest

Due to the limited available land for feedlots in the area, goats graze within the established forests which then affects the growth of trees. Cows also graze in the established forests because open pieces of grazing land have been superseded by forest establishments. Livestock, especially both cattle and goats are capable of breaking trees, thus hindering smooth growth.



Image 6.5: Showing cow dung in an unfenced forest

6.5 ILLEGAL SMALL-SCALE COMMERCIAL AFFORESTATION IN MANGUZI

During a personal interview with a DWS official who also facilitates water-use license applications in the Department of Water and Sanitation in KwaZulu-Natal, several reasons were raised as to why some plantations were declared illegal (Interviewee three [Senior Manager at the DWS] 24 October 2019). It was found that there is legislation in South Africa which controls the establishment of plantations and there are many processes involved which must be followed, if not followed then that is an offence to the relevant duly authorized department which, in this case, is the DWS.

The Department of Water and Sanitation Gazette (Notice 1027 of 2015) states that in South Africa, commercial afforestation has been declared as a stream flow reduction activity (SFRA), regulated by means of a SFRA Water-use Licensing System in terms of Chapter 4, Section 36 of the National Water Act (No. 36 of 1998). If a person practices commercial afforestation whether it's on a small scale or large scale, that person must apply for water-use license, if that person does not have a water-use license issued by the DWS, then that afforestation is illegal, therefore compliance and enforcement activity should be applied.

One can then argue that, this act was promulgated in 1998, then since some farmers have been involved in small-scale commercial afforestation for more than 21 years, that is, before this act, does that mean their plantations are legal?

However, the DWS official stated that, “No, unless that farmer did follow the procedure that was applicable before 1998. Before 1972 there was no regulation of commercial forestry in South Africa, any forest that was established before 1972 is legal. Between 1972 and 1998, the establishment of plantation forest was regulated through the afforestation permit system where any new plantation had to receive permission before being planted” (Interviewee three [Senior Manager at the DWS] 04 November 2019) bravely stated. This is further documented in the Department of Water and Sanitation Gazette (Notice 1027 of 2015), which states that "afforestation permit means any authorization lawfully issued by the relevant authorities for purposes of afforestation between 1972 - 1998 in terms of section 7(1) of the Forest Act, 1984 (Act No. 122 of 1984) or any other appropriate legislation. There are three ways a forest can be declared as legal; (1) if it was established before 1972, (2) if there is afforestation permit and lastly (3) if there is valid water-use license issued by the DWS. On the basis of this threefold criteria 13 farmers in the study area are illegal and only two who had afforestation permit obtained in 1998 are legal. These figures give one an idea of illegal farming in the area if there are two legal farmers in 15 farmers, it really shows high level of non-compliance.

He further stated that “there is a database for those forests that existed before 1972. Therefore, if now a person has a forest that was not established before 1972, and does not have a permit obtained between 1972 to 1998, or does not have a water-use license, then that forest is illegal and legal actions shall be taken against that owner, which can result in the forest being removed within a stipulated time frame” (Interviewee three [Senior Manager at the DWS] 24 October 2019).

Apart from these three criteria used to determine if the forest plantation is legal or not, there is also what is known as a Watercourse Buffer Zone (WBZ). WBZ is defined as an unplanted area between watercourses and plantations, with a minimum width of 20m or as

specified in water use license conditions, measured from the edge of the delineated watercourses. If a forest exists within WBZ meaning within 20m from the watercourse, then it is regarded as illegal, thus legal action is required for such practice as it is a serious offence according to the DWS.

The Constitution of South Africa (Section 24) states that everyone has the right to have access to (amongst other things) sufficient water, and the State must take reasonable legislative and other measures within its available resources to achieve the progressive realization of these rights. However, the DWS emphasized that it is pertinent to note that it is the “right to access” and not a “right to water” that the Constitution enshrines and that what is sufficient water is what the local municipality can supply within its own resources. The representative of the DWS went on to say that “we are fully aware about the households extracting underground water without the auspices of the DWS which is also one of the illegal activities taking place in Manguzi and in uMhlabuyalingana local municipality as a whole. This puts stress on quaternary catchment W70A as well as Pongola- Umzimkulu catchment management area, which is one of the most vulnerably threatened CMAs in South Africa due to human actions. The worst part of it is that these communities extract water illegally and use them for illegal purposes” (Interviewee three [Senior Manager at the DWS] 24 October 2019).

6.6 THE ROLE OF SMALL-SCALE COMMERCIAL PLANTATIONS ON LIVELIHOODS

The study found that about 36% of the farmers have been involved in small-scale commercial afforestation for more than six years but less than ten years (Figure 6.4). These growers have cut their trees once, and have seen the contribution to their livelihoods because they have received the revenues (a detailed discussion is in the next section). It was indicated that 14% of the total respondents are novices in this industry as they have less than five years, these people have not harvested their trees as yet since it takes a minimum of six years before they mature depending on the soil profile. These figures suggest that previously, people were reluctant and uncertain to get involved because of the long waiting period before they could get the profits, but having seen others benefiting and

improving their standard of living, more people have been getting involved, which is why the Department of Water and Sanitation has raised water related concerns as a result of this afforestation in the area. This reluctance was also found by Jele (2012) who stated that one of the challenges facing small-scale timber growers is that they wait for many years before they get money meanwhile they need to use it each and every-day.

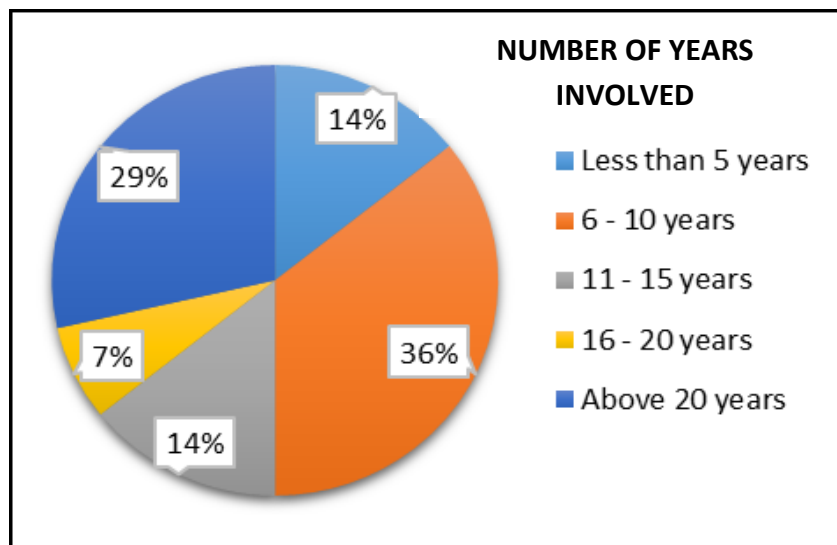


Figure 6.4: Years of involvement in small-scale commercial forestry.

Additionally, 29% of the interviewed respondents have been involved in forestry for more than 20 years. These people have got bigger pieces of land compared to those who joined in the past ten years, others have 5ha x2 or 5ha x3 whilst the majority have 5ha per household. Previously people from the same household could have 5ha of land allocated to each person but that is no longer the case. This is because 30 years ago, land was still available, but today with the increased population, and more people getting involved in forestry, land is limited. When some household members relocate to other areas for better life opportunities, the remaining land is taken and added to another relative already involved in forestry, which is why there are people owning up to 20ha and more. Other respondents agreed that they do not have formal written papers of transfer and possession of land, but ownership is based on verbal discussions and history pointing to fore fathers owning the land.

The 14% of the respondents have been in the industry for more than 11 years but less than 15 years. These have twice harvested their trees. Another 7% have probably cut their trees three times during two decades of their participation in small-scale commercial afforestation. The increase in the number of farmers who are still getting more involved in small-scale commercial afforestation in Manguzi suggests that there is pivotal role played by this afforestation in rural livelihood generation, which was the first objective of the study.

According to the Department of Water Affairs and Forestry [DWAF] (2005), the forest resource in South Africa has three main components, namely: indigenous forests, savannas and plantations. Local communities in Manguzi are involved in plantations, mainly Eucalyptus which is an invasive alien plant in South Africa. Eucalyptus is known as one of the threats causing water concerns in different parts of the world. A eucalyptus tree consumes 90 litres of water per day and during summers and times of drought, its roots can grow 30ft deep. A research study conducted in India found that compared to 177m mean depth of groundwater, eucalyptus plantations have increased depth to 260m (Kaggere, 2017). It is for these reasons the environmental authorities banned planting of eucalyptus from three districts (Kolar, Chickballapur and Bengaluru Rural) that were most vulnerable. This legal action was taken to protect groundwater resources. Another action taken against the impacts of eucalyptus on water resources resulted in 2011 Karnataka Forest Department banning plantation of eucalyptus in Western Ghats and surrounding districts (Kaggere, 2017).

There are many reasons as to why the people in study area were involved in small scale commercial forest plantations, these are summarized in Figure 6.5 below.

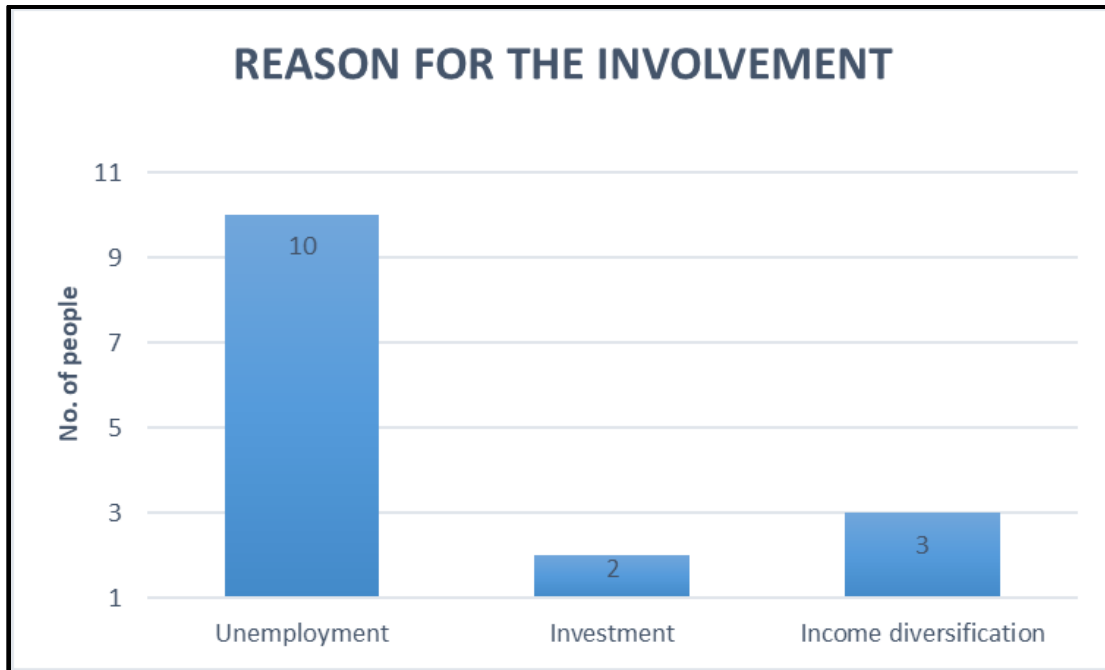


Figure 6.5: Reasons of growers for getting involved in this type of forestry.

Figure 6.5, above shows that the main reason for undertaking small-scale commercial afforestation was unemployment, followed by income diversity. The majority (67%) of the respondents attributed their involvement to the unemployment, with their illiteracy making it difficult to get proper jobs with fixed income. Another respondent was quoted saying “I used to change the sitting positions in my yard, as I had nothing to do to earn an income, so when I saw my neighbors getting involved in forestry, I saw a great opportunity, at least now I have a responsibility of taking care of my 5ha forestry” (Interviewee four [Small Scale Farmer], Phelandaba, 09 October 2019).

Such higher figure of respondents pointing to unemployment shows that there is a great need for rural economic development strategies. One strategy could be equipping local people with entrepreneurship skills so that they are able to work towards creating more employment opportunities rather than trying to look for employment. This is not the case only in South Africa as the study that was conducted by Le et al (2012) in other developing countries found that small-scale commercial forestry provides opportunities and has the potential of boosting the livelihood standards of local people, thus contributing to rural

development. Jele (2012) agrees that employment opportunities in rural areas are finite and households depend on natural resources for income to meet their daily livelihood needs.

Karumbidza (2005) also confirms that small-scale commercial farming is aimed at making a profit which contributes to the household's average total income. Such dependence on forestry as a result of unemployment can also be attributed to the lack of other human, physical, natural, social and economic resources essential for the communities to pursue any livelihood strategies as the SRLF postulates (Peterson and Pederson, 2010). Since more than 50% of respondents had no form of education, it means they lack human resources which the researcher considers as the most important amongst other four resources. The fact is one can have money and land but if he lacks necessary skills, he does not have a starting point which will then prevent him from executing even a livelihood strategy.

Furthermore, 20% of the total respondents got involved in this type of forestry to diversify the income sources. This response suggests that there are small-scale growers who are able to earn a living but forestry comes as another source of income to boost the household's total income. These responses converge with Jele's (2012) views who points out that this type of farming contributes income, employment and business opportunities towards alleviating poverty rather than providing a complete solution. A study conducted in Uzbekistan [Central Asia] by Djanibekov et al (2013) found that small-scale commercial afforestation is seen as one of the livelihood diversification options, as it provides a range of employment opportunities which improves household's income. However, the state policies prohibit the afforestation in some places, except if its large-scale commercial afforestation.

It is for this reason SRLF states that a livelihood is likely to be sustainable if more different strategies adopted for income diversification (Bodonorina et al, 2018). This 20% asserted that small-scale commercial afforestation has played a huge and vital role in making their livelihoods sustainable because there were times when their other sources of income such as livestock suffered from shocks such as prolonged drought and disease, but forestry ensured their survival. The widely known definition of what constitutes a sustainable

livelihood was met by these three respondents. The Department for International Development [DFID] (2000) states that a livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets.

The other 13% of the respondents got involved as a way of investing, because revenues are received after six to eight years from planting a forest, when trees are harvested. These are people who have other solid sources of income therefore being involved in forestry, is just a way of investing for the future. This can be due to the structures they have access on, for example the SRFL state that structures might be the existence of ministries, or banks that give credit to the farmers in the local community. Structures such as KwaNgwanase Small-scale Growers Association, Sappi Khulisa projects and Awethu Forest Investments (AFI) are very helpful to the farmers in providing advance loans and also in promoting savings for small-scale farmers. In this study, the role of small-scale commercial afforestation in rural livelihood generation was grouped into three broad categories namely; physical, socio-economic and humanistic roles. These are the areas on the rural livelihoods which have developed as a result of the people's involvement in these plantations.

6.6.1 The physical role in livelihood generation

The most noticeable physical role of small-scale commercial afforestation to livelihoods is the transition from the wooden houses to brick-layered houses (Images 6.6 and 6.7). As usual, in rural areas there are poorly developed houses, but in Manguzi (study area) there has been a rapid change of the state of the households. In most households that were visited during data collection stage, the researcher observed and noticed old wooden houses in the homesteads, which the respondents agreed to have stayed in them for some time, until they managed to build reliable houses through revenue received from small-scale commercial afforestation. Wooden houses cannot be reliable at all times, especially in floods and storm events, because damage can be severe compared to brick-layered houses. Therefore, having reliable houses is proof that small-scale commercial afforestation is playing pivotal role in generating sustainable livelihood, because SRLF states that a person is likely to achieve sustainable livelihood if he has physical assets such as houses. These

increase the chances of coping with, and recovering from shocks (Peterson and Pederson, 2010).



Image 6.6: One of the farmer`s newly built house

The above arrow points the
zoomed wooden house



Image 6.7: One of the farmer`s old wooden house.

One of the farmers confirmed that if it was not for the 8ha she started owning back in 1998, she would be still staying in the above wooden house (Interviewee five [Small Scale Farmer], KaNyamazane, 10 October 2019). After harvesting her forest in 2005 and in 2012 she received more than R100 000 with which she managed to build reliable home for her family. She even cracked a joke about a name of the area “KaNyamazane” which means a Springbok, she said “before the community got involved in small-scale afforestation they were living in wild caves as springboks but that has recently changed”, as the researcher

also observed many newly built houses in the area, with some old wooden houses which are now used as store-rooms and car shelters.

The arrow shows that previously, this was an entrance before the room was converted into a car shelter after they managed to build proper house.



Image 6.8: The wooden house converted into a car shelter

Apart from the majority building proper houses on their yards, others also managed to install systems to extract underground water which they call "*Isigayo*" or informal water pump. The locals said this system cost about R3500 upwards, which is a lot of money for people who rely on social grants for survival. The local people stated that *Isigayo* goes 10m deep or up to 20m depending on the area. With the inability of the local municipality to supply basic water infrastructure in remote areas, this is the only way the rural people gain access to clean water. In all visited homes, there was an *Isigayo* in their homesteads but it was a different story with one of the growers who installed *Isigayo* next to his 5ha planted forest mainly for watering his trees as he is not staying full time on that home next to his forest. He admitted that he installed it to water his trees as he was spending lot of money and energy transporting water when planting trees. He also stated that he has realized that his neighbors who cannot afford to have their own are also collecting water for domestic use

from his *Isigayo*, he does not have a problem with that, because the neighbors also have a responsibility to protect it from theft and misuse.



Image 6.9: *Isigayo* next to the forest

Isigayo could be one of the greatest culprits causing water concerns for the Department of Water and Sanitation as local communities extract water directly from underground. Communities do not pay for this water and they are not monitored as to how many litres are consumed per household as the systems are not implemented by the local municipality, which can be an intractable problem to the DWS. From the perspective of the local communities, if it was not for the small-scale commercial afforestation they would not be having access to clean water. *Isigayo* falls under the physical resources that local people have in place to use in sustaining their livelihoods as stipulated in SRLF. Clean water promotes good health, and good health is one of the essential human resources enabling or limiting rural people to adopt certain livelihood strategies as stipulated in SRLF.

6.6.2 The socio-economic role in livelihood generation

The key role of small-scale commercial farming to the livelihoods of the local communities cannot be ignored as the farmers stated that their socio-economic status has improved and continues to do so. Many respondents stated that, they used their revenues to start non-timber based businesses. The growers are cognisant of the fact that trees are taking time to mature while immediate income is required, so that is why they use money to diversify their livelihood strategies. As a result, they use this type of forestry as a strong foundation upon which they can build strategies to escape the deprivation trap. This is further emphasized by Jele (2012) who stated that timber farming contributes income, employment and business opportunities towards alleviating poverty rather than providing a complete solution. Tree harvesting supports households during financial hardship and reduce vulnerability through diversified livelihood strategies.

When the researcher asked about the economic role of small-scale commercial forestry on their livelihoods and as a basic foundation one can use to build a sustainable livelihood, most of them shared a story of successful small-scale farmer . This man is a small-grower who got involved in forestry in 2003, he planted 2ha of eucalyptus at his home (in Manguzi) northern KwaZulu-Natal. With the assistance from Awethu Forestry Investments (agent) facilitating the marketing of timber to the Mondi Richards Bay mill, today Ben has 40ha of Eucalyptus, employs three permanent staff and hires an extra ten people during planting season. He is one of the prominent small-timber growers who used the capital from his forestry operations to open a number of other businesses, he has a ²*spaza* shop, a mobile freezer, rents ³rondavels and has 120 head of cattle.

This is the similar case with another farmer in KaNyamazane area, who is also the chairperson of the small-scale timber growers, he also used the money from forestry to start a *spaza*, bought a Toyota van which is servicing local people to and from town. He also invested in livestock farming as he has over 80 cattle. He is one of the two the respondents

² Spaza shop is an informal convenience shop, usually run from home, selling everyday small household items (source: <https://www.lexico.com/enn/definition/rondavel>) (Accessed on 15-11-2019: 15H30).

³ Rondavel is a traditional circular African dwelling with a conical thatched roof (source: <https://www.lexico.com/enn/definition/rondavel>) (Accessed on 15-11-2019: 15H32).

who boastfully admitted that even if this forestry can be banned, his livelihood would cope and survive, though he would move slightly backwards. This is mainly because he does have other sources of income although forestry is also contributing a lot, so there will be a reduction in income if this afforestation is stopped.

6.6.3 The humanistic role in livelihood generation

The SRLF states that human capital refers to the skills, knowledge, ability to labour and good health that enables people to achieve their desired livelihoods. Therefore, in this research, humanistic role to livelihoods refers to the impacts that were brought by small-scale commercial afforestation in developing human aspects of the farmers and their families. Respondents indicated that their participation in small-scale commercial afforestation has equipped them with some essential skills, especially on how they can effectively and efficiently manage their forests. Sappi organizes workshops for small-scale farmers in order to introduce them to other business ideas they can invest in when they receive their revenue. Sappi also provides 13 training modules, developed specifically for the small-scale growers. This training covers all aspects of forestry, including the core operational skills as well as safety, legal compliance and running a business (interviewee six [Management Forester]), Manguzi, 14 October 2019).

Small-scale commercial afforestation has enabled farmers to improve other human aspects which contribute to their adopted livelihood strategies. One respondent stated that her involvement in small-scale commercial afforestation has enabled her to do driver's license, which increased her chances of getting formal employment, since now she is working as a community health worker. She further stated that she also used the money from forestry to send her last born son, who is now doing his final year in BCom Accounting at the University of Zululand (Interviewee five [Small Scale Farmer], KaNyamazane, 10 October 2019).

The respondents stated that they have been able to improve their health status because health facilities in Manguzi are few, they rely on mobile clinics which take place every first Monday of each month. One respondent stated that whenever there is someone sick in the household they are able to hire a van to take that person to the hospital, and they now have,

and can afford a family doctor. He also stated that their state of health is also improving because they can afford the healthy food needed for their bodies' nutrition (Interviewee two [Small Scale Farmer], Phelandaba, 09 October 2019).

Taking into consideration the three-fold role played by small-scale commercial forestry to the rural livelihoods, the researcher asked what the people would do if this afforestation was stopped. The majority (67%) asserted that their livelihoods would not cope or survive. This suggests that livelihoods of rural communities are primarily dependent on forestry. This dependency on forestry can be correlated with illiteracy, if people are illiterate, they are more likely to depend on forestry because they lack competitive skills required in non-agricultural activities. This response is not surprising as it was also found in India, that wherever illegal afforestation activities were stopped by authorities, the levels of poverty increased amongst rural dwellers (Biswas, 2003). This connects with the SRLF which states that institutions and organizations can make rural livelihoods vulnerable through their policies and legislation which in majority of cases are not known by rural communities (DFID, 2000).

Furthermore, 20% of the respondents were not certain whether their livelihoods would cope and survive or not if this afforestation is stopped. This response came from the 14% who have been involved in farming for less than five years. This is due to the fact that, although they have seen other fellow neighbors benefiting, they themselves have not harvested even once, thus they have not experienced the impacts. The other 13% stated that they would survive, not that because forestry was not having great impacts on their livelihoods but it's because they used the revenues received from forestry to diversify their sources of income

6.7 THE RESPONSE OF THE DEPARTMENT OF WATER AND SANITATION

The Department of Water and Sanitation (DWS) is the custodian of National Water Resources, and is responsible for policy and regulation of the sector. When the DWS noticed the unlawful development of small-scale commercial afforestation in Manguzi, they responded by liaising with the local sphere of government (uMhlabuyalingana LM) and with the TTA to have educational campaigns in the communities. This is where the rural

communities are supposed to be informed about water concerns in South Africa and about the impacts their activities have on water resources as well as about the legislation related to water. However, these campaigns have not been successful since afforestation is increasing at an alarming rate in Manguzi. The failure of these campaigns was caused by the fact that the communities did not attend them. The DWS takes into consideration the Promotion of Access to Information Act 2 of 2000, commonly known as (PAIA), which is concerned about all the stakeholders and the affected parties having access to the relevant public information, which is why they started with educational campaigns.

With a lot of research and investigation taking place in the catchment W70A (where Manguzi is located) showing deterioration in water resources caused by increasing illegal afforestation, the DWS has considered another responsive measure, which is known as Compliance Monitoring and Enforcement (CME). CME is a protocol tool used by the DWS to deal with illegal actions which affects water resources in South Africa. CME was identified in the National Water Resource Strategy 2nd edition (2013) as one of the key sectors that required a prioritized focus in order to effectively preserve the country's water resources. The compliance refers to the state of conformity with the law. The monitoring refers to the act of observing and checking the progress of compliance with the law over a period of time. Enforcement occurs after one or more contraventions have been detected. It involves taking steps to achieve compliance by the regulated community and correcting or terminating conditions that put the environment or public health at risk (The DWS CME Report Gazette, 2015 - 2016).

The DWS conducted an investigation of unlawful afforestation through desktop assessment to determine compliance of planted afforestation in the W70A catchment, with the requirements of the National Water Act 36 of 1998 (NWA). Site inspections at the unauthorized plantations and surrounding catchment have also been undertaken and meetings were held with Tembe Tribal Authority (The DWS CME Report Gazette, 2015 - 2016). The percentage compliance was assessed in Manguzi. Table 6.1 below depicts the classification in which compliance is measured against.

GENERAL COMPLIANCE PERFORMANCE LEVELS

Percentage of compliance	Condition	Description
75 -100%	Acceptable	Technical conditions are met in most circumstances; few administration actions should be undertaken. Request proof of compliance electronically.
54 – 74%	Good but at risk	The implementation of water use conditions is implemented with several actions still outstanding. Action plan required to ensure full compliance. Follow up audit required.
25 – 49%	Not acceptable	Compliance meets less than half of the substantive implementation and administrative actions in the license. Action plan required to ensure full compliance. Follow up audit required. Decision to be taken on improvement compliance. If so, follow-up audit scheduled, if not, hand over to enforcement action.
0 – 24%	Not acceptable	User meets minimal conditions in both implementation and administrative actions in the license. Decision to be taken if non-compliance is potentially or detrimental or fatal to water resource. If fatal, hand over for enforcement action. If not an action plan required to ensure compliance. Follow up audit required and scheduled.

Table 6. 1: Source: The DWS CME Report Gazette (2015 – 2016: p14)

Based on the above compliance classification, Manguzi falls within the red area, meaning the compliance level is between 0 -24%. The color in this table represents the severity of non-compliance with the legislation. This was validated through the interviews with growers who claimed not to know anything about the legislation framing their actions and licensing system required for any water use. This is one of the sources of conflict because on one side, the DWS claim to have invested in communities` educational campaigns, and on the other, the communities do not know anything about such campaigns. An area falling within the red area requires emergency attention. Due to rapid increase of the unlawful

afforestation in the area, water resources are deteriorating in the area. During the interview with the representative from the DWS, it was found that if the area falls within red portion it is a “no go area” meaning no water use license can be issued out until the CME tool has been utilized to understand the current situation.

The DWS CME Report Gazette (2015 - 2016) states that unlawful forestry development is expanding in the area and watercourses and other water resources are affected. The DWS is working with other government departments to address this matter. These plantations in Manguzi fall under SFRA but enforcement action is not yet implemented as monitoring and investigations are still on-going. The DWS has to accomplish stages of Compliance and Monitoring before executing the Enforcement. Currently the department is still in phase A of the CME Protocol overview (refer to Figure 6.6 and Figure 6.7). The CME is guided by different legislation such as Promotion of Administrative Justice Act (PAJA) 3 of 2000 which states that everyone is entitled to justice precautions.

The CME is built upon the following objectives, which are to;

- Give effect to the human right of access to water (Section 27) and the right to an environment not harmful to the health and wellbeing (Section 24) of the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996).
- Promote compliance.
- Guide regular, strategic, effective and efficient monitoring of compliance with all DWS legislation.
- Provide prompt and effective enforcement action in the event of a suspected contravention of DWS legislation, including criminal prosecution.

ENFORCEMENT PROTOCOL

Overview

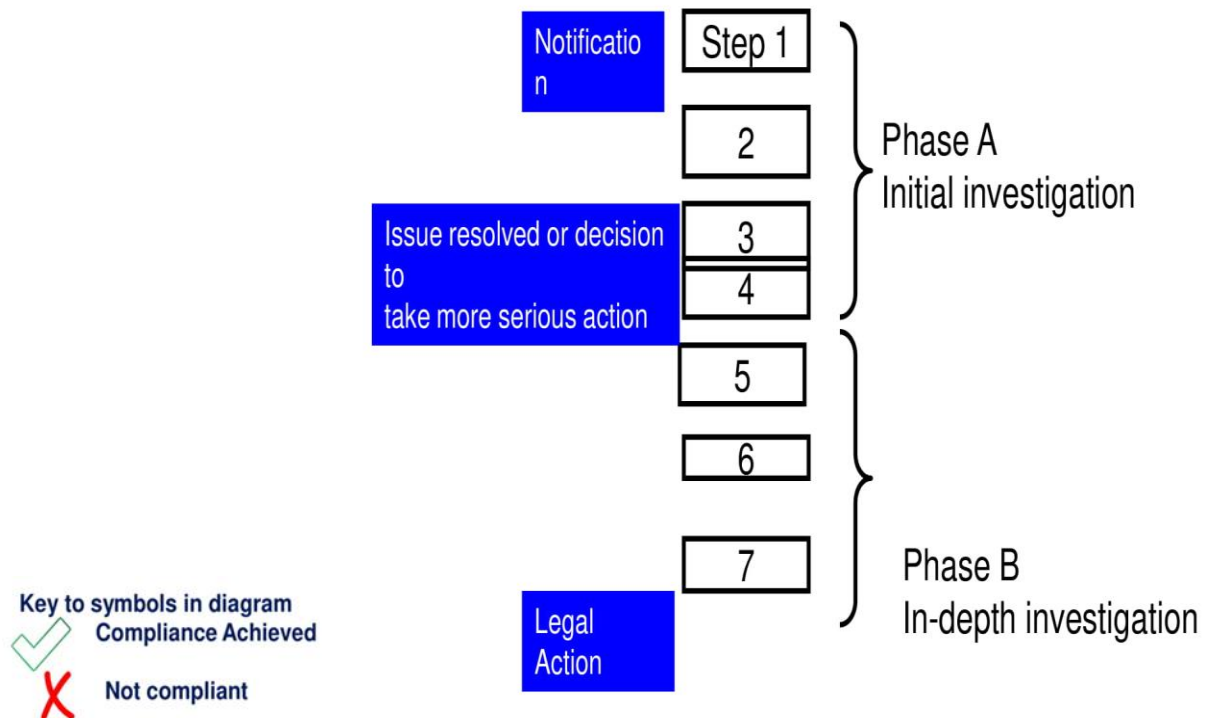


Figure 6.6: Enforcement Protocol Overview. Source (DWS, 2015 p16)

This protocol has two phases, A and B, and each has a number of stages that should be followed, if Phase A proves to be unsuccessful, then Phase B is then executed. Phase A (steps 1 – 4) is the initial process, largely at WSA's hands, from notification, through classification, notifying the offending party and receiving a report of the corrective action taken. This process occurs in a short time frame and does resolve the majority of non-compliance issues. In Phase A, it is where the DWS gets notified of the illegal practices affecting water resources. The DWS conducts initial investigations through desktop assessment and analysis. The DWS then prepares for site inspections to verify and validate

results from desktop assessment. The site inspections are important in order to analyze if the problem identified poses extreme danger or is minimal. In this stage, problems are classified according to the source, if it is mining industry or forestry or other. If the results have been validated and proven to be true, then the persons responsible for such illegal practices are identified. The DWS have only does these steps in phase A, as the investigation is still pending.

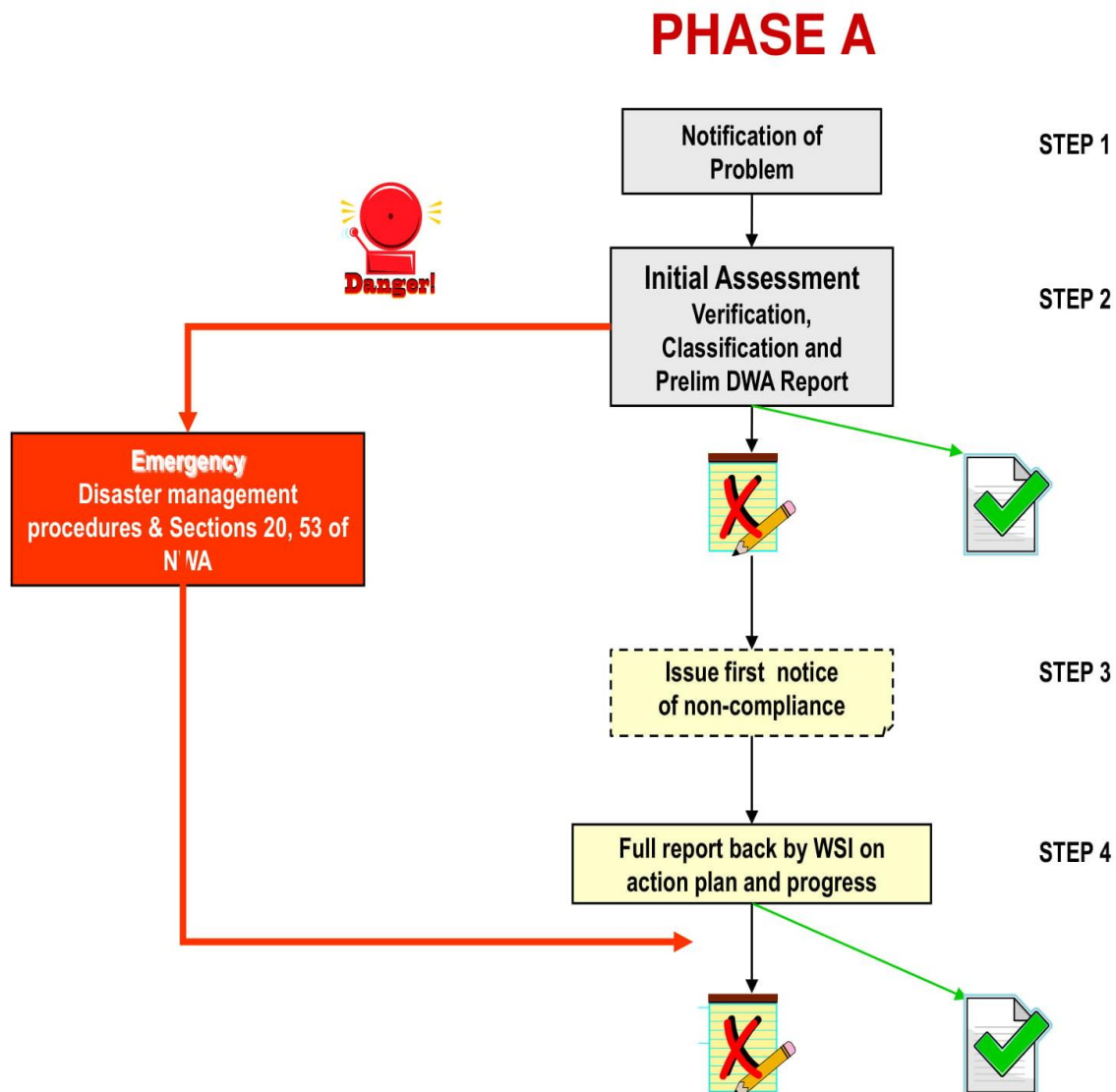


Figure 6.7: Enforcement protocol overview Phase A, Source (DWS, 2015 p17)

Once they have been identified, the DWS issues out the first letter of non-compliance to the reprobate as they are often referred to. As per the requirements of PAJA 3 of 2000 emphasizing justice in any matter resolutions, the reprobate is given time to respond to the letter. If there is no response, another letter is issued out, if response has been received, then the action plan is developed to tackle the matter, which emphasizes a great focus on educational campaigns. The DWS monitors the progress, if there is no progress then the DWS may execute Phase B (Figure 6.8).

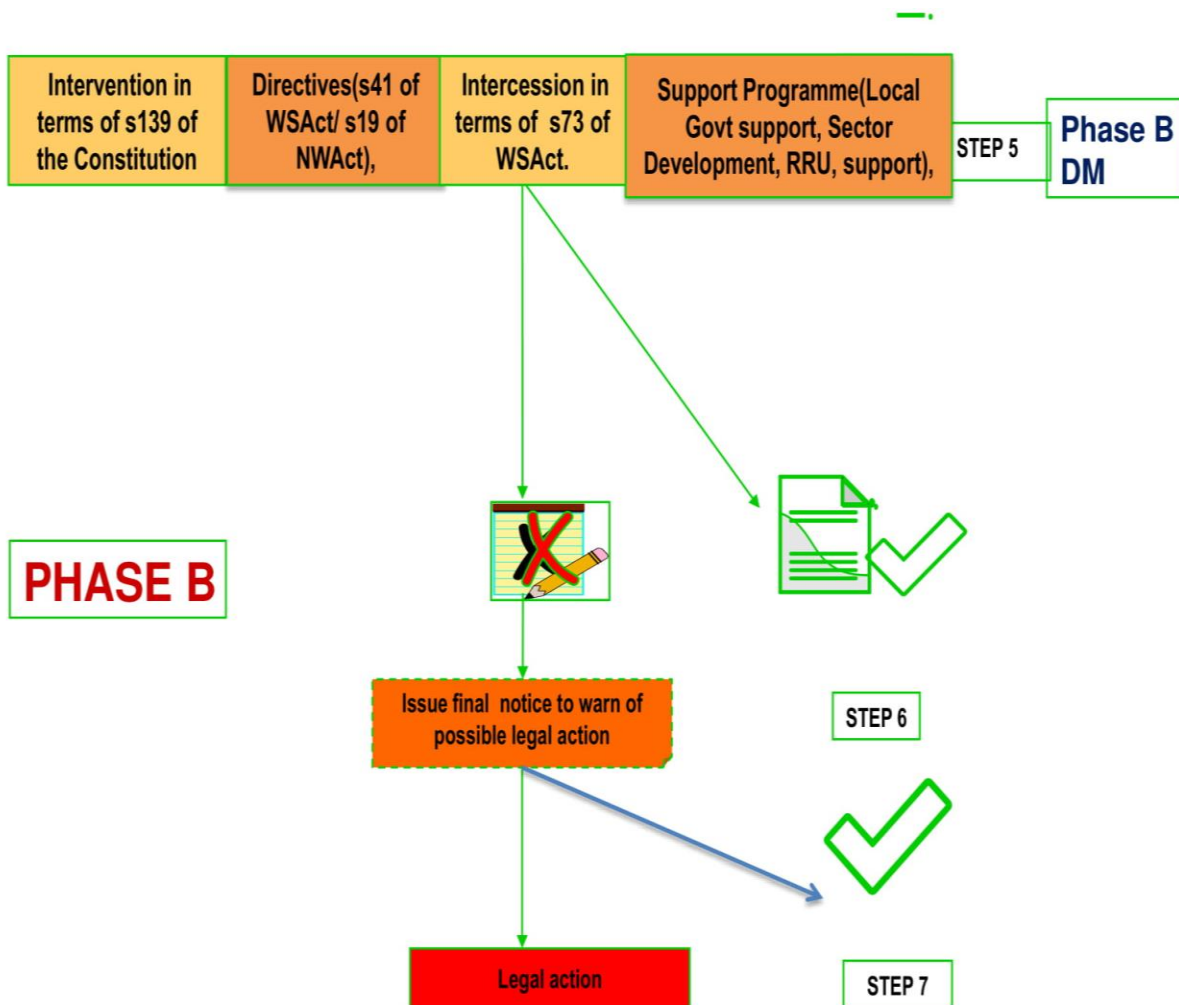


Figure 6. 8 Enforcement protocol overview Phase B, Source (DWS, 2015 p18)

Phase B (Steps 5 – 7) is a more crucial process involving decisive action, in-depth investigation, interventions and, where necessary, legal action. It is hoped that this phase is only to be followed for significant non-compliance, once Phase A has proved to be unsuccessful. A water user, who negligently or intentionally contravenes, fails to comply or comply inadequately with these regulations or with any directive issued in terms of Section 53 of the National Water Act, shall be guilty of an offence and liable on conviction to a fine or imprisonment for a period not exceeding five years. The enforcement which results in the removal of trees and prohibition of afforestation is also mentioned by Djanibekov et al (2013), who found that rural communities depend on forests but the governmental policies and laws prohibit forestry in some places. The SRLF argues that the poor rural communities know what matters to them, and outsiders have to listen to their priorities instead of assuming that their own values and ideas are as good as, or better (Peterson and Pederson, 2010). The SRLF further states that the institutions and structures, whether they be governmental or private should help the rural communities to become aware of their own priorities and analyze their own surroundings for resources (Peterson and Pederson, 2010).

This is the main source of the conflict because the actions of the DWS show that their main aim is striving for sustainable water use through the legislation already in place, while the increase in small-scale commercial afforestation suggests that local communities are striving for the sustainable livelihoods, and it was found that the legislation in place is neither known nor understood by these farmers. The other source of the conflict is that should the DWS execute enforcement and removes trees, are there any proven developmental projects that can be initiated to cater for the livelihoods of the farmers and their families? The Department of Water Affairs and Forestry [DWAF] (2005) states that when rural people have no other sources of income, they usually turn to the forest for their survival.

If the DWAF recognized the role of forestry in the livelihoods of rural people, if these people are to be restricted from such, is there now any viable source of income available to accommodate these people, who have no market-related skills, because the daily activities of the household members are shaped by their level of education? This should be viewed against the fact that; small-scale commercial afforestation is one of the few activities which

proves to be successful in earning rural dwellers a living (Jele 2012). The preceding discussions and the questions which have been raised here suggest that, the priorities of the two involved parties are divergent, and this results in a gap which is the cause of the conflict. This shall be further explained later on under the perceptions of the local communities towards regulatory authorities.

6.7.1 Water concerns related to forest plantations in South Africa

Ingrid and Rainier (2012) state that South Africa is viewed as a water-stressed country with an average annual rainfall of 500 mm (the world average annual rainfall is 860 mm) with decreasing precipitation from east to west. Total groundwater use is estimated at 15% over the 65% of the surface area of South Africa. Invasive plants such as eucalyptus steadily diminish water resources, as they typically use significantly more water than native vegetation. Across the country, invasive plants reduce mean annual runoff by 1.4 billion m³ (3%) - the equivalent of 577 600 Olympic size swimming pools.

A 2016 study on the impact of invasives on the Western Cape Water Supply System indicated that they reduce water yields by 38 million m³ per annum, which equates to losing the entire Wemmershoek Dam annually. The importance of alien clearing as part of good catchment management has long been recognized, but with the severe three-year drought in the Cape, fully addressing this issue is now vital. Cape Town recently felled 50 hectares of city-owned pine plantations. There are also plans to fell another 110 hectares, which will result in daily savings of about one million litres. But much larger-scale clearing is needed to make more substantial gains (Ingrid and Rainier, 2012).

Ingrid and Rainier (2012) further state that Working for Water (WFW), which controls invasives countrywide while facilitating job creation, has cleared 2.5 million hectares of invasions since its inception, but this is only a fraction of the invaded area. Experts have recommended several changes to this programme. These include sufficient funding for planning, monitoring and evaluation, increased operational flexibility, as well as integration with fire management.

6.7.2 Water concerns related to plantations in uMhlabuyalingana

The DWS has responded and is planning to fully execute the enforcement protocol overview which can result in the removal of trees in Manguzi because the rapid increase in the forest plantation generated stress on water resources and legal requirements for those plantations are not met. The DWS has traced the development and intensification of unlawful afforestation as far back as the early 1990s. Figure 6.9 below shows the growth in unlawful afforestation in the study area and the impact it has had on the water table in Kosi Bay as Manguzi is often referred to.

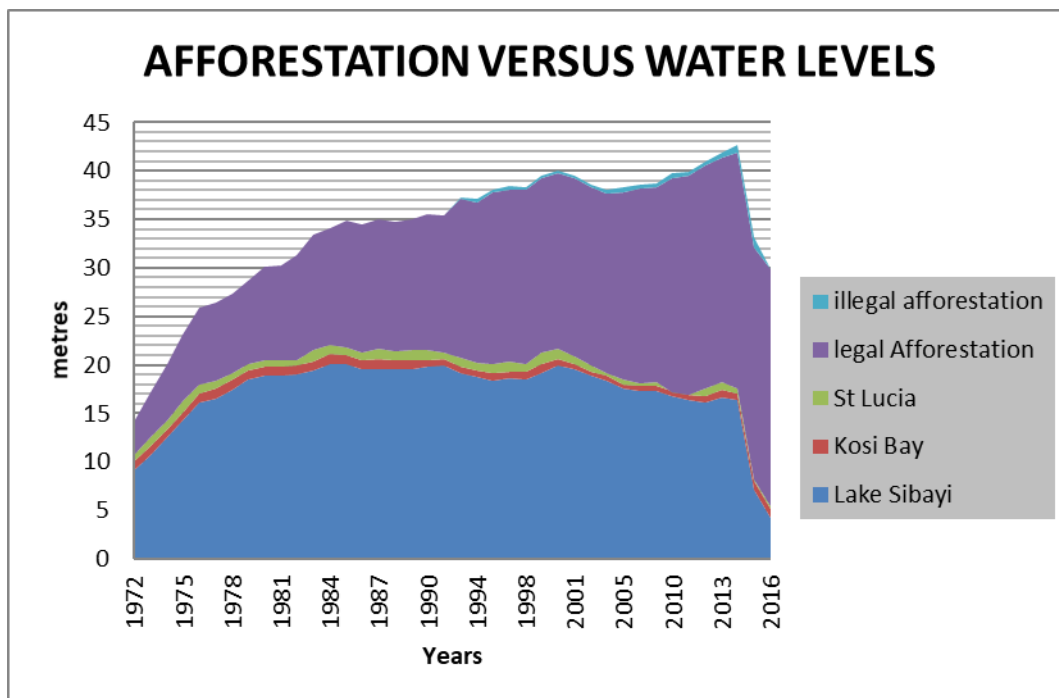


Figure 6.9: Decline in water level due to illegal afforestation. (source of data DWS, 2019)

The above graph shows the development of illegal afforestation which was first recognized in as early as 1993 as shown by the light blue line at the top. Between 1999 and 2012 there was a prodigious growth in illegal afforestation which saw water level dropping at an alarming rate from 16m in 2014 to 4.2m in 2016. Water level can be understood as the height reached by the water in a reservoir, river, or any other water resource. In the case of Manguzi, the DWS investigated the Lake Sibaya as a point of reference in understanding the scale of the impacts, illegal afforestation has on water resources. Mahlangu (2015)

postulates that the growth of the man-made forests soon leads to conflicts with downstream water users, mainly farmers. The DWS used different hydrological models such as Stream Flow Reduction Activity Model, other borehole monitoring models and stations to record ground water, whilst on the other hand using Geographic Information System (GIS) and Global Positioning System (GPS) to map the expansion in hectares (ha) of illegal plantations.

The impacts of small-scale commercial afforestation on water resources have been highly noticeable. In Manguzi, there are now forests within Watercourse Buffer Zone (WBZ), which accelerates stress on water resources, not only for the area but for the whole municipality. There are wetlands that existed but now have dried up due to the establishment of forest within the WBZ. The image 6.10, image 6.11 and image 6.12 show a dried up swamp due to due illegal afforestation in Phelandaba in Manguzi, with exact co-ordinates (26° 59' 56.64" S 32° 45' 46.02" E).



Image 6.10: Yellow line demarcating swamplands in 2005



Image 6.11: a dried up swamp in 2010, red line marks a forest plantation



Image 6.12: Development of settlements within dried swamp in 2019.

Before the development of tree plantations in 2005 there were swamps as shown in image 6.10 above but they dried up in 2010. Currently in 2019 there has been development of human settlements. These developments in Manguzi confirm what has been observed in other contexts. For example, the rapid increase of plantations occurring within proximity of the sub-watershed of the Mekong River Region in China has severely threatened water resources (Yang et al, 2015). This was previously a very important resource in

Xishuangbanna but is now threatened because there are significant indigenous populations of people living within and near its boundaries involved in small-scale commercial plantations, especially rubber and tea which benefits them but disrupt water ecosystem (Yang et al, 2015). Kaggere (2017) states that in India, studies and observations by different government officials found that eucalyptus and acacia plantations were responsible for the present parched condition of the three districts, which previously had water. Which is why despite the benefits to the rural livelihoods, the government has then banned farmers and the general public from planting eucalyptus and acacia groves in Karnataka since February 2017.

The image 6.12 above suggests that people prefer to live close to their forest plantations. They normally prefer close locations so they can protect their forests against cattle and fire incidents. This is further supported by Shackleton et al, (2007) who state that worldwide, approximately 1.6 billion rural people derive their livelihoods fully or partially from products derived from local forests. These rural people live within or next to the forests and have depended on forests to meet their basic needs for survival and livelihoods from generation to generation.

Another concern that the department is picking up, is the conversion of unmanaged, informal jungle afforestation to formal commercial plantations without authorization (DWS, 2017). The images below demonstrate the DWS's concern, as it is visible in the study area. The image 6.13 showing no formally established forest back in 2005. There was just a small portion of jungle, with just one household already in the area. In 2010, there are lot of settlements nearby, then that is when land preparation took place (Image 6.14).



Image 6.13: (2005) No formally established forest except small jungle forest



Image 6.14: (2010) land preparation



Image 6.15: (2019) 3Ha established forest

Not surprisingly in 2019, there is a formally established commercial forest (Image 6.15). One respondent stated that “others get involved in small-scale commercial forestry because they want to secure land ownership rights, if the land is vacant, nothing is happening on it, it is easier for the traditional council to give it to someone else who need a place to build a home” (Interviewee two [Small Scale Farmer], Phelandaba, 09 October 2019). Mtengu and Green (2016) also state that another important reason that motivated families to be timber growers is the fact that they were securing their land rights over unutilized land. Mtengu and Green (2016) further state that the reason for this, is that women were protecting the land from being repossessed since their husbands were working away from home in cities such as Durban and Johannesburg. For widows, it also helped to increase security of tenure since their land rights become insecure after the death of their husbands (Mtengu and Green 2016).

Another concern that the DWS is currently having with reference to what is happening in Manguzi is that, there are people who were granted a water-use license back in late 1990s for a specific sized forest in hectares, but these people have been expanding their plantations without consulting the department. Based on the DWS Gazette Notice (1027 of 2015) such practice is illegal. Under Section 26 and Section 69 of the National Water Act, 1998, the Minister of Water and Sanitation (Nomvula Mokonyane) in 2015 published in the Government Gazette, the regulations requiring the authorization of afforestation genus exchanges in order to protect water resources, instream or riparian habitat.

Amongst other laws, it is stipulated that if a lawful water user is planning to modify his plantations, should it be genus exchange (species planted exchange) or expansions, or any action that will affect water resources, the person must apply to the DWS, detailing all the proposed changes. The Department must then determine the exchange ratio making use of the best available researched information on the water use of the different species at quaternary catchment level. However, forest plantations have been, and are still expanding but there are no applications for genus exchange received by the DWS, thus such forests are illegal and Compliance, Monitoring and Enforcement tool shall be applied.

The Gazette further states that genus exchange may not result in an increase in the existing lawful water use of the property. These regulations allow only for an exchange in the authorized genus of an equal area or a reduced area of the existing lawful afforestation area based on the water use of the different genera. This means that: (a) an exchange to a higher water using genus will therefore result in the amendment of the original authorization resulting in a proportionally smaller area (hectares) to be planted, (b) exchanges to a lower water using genus may not increase the planted area (hectares) unless authorized in a water use license. There has been an increase in the planted area (hectares) in the area without the authorization in a water use license.

Manguzi is located within quaternary catchment W70A and it has been investigated and found that water quality within the catchment is declining. The decline in water quality is linked to point source pollution such as the discharge of inadequately treated wastewater effluent from wastewater treatment works and irrigation, dairy farming, piggery and pulp production. There is also a challenge on water yield in the area as it is also declining, and this comes as a result of uncontrolled afforestation, mainly eucalyptus plantations. In Pongola-UMzimkhulu (where Manguzi is located) the available yield is 1917 (million m³/annum) while water requirement is 2539 (million m³/annum). In this CMA, there is already a big challenge because demand for water is higher than the available water, thus any extraction of water illegally adds to the water problem the area is already experiencing (DWS gazette, 2016). During the site visits, the researcher observed many planted plots which cannot be detected through satellites images as they are very small (Image 6.16). The researcher acknowledges that if more research (involving fieldwork and not dependence of satellite images), is done, there would be realistic statistics of exact areas infested with illegal afforestation.



Image 6.16: A recently planted plot

In the above Image (6.16), it is highly impossible to detect that there are plantations already on the ground, except if one looks at Image (6.17) below which was taken at very close range compared to Image 6.16. During the interviews some farmers mentioned that they are still planning to expand their plantations because they still have access to the land. This suggests that the DWS must engage more with the growers so as to determine a workable solution going forward.



Image 6.17: Plot with recently planted trees

6.8 THE PERCEPTIONS OF THE LOCAL COMMUNITIES TOWARDS THE GOVERNANCE

The perceptions of the small-scale commercial growers that were interviewed varied. The majority showed dissatisfaction and anger towards the DWS should such enforcement (stopping illegal afforestation) actions take place. Many respondents believe that trees are the same and use same litres of water to grow, therefore it is not a proper solution to remove illegal plantations whilst legal ones will be left because at the end of the day its trees that consume water (Interviewee seven [Small Scale Farmer], Phelandaba, 10 October 2019). They believe if water concerns are caused by forest plantations, then all plantations must be removed, but if the DWS is going to remove some and leave others, then they are waiting for a disaster to happen (Interviewee seven [Small Scale Farmer], Phelandaba, 10 October 2019).

The main reason behind the farmers' wrath is that while the DWS is planning to take legal actions against the perpetrators of illegal afforestation, there are no feasible alternatives readily available for the local farmers. The farmers perceive this response as the oppressive and against them because they are the ones who will be directly affected and deprived of their only proven source of income and livelihood. Biswas (2003) points out that in India, conflicts over forests governance between the environmental department and local communities prevail but what is noticeable is that wherever legal restriction to the access of forest resources is imposed, poverty and suffering among the rural people increases.

The removal of forests would mean that the local communities do not have access to natural resources or assets such as water and land. According to the SRLF, resource deficit of any resource should it be natural or the other, will compromise the livelihood strategies, hence no positive livelihood outcome can be achieved. Should the removal of forest take place, that would corroborate the SRLF paradigm which state that organizations with their policies and laws can limit rural dwellers from achieving what is called "sustainable livelihood" (Scoones, 1998).

Other respondents acknowledge that their forest plantations might not be legal as per the DWS' laws, but since they are grown on their allocated land, there must be a sort of compensation because they are being deprived their rights to use their own land to their benefit. One respondent stated that; "if they remove our forests then they must remove us too, because what is the point of staying on land that you are not allowed to utilize in order to earn a living (Interviewee eight [Small Scale Farmer], Phelandaba, 11 October 2019). The researcher observed that local farmers thought illegal forest plantations referred to those who planted on the land that does not belong to them or that had not been previously allocated to them. They were not aware that they can find themselves on the wrong side of the law although they planted on land they acquired through Tembe Traditional Authority. They were not aware that the main issue here, causing concerns to the DWS is usage of water without following legal Water Use License Application (WULA) procedure.

This suggests that there is no information flow from the DWS to the local communities. This calls for further research on the effectiveness and efficiency of the Promotion of Access to Information Act 2 of 2000, commonly known as (PAIA), which is concerned with all relevant and affected parties having an access to the necessary public and private information. It is for this reason the SRLF considers human resource as one of the essential resources needed for one to execute a livelihood strategy. This is simply because rural people engage in a livelihood strategy and fail because they do not have the capacity to successfully execute it. People can have access to natural resources such as water and land, physical resources such proper infrastructure but without skills, knowledge and good health, they would not be able to identify any opportunity that leads to the execution of a livelihood strategy. Human resources takes into consideration the amount of knowledge and information the rural community have, which can be helpful in shaping their livelihood strategies. The SRLF helps if one is trying to understand rural livelihoods from the underlying factors contributing to certain livelihood strategies and livelihood outcomes.

6.9 CONCLUSION

This chapter has analyzed and interpreted data findings gathered through interviews, observations and documents. The chapter responded to the aim and objectives of the study by presenting the findings. It was found that small-scale commercial forestry is the main economic driver in the area. This business is improving the rural economy but rapid expansion and issues of not having water-use licenses raise concern for the Department of Water and Sanitation (DWS). The steps to be taken by the DWS as responsive measures were explained. The chapter has also examined the perceptions of the local communities towards the response of the authorities. The next chapter provides a conclusion of the whole research.

CHAPTER 7: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

7.1 INTRODUCTION

The study's aim was to investigate the nature and dynamic of the conflict over small-scale commercial afforestation between the local communities and the Department of Water Affairs and Sanitation (DWS). This chapter, therefore provides the overall conclusion of the study as to how the above mentioned aim was achieved through the specific objectives. This chapter further provides recommendations based on the findings of the study.

7.2 THE ROLE OF SMALL-SCALE AFFORESTATION ON RURAL LIVELIHOODS

In Manguzi, small-scale commercial forestry is the main economic activity, as the study found that 80% of the farmers do not have other sources of income, apart from this afforestation. The significance of small-scale commercial afforestation to the rural livelihoods is seen in Manguzi, because a large number of the respondents have been involved in such practice for more than 20 years. Jele (2012) confirms that small-scale commercial farming is the main source of livelihoods in rural areas, as employment opportunities are scarce, this afforestation creates jobs thus contributing to the sustainable livelihoods. Carney (1998) asserts that small-scale commercial afforestation is an example of agricultural intensification, which is one of the three livelihood strategies rural people adopt. In Manguzi, this afforestation played a key role in rural livelihood generations. The role was grouped into three broad categories, namely; the physical role, the socio-economic role and the humanistic role.

The most noticeable physical role was the transformation of the farmers' dwellings. Previously, they were staying in wooden houses, which are not always reliable because of their susceptibility to natural hazards, such as floods and storms but they have been able to use their revenues to build brick-layered houses (Interviewee five [Small Scale Farmer], KaNyamazane, 10 October 2019). The socio-economic role included the ability of small-scale farmers to engage themselves in other business ventures different from timber plantations such as livestock farming, spaza-shops and public transport services enabling them to have more and diverse sources of income (Interviewee four [Small Scale Farmer], Phelandaba, 11

October 2019). The other sources of income serve as the income diversification strategies as advanced by the Sustainable Rural Livelihood Framework (SRLF) (Scoones, 1998). This framework posits that in order for rural people to achieve sustainable livelihoods, they must execute different strategies, such as agricultural intensification, migration or income diversification (Scoones, 1998). In Manguzi, some households did implement all these three types of livelihood strategies, which is why two farmers stated that even if this afforestation can be stopped, their livelihoods would still survive and cope. The humanistic role to the rural livelihoods was in the area of improved health for farmers and their families. Manguzi has limited health care facilities, therefore the communities highly depend on mobile clinics once a month or they have to travel longer distances to reach the facilities. The farmers are now able to travel to the hospitals at any time whenever they are in need. In case of emergencies they can afford to hire a van to transport a sick family member. According to Krants (2001), the improved state of health of rural people is one of the human resources needed by the rural people because it enables them to work, thus contributing to their livelihoods.

Sappi provides trainings to the farmers on forest management, financial management and also presents other entrepreneurship opportunities; they can venture into once they receive their revenues. In Australia and in Indonesia, small scale farmers received technical and financial support and secured land tenure rights with the help of agents (Race et al, 2009). Peterson and Pederson (2010) states that the human resources such as the state of health, skills, and knowledge that rural people have are fundamentals that shape the livelihood strategy to adopt. Farrington (1999) states that people with skills and knowledge in any field are likely to be proficient and successful. Small-scale commercial afforestation, in Manguzi equipped small-scale farmers with essential skills especially on how they can successfully manage their forestry and the money generated for better life.

The first objective of the study was achieved successfully because the study found that the small-scale commercial afforestation plays a key role in rural livelihood generation. This was confirmed by large proportion (60%) of the farmers who asserted that if this afforestation was stopped, their livelihoods would not cope and survive. This shows high dependence on forestry which has proved to be the successful pioneer in earning rural people a living. Healy and

Ascher (1995) state that small-scale commercial afforestation serves as the basis of economic activity for people in the rural areas. Tembe (2012) states that forestry is the only economic activity in the Umhlabuyalingana LM that has proved to be an effective means of generating income and jobs for the local people.

7.3 THE GOVERNANCE OF SMALL-SCALE COMMERCIAL AFFORESTATION

The Department of Water and Sanitation (DWS) as the custodian of National Water Resources, is responsible for policy and regulation of the sector. The results of the study show that the DWS has not yet come up with alternatives that will ensure that the farmers are catered for in the event that the afforestation is stopped as the DWS is planning to execute the enforcement tool, which will force rural people to refrain from such plantations. This is despite the fact that; this has been the main economic activity for more than 20 years for some of the people involved in it. The response of the DWS shows that the rural people are vulnerable and affected by the legislation and policies of the national government. Scoones (1998) states that the role of government authorities with their legislation framing their scope of work can impede rural people from achieving sustainable livelihoods, by denying them vital resources they need as stipulated in the SRLF. If the DWS removes and bans the plantations in Manguzi, that would mean the local communities are denied access to the vital natural resources which is water and land. This denial, perpetuates poverty and suffering in rural areas (Biswas, 2003).

On the basis of the three fold criteria used by the DWS to detect whether a forest is legal or not, 87% of the farmers were illegal and 13% had afforestation permit obtained in 1998 were legal. These figures show a high level of non-compliance as per the legislation in place. On the other hand, these results also show a huge gap in the information flow, in that, once a law is enacted and documented, it is expected of everyone to comply, but in reality this does not happen. Regarding this research, this raises the question; Are the rural people even aware of the legal requirements framing their forestry such as Water Use License Application (WULA)? According to FAO (2018), about 300 million people depend directly on forests and 1.6 billion indirectly. Such figures show the important role that is played by small-scale commercial afforestation in the livelihoods of rural communities. However, there is a common tragedy on these communities, they are often side-lined in decisions on how the forests they depend on

are used and governed. As a result, their livelihoods and often, their way of life are severely threatened FAO (2018).

The enforcement protocol, which is proposed by the DWS to be executed in Manguzi because of high level of non-compliance will lead to the removal of trees and restrictions from such practice. That is the source of conflict because the increase in the plantations in the Manguzi shows that such afforestation is earning many rural people a living, while on the other hand, the DWS is fighting for water resources which are decreasing, with some identified wetlands having since dried up. The studies on rural livelihoods show that the small-scale commercial afforestation has the potential of boosting the livelihood standards of local people and contributing to rural development (Le et al, 2012) and this is why many rural communities are becoming more involved (McIlveen and Bradshaw, 2009). In Uzbekistan (Central Asia), the livelihoods of rural communities highly depended on small-scale commercial afforestation, as it provided a range of employment opportunities which improved the household's income (Djanibekov et al, 2013). However, the state policies prohibit the afforestation in some places, which results in violent protests.

7.4 THE PERCEPTIONS OF THE LOCAL COMMUNITIES TOWARDS GOVERNANCE

The majority of small-scale farmers showed dissatisfaction and anger towards the DWS should such enforcement actions take place. The source of conflict is that rural people are practicing small-scale commercial afforestation for their livelihoods, whilst the DWS regards such practices as illegal because the legislation in place such as Water Use License Application (WULA) was not followed by these farmers. The other concern of the DWS is that some of these plantations occur in the sensitive areas such as within the watercourse, which results in the deterioration of water resources and reduction of the water table. The main concern of the farmers causing their anger and dissatisfaction, is that they have earned a living through this forestry activity for more than 20 years and it has been proven successful. As a result, if this forestry is stopped now, are there any feasible alternatives available to cater for their needs? There is a potential that, if the conflict in this case study is not properly resolved it may degenerate into a violent conflict, because, from the point of view of the community, the

regulatory authority is interfering with their livelihoods, whereas, the DWS believes that it is dealing with illegality and defiance. And herein lies the contestation which this research has attempted to bring to the fore.

These concerns are not surprising because a study that was conducted in India by Biswas (2003) shows that after the government imposed the restrictions on small-scale commercial afforestation in some places due to the negative environmental impacts associated with such afforestation on water resources, there was an enormous increase in poverty and suffering among the rural people. The main concern of the government was that the plantations interrupted rainfall by collecting water on its canopy. Some of this water was then evaporated back into the atmosphere and prevented from entering rivers and streams. The water table was therefore decreasing (Government of India, 2002). These institutions and organizations, especially public ones, with their power somehow limit rural people access to certain livelihood resources through some laws and regulations (Scoones, 1998). The priorities of the institutions are totally different from those of the rural people (Peterson and Pederson, 2010). This is seen in Manguzi, where the priority of the farmers is to earn a sustainable livelihood but the priority of the DWS is the preservation and protection of the country's water resources.

The findings on the perceptions of the local farmers show that they are not even aware of the existence of such laws. This is not surprising because Manguzi has a 99% rural character and is made up of people who speak isiZulu with the illiteracy rate of 53%, thus the level of understanding is low. Rural people could not understand the meaning of illegal practices they are involved in, because they get land allocation through tribal authorities and they do not steal any water, they just use natural water from the rain and from the rivers. Yang et al, (2015) who conducted a study in China on the perceptions of local communities towards governance, found that local people are highly dissatisfied, and they do not understand the restrictions imposed on the natural resources, which were provided by God to cater for their livelihood needs.

7.5 RECOMMENDATIONS

- a). The study recommends that the national laws must also be written in other languages so as to cater for people who can only understand their home language. The study found that in Manguzi more than 95% people speak isiZulu. Further, it is suggested that the DWS must work with the traditional authorities to facilitate educational programmes in isiZulu to create awareness in the communities about legislation in place, because rural people do not have access to these laws, since they are only made available online by downloading, which most rural people cannot do.
- b). After assessing the cause of conflict which is the divergence of priorities of the two parties involved, the study recommends the implementation of rural development strategies in the study area. Addressing issues of poverty and unemployment before stopping the people from practicing small scale afforestation may work. In this regard, the study recommends the provision of entrepreneurship training for the local communities, where they will be introduced to other economic opportunities they can venture into apart from timber plantations in order to reduce stress on water resources. This is because the reason people engage in this economic activity is because they do not have any other alternatives and therefore, these alternatives must be provided. Otherwise if this is not done, there is potential for the conflict to drag on and even become violent.
- c). The study also recommends the establishment of initiatives of co-management of water and forest resources between the communities and government might ease the conflict between the two parties.

7.6 CONCLUSION

The study achieved its three intended objectives to fully understand the nature and dynamic of the conflict between the local communities of Manguzi and the DWS. The study found that the small-scale commercial afforestation has proven to be the successful initiative for earning a living in Manguzi. Such success is accompanied by lot of positive impacts which contributed

greatly to the livelihoods of rural people. However, the DWS on the other hand think that this economic activity is illegal and must be stopped. The local communities showed high levels of dissatisfaction towards the response of the DWS. The SRLF served as the useful theoretical framework in providing a guideline for the research. It shows that there are a lot of elements to consider when one is researching the rural livelihoods, such as resources available for rural people and the impact of existing institutional policies.

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Appendix A: Interview schedule for Farmers

UNIVERSITY OF ZULULAND



INTERVIEW SCHEDULE FOR SMALL SCALE COMMERCIAL AFFORESTATION FARMERS

Research Topic: **Investigating Small-Scale Commercial Afforestation and Catchment Management Area in Manguzi under Umhlabuyalingana Local Municipality, KwaZulu-Natal: Livelihoods, Policy and Conflict**

Researcher: Lindokuhle Denis Sibiya

Dear Respondent

I am a Masters student in the Department of Geography and Environmental Studies at the University of Zululand. I am conducting a study on small-scale commercial afforestation for livelihoods and governance. The main aim of the study is to investigate the nature and dynamic of the conflict over small-scale commercial afforestation for livelihood sustenance between the local communities and the Department of Water Affairs and Sanitation. I would therefore be grateful if you take part in completing the study through answering the following questions. The information provided will be treated with confidentiality and will be only used for academic purposes.

Consent form for Participation

I, the respondent, have been asked to voluntarily take part in the study on small-scale commercial afforestation for livelihoods and governance. I have read and understood the aim of the study and I therefore give my consent to participate in the research. I fully understand that I am participating without being forced or compelled whatsoever. I also understand that it is my respectful right to withdraw from the interview, at any time and I will not be penalized for such a decision. I also understand that there are no known benefits associated with the research project as it will only serve for academic purposes. It has also been made clear to me that this consent form will not be linked to the interview, thus my answers shall remain confidential.

Participant's signature

Date

SECTION A: DEMOGRAPHIC INFORMATION

1. Female ☐ Male ☐

2. Age ☐ ☐ ☐ ☐
 Less than 20 21-40 41-60 above 61

3. Educational level

☐ ☐ ☐ ☐
 No schooling Primary Secondary Tertiary

4. How many are you in this household? How many participate in small-scale commercial afforestation?

5. Please provide the following information on household.

Names of people who usually live in your household	Relationship to the head of the household	Age	Sex M=1 F=2	Employment status	Education level
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

13.					
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Relationship:

Employment status

Education level

- | | | |
|----------------------------|---------------|---|
| 1. Wife / Husband | 1. Full-time | 1. No schooling |
| 2. Son / Daughter | 2. Part-time | 2. Foundation phase |
| 3. Grandchild | 3. Seasonal | 3. Intermediate phase |
| 4. Parent | 4. Unemployed | 4. Senior phase |
| 5. Brother / Sister | 5. Student | 5. FET phase |
| 6. Adopted / Stepchild | 6. Pensioner | 6. Training certificate or short course |
| 7. Son- / Daughter- in-law | 7. Other | 7. Tertiary education |
| 8. Parent-in-law | | |
| 9. Nephew / niece | | |
| 10. Other relative | | |
| 11. Not related | | |
| 12. Head of the house | | |

6. How many household members contribute to household income?

7. how do they contribute to household income?

Form of income	Tick	Average monthly income
Pension		
Government grants		
Donations		
Stokvel		
Sale of assets (e.g cattle)		
Income from selling, trading		
Rental income		

If other, please specify.....

SECTION B: IMPACTS OF SMALL-SCALE COMMERCIAL AFFORESTATION ON LIVELIHOODS

8. How long have you been involved in the small-scale commercial forest plantation?

How many other household members are involved in these plantations?

9. Why did you to get involved with small-scale commercial plantations?

10. What is it exactly that you are growing?
11. What do you do with the products after harvesting them?
12. Is this plantation the only source of earning a living?
13. Are there any livelihood diversification strategies?
14. What contribution does small-scale commercial afforestation have on your livelihoods and household income?
15. If this afforestation can be stopped by the Department of Water and Sanitation, do you think your livelihood can survive and cope?
16. Do you think this forest plantation is sustainable?
17. Is there anything you want to add around impacts of small-scale commercial afforestation on livelihoods? Please explain.

SECTION C: POLICIES AND GOVERNANCE OF SMALL-SCALE COMMERCIAL AFFORESTATION

18. Who is the owner of the land that you are practicing this small-scale afforestation on?
19. Are you aware of the size of the plot?
20. If you are the owner, do you have formal written title deed?
21. If no, how did you gain ownership of the land?
22. Are you aware of the laws in place regarding forestry plantations in South Africa? Such as Forest Act, National Water Act and others.
23. Do you receive any assistance from the government?
24. Is there any forestry or local farmers' structure or organisation that you belong to? If there is, what are the benefits of being a member in those?

25. Are there any comments that you want to add on the policies and governance of small scale commercial afforestation in this area? Please explain in full.

SECTION D: THE PERCEPTIONS OF THE RURAL COMMUNITIES ON THE RESPONSES OF REGULATORY AUTHORITIES

26. What are the challenges that you face while growing these forest plantations?

27. Are you aware that the Department of Water and Sanitation perceives this small-scale afforestation as illegal?

28. Do you think what you doing is illegal or not? Why?

29. What are your perceptions on the regulatory authorities with regards to this afforestation?

30. Do you think this afforestation should be stopped by the Department of Water and Sanitation? Explain your views in full.

31. Is there comment that you would want to add on your perception towards the way that your farming activity is governed?

Appendix B: Interview schedule for the DWS

official

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INTERVIEW SCHEDULE FOR OFFICIALS FROM THE DEPARTMENT OF WATER AND SANITATION

Research Topic: **Investigating Small-Scale Commercial Afforestation and Catchment Management Area in Umhlabuyalingana Local Municipality, KwaZulu-Natal: Livelihoods, Policy and Conflict**

Researcher: Lindokuhle Denis Sibiya

Dear Respondent

I am a Masters student in the Department of Geography and Environmental Studies at the University of Zululand. I am conducting a study on small-scale commercial afforestation for livelihoods and governance. The main aim of the study is to investigate the nature and dynamic of the conflict over small-scale commercial afforestation for livelihood sustenance between the local communities and the Department of Water Affairs and Sanitation. I would therefore be grateful if you take part in completing the study through answering the following questions. The information provided will be treated with confidentiality and will be only used for academic purposes.

Consent form for Participation

I, the respondent, have been asked to voluntarily take part in the study on small-scale commercial afforestation for livelihoods and governance. I have read and understood the aim of the study and I therefore give my consent to participate in the research. I fully understand that I'm participating without being forced or compelled whatsoever. I also understand that it is my respectful right to withdraw from the interview, at any time and I will not be penalized for such a decision. I also understand that there are no known benefits associated with the research project as it will only serve for academic purposes. It has also been made clear to me that this consent form will not be linked to the interview, thus my answers shall remain confidential.

Participant's signature

Date

Name and Surname.....

Position.....

1. Are you aware of the Small-Scale commercial afforestation taking place in Quaternary catchment W70A?
2. How long have you been aware of these small-scale commercial afforestation practices in the Quaternary catchment W70A?
3. What are your main concerns with regards to this afforestation?
4. Why do you regard these afforestation practices as illegal?
5. Are the local communities aware that these small-scale commercial afforestation practices are illegal?
6. Are there any educational programmes in place within these local communities which teach them about the legal acts binding forestry and water use?
7. What are your responses to this so called “Illegal development of afforestation?”
8. According to the Department of Water and Sanitation gazette, it was stated that the afforestation will be fully removed, which mechanism are you going to use to identify those people who are directly and indirectly involved in such practices in order to ensure they are catered for after wards?
9. What/which laws guide the way that you respond to small scale commercial afforestation?
10. What programmes have you put in place to respond to small scale commercial afforestation?
11. Have these programmes been successful or not? And why? Please explain fully.
12. Is there anything that you would want to add/comment on concerning my study? Please explain.