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GOVERNMENT POLICIES AIMED AT COMBATING LAND DEGRADATION IN ALFRED NZO DISTRICT

A research report submitted in fulfilment of the requirements for the degree of

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by

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ABSTRACT

Land degradation is a serious problem in communal district of Alfred Nzo, Eastern Cape in South Africa. The root causes of land degradation and soil erosion differ. The causes of land degradation in Alfred Nzo district communal areas are due to soil erosion by wind, water and poor agricultural practices. Rainfall is one of the most important climatic factor that contributed a lot in land degradation in the Alfred Nzo District. Other main factors contributing to land degradation include: Socio-economic factors related to historical land policies and inappropriate land uses, Poor land use planning, Drought and rainfall variability .Land use and management and sand mining.

This study tried to pay more focus on the assessment of government policies which aimed at combating land degradation in South Africa in their nature but the area of focus will be Ntabankulu Local Municipality area in the project called Ematolweni Agricultural Co-operative Project. The reason to focus in this project is because they are currently practising crop production under electrified irrigation system but the main obstacle in this project are the dongas which are seemed to be a serious threat to the project site. During rainy seasons the project site is not easily accessible, that hampers access to market. There is also direct and serious effect of land degradation which is *food insecurity* which is emanating from loss of biodiversity and ground cover, loss of soil productivity, loss of income, decreased yield, and decline in economic productivity and national development. Lastly it is wisely recommended that to reduce the effect of land degradation in Alfred Nzo enlarge, government should strengthen the intervention programmes and provide more support to the LandCare programme which was the concept introduced in Australian and adopted in South Africa in 2001. This programme is assisting at restoring sustainability and productivity to land and water management in both rural and urban areas. It is holistic in nature, encompassing integrated sustainable natural resource management.

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LIST OF ACRONYMS

CARA:	Conservation of Agricultural Resources Act,(Act 43 of 1983)
NEMA:	National Environmental Management Act (Act 107 of 1998)
LUP :	Land Use Plan
DC :	District Code
IDZ :	Industrialized Development Zones
EC :	Eastern Cape
KZN :	KwaZulu-Natal
MDG :	Millennium Development Goals
LED :	Local Economic Development
NGO :	Non-Government organization
GDP :	Gross Domestic Product
PGDP :	Provincial Growth and Development Plan
PIMS :	Project Implementation Management Services
LM :	Local Municipality
ANDM:	Alfred Nzo District Municipality
ULM :	Umzimvubu Local Municipality
MLM :	Matatiele Local Municipality
MML :	Mbizana Local Municipality
NLM :	Ntabankulu Local Municipality

DECLARATION

I hereby declare that the above-mentioned dissertation is my own work and that it has not previously been submitted for assessment to another University or for another qualification.

D.Z NQAPHI

14 April 2016

DATE

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CHAPTER 1: INTRODUCTION

1.1 Introduction

This study will focus on the assessment of government policies which aimed at combating land degradation in South Africa but the area of focus will be Ntabankulu Local Municipality area in the project called Ematolweni Agricultural Co-operative Project. The reason to focus in this project is because they are currently practising crop production under electrified irrigation system but the main obstacle in this project are the dongas which are seemed to be a serious threat to the project site. During rainy seasons the project site is not easily accessible, that hampers access to market.

It is very much imperative to give detailed definition of land degradation to pave the way to the study. Land degradation is regarded as a temporary or permanent decline in the productivity capacity of the land or its potential for environmental management (Sara and Satya 1999). According to Blaike and Brookfield (1987, p5) natural transformation processes that occur in landscapes include some form of land degradation, but these processes are usually compensated for and counterbalanced by nature's inherent recovery ability. Even though nature recovers naturally, in South Africa and the rest of the world land degradation is a huge problem (Meadows and Hoffman 2002).

According to Eswarana 2001 cited by Ngcomfe (2008) due to land degradation negative impact on the environment and quality of life, land degradation is an important global issue (Eswaran et al., 2001). A global assessment of land degradation by Meadows and Hoffman (2002) concluded that more than one billion people, dependent on land for their livelihood, are affected by land degradation. The area of degraded land per continent (UNCED 1992) is about 73 percent of drylands in Africa are affected. The major causes of this state of extensive global land degradation according to Singh (1998), cited by Horta (2002) is the repetitive cycle of human disturbance of the environment.

According to Ngcomfe (2008) over-exploitation of natural resources and unjust land policies in South Africa have caused land degradation in the country. In addition lack of awareness of the causes of land degradation has resulted in communal land practices that lead to land degradation and can be blamed for negative effects on the environment. Hoffman et al., (1999) cited by Meadows and Hoffman (2002) argue that 91% of the country is subject to degradation.

In Alfred Nzo district of the Eastern Cape in South Africa it is about eighty-five percent (85%) of the district population live in rural settlements and are at least partially dependent on the natural environment for their livelihoods. The majority of these people are grant dependent vs actively productive. Most of the able-bodied and educated people leave the district and seek employment elsewhere as the district's economy is not able to absorb the present labour force. Passive land use that is use of land with little or no regulation, management or maintenance by the users and authorities has resulted in extensive overgrazing and degradation. The recent introduction of the "Massive Food" method of production at the expense of environmentally and socially sustainable production methods is threatening sustainable production and moving the district towards a "welfare state".(Alfred Nzo district environmental management plan, 2010).

1.2 Background to the study

Eastern Cape Province is mostly rural with the majority of the people living below the poverty line. Over and above, overpopulation and unemployment has put tremendous pressure on the limited natural resources. As a result, the province is characterized by very low agricultural productivity and severe environmental degradation such as soil erosion, alien species invasion, soil acidification, etc. (Department of Rural Development and Agrarian Reform, 2012)

Alfred Nzo District Municipality is the smallest in the Eastern Cape Province. Its boundaries stretch from the Lesotho Border in the North to Kwazulu-Natal in the east. It is bordered by O.R. Tambo in the south and Joe Gqabi districts in the west, respectively. The Alfred Nzo District Municipality areas of

jurisdiction comprises two local municipalities, namely, Matatiele and Umzimvubu, the former comprising of Matatiele as a key town and the latter comprising of Mount Ayliff and Mount Frere as key towns, respectively. In May 2011, the Municipal Demarcation Board made a determination to incorporate Mbizana and Ntabankulu from O.R. Tambo District Municipality into Alfred Nzo District Municipality.

1.3. Research Problem

Can current government policies assist in combating land degradation in Alfred Nzo as there is an increasing problem of ineffective utilization of agricultural land, such as invasion of arable land for non-agricultural purposes, utilization of marginal soils, poor veld management and monoculture. These improper practices had led to land degradation, i.e., soil erosion, under/overgrazing, acidification, desertification and alien species invasion and poor socio economic development, i.e., malnutrition, low income and food insecurity (Department of Rural Development and Agrarian Reform, 2012). There is no clear land use planning and guiding documents to delineate land into its suitable land uses, as a result, there is a conflict between competing uses of the land and between the interests of individual land uses. Most government policies like National Environment Management Act, Biodiversity Act, Alfred Nzo District Environmental Management Plan and Conservation of Agricultural Natural Resource Act 43 of 1983 are mostly focusing on conservation of natural resources but have little intervention on the lands which are already severely degraded like Mount Ayliff and Ntabankulu.

1.4 Aim and objectives

The aim of this study is to assess whether government policies are assisting in combating land degradation in Alfred Nzo particularly in Ntabankulu at Ematolweni Administrative area.

To achieve the above aim, number of objectives will be formulated to guide the rest of this study and these are:

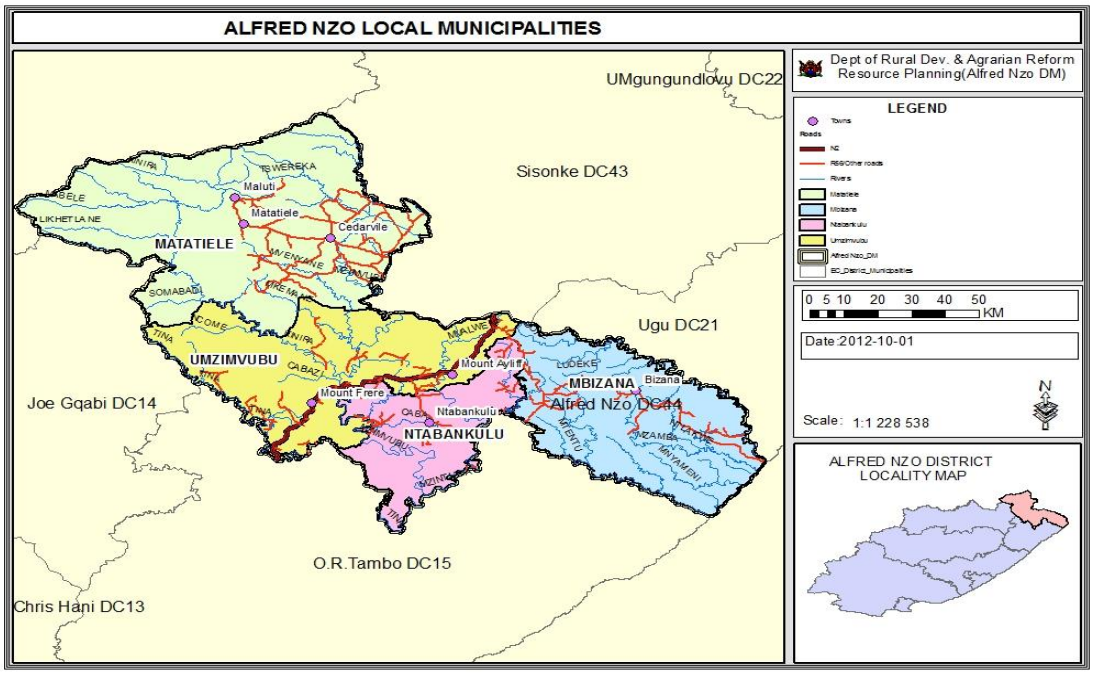
- Examine and discuss in detail causes of land degradation in Ntabankulu
- Explore the effects of land degradation on rural development and agricultural activities
- Establishment of the programmes that will contribute towards biodiversity conservation
- Application of appropriate development technologies both in rural and agricultural practices that will be conservative in natural resources.

1.5 Scope and scale of research

The study will focus in Ntabankulu, it will examine the government policies, programmes and acts from 1980s to-date. It will start from this period since the South Africa is still using acts like act 43 of 1983 which is focusing on the conservation agricultural resources. Project site is called Ematolweni Agricultural Co-operative which is a LandCare project, is about 62 hectares in extent. It is in the magisterial area of Ntabankulu which is in Ntabankulu Local municipality and, owned by 7 community members who are producing maize and green vegetables under small irrigation system and registered as business entity. It is under Alfred Nzo District Municipality which is the smallest District within the Eastern Cape Province. The geographical area of the district is 11119 km^2. The district is composed of Umzimvubu Local Municipality that consists of Mount Ayliff and Mount Frere towns with the area of 2506km^2 and Matatiele Local Municipality consist of Matatiele, Cedarville and Maluti towns with the area of 4352 km^2, Mbizana Local Municipality consist of Mbizana town with an

area of 2806 km^2 and Ntabankulu Local Municipality consist of Ntabankulu town with an area of 1455 km^2, respectively. The N2 and R56 road transportation networks are the linkage between the Eastern Cape (EC) and KwaZulu Natal (KZN) provinces. ANDM has 97 wards which is 24 wards under Umzimvubu LM and 24 wards in Matatiele LM, 31 under Mbizana LM and 18 wards under Ntabankulu LM. The District code is DC44 and geographical location is between 29°02'6.5" E; 30˚01'10" S and 28˚56'18" E; 31˚00'28.7" S. The District falls entirely within the Umzimvubu River Basin. Most of the District is mountainous terrain (over 1000 meters above sea level) with steep valleys of the Tina, Kinira, Umzimvubu and Mzintlava Rivers.

Figure 1 :Map showing district Boundaries



Source: Department of Rural Development and Agrarian Reform,
Resource Planning Directorate, Eastern Cape.

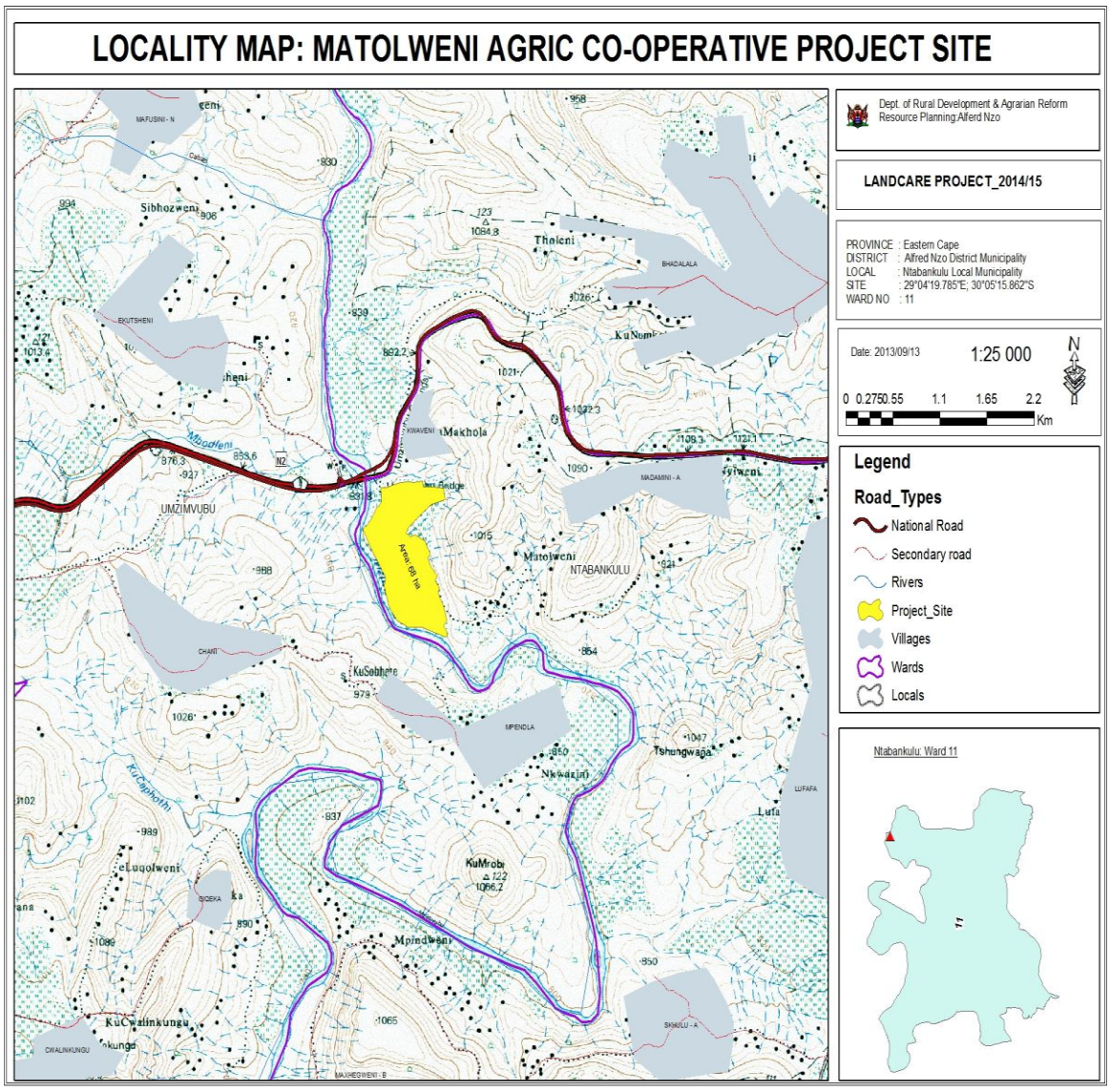


Figure 2: Map showing the geographic location of Ematolweni Agric-Co-operative.

Source: Department of Rural Development and Agrarian Reform, Resource Planning Directorate

Chapter 2. : Literature review

Land is a vital natural capital. It is a crucial asset in addressing challenges at the nexus of poverty, food, water and (bio) energy, particularly for the rural poor and among them, women. In affected areas, land degradation correlates closely with extreme poverty, increased water scarcity and food insecurity (Gnacadja L., 2013) By the year 2020 land degradation may pose a serious threat to food production and rural livelihood, particularly in the densely populated areas of the developing world. An appropriate policies are required to encourage land- improving investments and better land management if developing countries are to sustainably meet the food needs of their populations (Sara J.and Satya Y, 1997). Besides affecting aggregate food supply, soil degradation also diminishes agricultural income and economic growth (Sara J, 1999). Poorer households are confined either to marginal environmental areas where resource rents are limited, or only have access to resources once they are degraded and rents dissipated (Barbier E.B, 1997).

According to Eastern Cape Department of Agriculture and Land Affairs workshop report (1997) the area of land used for crops and grazing decreased slightly during the period 1988–98. Land degradation was partly responsible for this. Other factors included the droughts of the mid-1980s and early 1990s, violence and stock theft in the communal areas, increased production costs, lack of support for communal farmers and the collapse of agricultural infrastructure. While agricultural land use was declining, there was a rapid increase in the rate of growth of settlement areas. The scrapping of influx controls and the provision of housing, roads and services by the Reconstruction and Development Programme encouraged urbanization and the growth of rural settlements.

South Africa has a unique natural environment and biological diversity, for which it has been recognized at a national level that good management is essential for sustainable development. The wise use of resources requires a good understanding of the ecological processes that maintain the resource base and it is essential that the complex relationships between the social order and natural environment are well understood. The nature and intensity

of resource use in South Africa has not been spatially uniform and different social structures have been imposed on the environment in different areas and at different times (Hoare, D 2001).

In communal areas where mixed herds of cattle and goats limit bush encroachment, deforestation and loss of plant cover due to overgrazing are of greater concern. If all magisterial districts in South Africa are considered. Together, eight of the twenty districts requiring priority attention in terms of land degradation are found in the Eastern Cape (Department of Agriculture and Land Affairs, 1997).

Land degradation is a serious problem in communal districts in South Africa. Opinions on root causes of land degradation and soil erosion differ (Field Study South Africa, 2007). About 85% of the causes of land degradation worldwide are due to soil erosion by wind and water. Rainfall is the most important climatic factor in determining areas at risk of land degradation (Oluwole M. and Ejovwoke U, 2011). Reports by Hammond-Tooke (1993) claim that black people in South Africa belong to a group of Bantu-speaking tribes, of whom the Nguni settled along the East Coast. The Nguni moved southwards into the Eastern Cape. According to Bergh (1984) they (the Nguni) took over land occupied by the San and Khoikhoi and assimilated these groups by way of trade and intermarriage. The Nguni people can be subdivided into two large groups, namely the North Nguni (Zulu-speaking people) and South Nguni (Xhosa-speaking people). The Xhosa people settled mainly in the Coastal Belt and Coastal Plateau of the Eastern Cape.

The Xhosa people practiced hoe-agriculture on small fields, planted a range of crops, including sorghum, pumpkins, gourds, calabashes, melons, wild peas, beans (several varieties), cocoyam, guavas, mangoes and tobacco (Bundy, 1979). Sorghum was the main crop until maize took over during the 18th and 19th century. They practiced shifting cultivation. When the soil in the field became exhausted a new and preferably forested piece of land was cleared. This farming system kept mining the nutrients until the migration of European settlers in the 19th century.

The invasion of European settlers, who were looking for land to farm, resulted in wars. After Mlanjeni's war, which lasted for three years (1850 to 1853), the resistance of the Xhosa against the invaders was broken completely. Soon thereafter, the Xhosas lost more than 80% of their animals due to lung sickness, a lethal cattle disease from Europe (Bundy, 1979). Settlers from Europe such as 1820 British settlers and 1858 German settlers, introduced new agricultural technology to the region, including new crops such as potatoes and small grains e.g. wheat (Mkile, 2001).

According to Bundy (1979) the period 1880 to 1910 became known as the boom period of African commercial farming, with many peasant farmers producing surplus for sale on the market. After 1910, there was a sharp decline in African farming. Bundy (1979) further ascribes this to the Land Act of 1913 which limited access to agricultural land by Africans to designated native areas only. This leaded to more depletion of soil nutrients and land degradation. Bembridge (1984) claimed that land degradation and the depletion of soil fertility following decades of cultivation led to demise of African commercial agriculture in the Eastern Cape.
The Native Land Act in 1936 introduced 'Betterment Planning' in an attempt to halt land degradation in the native reserves. The Act divided land into designated functions namely; residential land, arable land and rangeland. This resulted in existence of villages (communal areas) in the Eastern Cape during 1940 to 1980. Generally, agricultural production in communal declined further.

The Constitution (Act No. 108 of 1996): Section 24 of the Bill of Rights (Chapter 2) provides that everyone has a right to an environment that is not harmful to their health or well-being and to have the environment protected for the benefit of the present and future generations, through reasonable legislative and other measures that (a) prevent pollution and ecological degradation (b) promote conservation and (c) secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development. The section continues by illustrating government's duty in protecting the environment (Kobokana S, 2007).

Chapter 3: Methodology

3.1 Introduction

A methodology provides the user with a framework for selecting the means to analyse, order, exchange information about an issue. It defines what can be known or exchanged, how that should be represented and by and for whom this is done. Methodologies are seen as neutral means to an end (Sokhela, cited by Grwambi, 2005).

3.2 Research Design

This research was conducted through qualitative research method, which included review of some literature on environment management that focused more on land and biodiversity conservation. More specifically, secondary literature review had been done, that had included an internet search for more information on land degradation and biodiversity conservation, and a review of other government documents, policy documents, historical documents, and journal articles. Another documents that have been utilized are the District Environmental Management Plan, District Environmental Framework, Integrated Development Plans, and Constitution of the Republic of South Africa.

3.3 Research methods

The focus group method was used in this research. It was very important because it assisted a lot in capitalising on communication with research participants in order to generate data. Focus group was discovered to be simply, quick and convenient way to collect data from different people simultaneously. Assisted a lot because instead of asking each person to respond to a question in turn. It also provided a liberty for people to talk to one another, where they are able to ask questions, be able to exchange and commenting on each other's experiences. This method is highly recommendable because it is exploring people's knowledge and experiences. Observation method was also applied in this report more especially on the assessment of natural resources. Some interviews were contacted with community members and project beneficiaries of Ematolweni Agricultural Co-

operative who are producing maize and green vegetables under small irrigation system. They are also farming with livestock under communal farming system. Although the interviews were carried out in group settings, but individuals who had more to say further follow up immediately after the group discussion. 10 well experienced Agricultural Development Technicians (Extension Officers) were interviewed from Ntabankulu Local Municipality Agricultural offices.

3.4 Data collection methods

3.4.1 Primary Sources

In this research the primary sources were also used and these sources were assisting to provide data that has been used as first hand; that is to say, they were the original sources of data that were produced by the people responsible for the actual collection of such data and what is important about the use of primary sources is that they provide original data, that is, data that has not existed before. (Ngcaba, 2002). The main source of data collection that has been used in this report was the interviews which were conducted on a one-to-one basis in form of designed questionnaires. These one-to-one interviews were chosen in order to get an insight of the peculiar experiences of each different respondent. The interviews were based on a pre-arranged interview schedule containing structure questions and the responses written down in spaces provided in the questionnaires.

3.4.2 Secondary sources

This category of data collection sources was different from primary sources because it consisted of sources of data that has been gathered at second hand; this was made up of sets of data collected from other people's original data.

CHAPTER 4: FINDINGS

4.1 Land degradation definition

It is clear and generally agreed that there is no single definition of land degradation worldwide, land degradation is defined as the long-term loss of ecosystem function and productivity caused by disturbances from which the land cannot recover unaided (Bai and others 2008). Land degradation occurs slowly and cumulatively and has long lasting impacts on rural people who become increasing vulnerable (Muchena 2008).

According to Ngcofe (2008) there are various definitions of land degradation but most important is that they are all about the deterioration of land. Stocking and Murnaghan (2001) state that there is no single, readily identifiable definition of land degradation, but all of them describe how one or more of the land resources which are soil, water, vegetation, rocks, air, climate, relief have changed from better to worse. Barrow (2001) cited by Ngcofe *etal* defines land degradation as loss of potential utility of land through reduction of the indigenous ecosystem and damage of physical, social, cultural and economic features. The Food and Agriculture Organisation of the United Nations cited by Stocking and Murnaghan (2001), states that land degradation is a temporal or permanent decline in the productive capacity of land. UNCCD, (1995) cited by Hoffman et al., (2001, p3) and World Meteorological Organisation (2005), define land degradation as: “Reduction or loss in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland or range, pasture, forest and woodlands resulting from land uses or from process or combination of processes, including processes arising from human activities and habitation patterns such as soil erosion caused by wind and water. Deterioration of the physical, chemical and biological or economical properties of the soil and long term loss of natural vegetation.

4.2 Different forms of land degradation

4.2.1 Water erosion

Water erosion covers all forms of soil erosion by water, including sheet and rill erosion and gullying. Human-induced intensification of land sliding, caused by vegetation clearance, road construction, etc., is also included.

4.2.2 Wind erosion

This refers to loss of soil by wind, occurring primarily in dry regions**.**

4.2.3 Soil fertility decline

It is described as deterioration in soil physical, chemical and biological properties. Whilst decline in fertility is indeed a major effect of erosion, the term is used here of cover effects of processes other than erosion which includes lowering of soil organic master, with associated decline in soil biological activity, degradation of soil physical properties (structure, aeration, water holding capacity), as brought about by reduced organic matter, adverse changes in soil nutrient resources, including reduction in availability of the major nutrients (nitrogen, phosphorus, potassium), onset of micronutrient deficiencies, and development of nutrient imbalances, buildup of toxicities, primarily acidification through incorrect fertilizer use.

4.2.4 Waterlogging

It is the lowering in land productivity through the rise in groundwater close to the soil surface. In some cases the water table rises above the surface. This can be brought about by incorrect irrigation management.

4.2.5 Salinization

This is the building up of free salts; and codification which is also called alkalization as the results of the development of dominance of the exchange complex by sodium. This is mainly occurred through incorrect planning and management of irrigation schemes and through the incursion of sea water into coastal soils arising from over-abstraction of groundwater.

(http://www.fao.org/docrep)

4.3 Causes of land degradation

In most cases more especially in communal/rural areas land degradation is caused by number of factors like injudicious application of agricultural practices and other development practices. The World Health Organization is describing further that land degradation is caused by multiple forces, including extreme weather conditions particularly drought, and human activities that pollute or degrade the quality of soils and land utility negatively affecting food production, livelihoods, and the production and provision of other ecosystem goods and services. According to the report from United Nation Convention to Combat Desertification (UNCCD), land degradation has accelerated during the 20th century due to increasing and combined pressures of agricultural and livestock production (over-cultivation, overgrazing, forest conversion), urbanization, deforestation, and extreme weather events such as droughts and coastal surges which salinity land. Desertification, is a form of land degradation, by which fertile land becomes desert.

There are number of factors which are severely contributing towards land degradation in South Africa for instance according to the report by National Department of Environmental Affairs (2010), the causes of degradation and desertification include socio-economic, biophysical, climatic, and land-use factors. Large areas of South Africa have soil parent materials (geology) that produce soils inherently vulnerable to various forms of soil degradation, such as crusting, compaction, and water and wind erosion. Once eroded, most of these soils also have very low resilience. The low, unreliable, and aggressive rainfall aggravates the situation. The main factors contributing to land degradation include: Socio-economic factors related to historical land policies and inappropriate land uses, Poor land use planning, Drought and rainfall variability .Land use and management and mining.

4.3.1 Effects of Land degradation

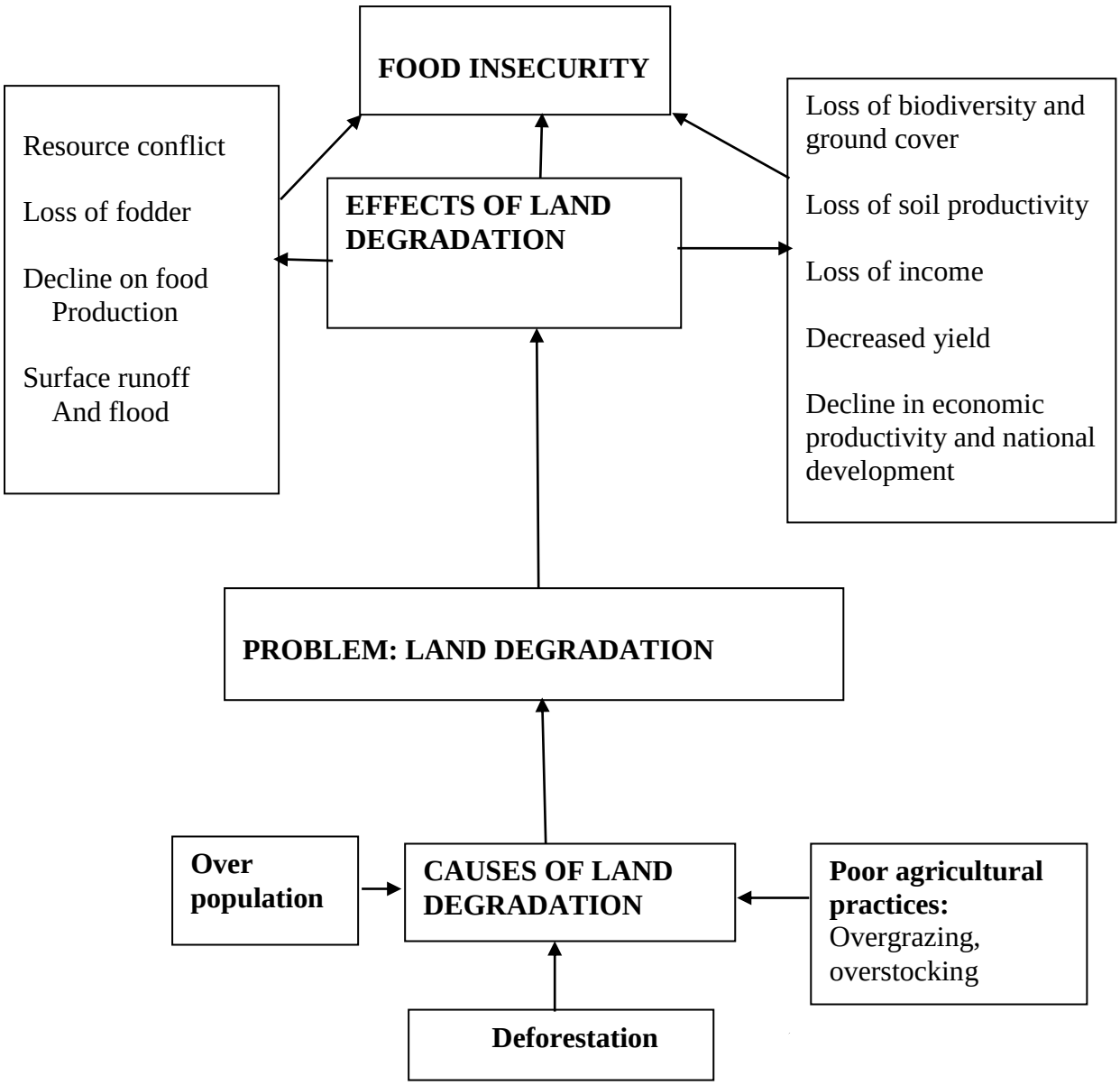


Figure 3. Presenting the causes of land degradation, problem of land degradation, effects of land degradation both in agricultural and development and well as human livelihood which is food insecurity

4.4 Driving forces of land degradation

4.4.1 Population growth

According to Dewaram and Nagdeve (undated), the rapid population growth and economic development in country are degrading the environment through the uncontrolled growth of urbanization and industrialization, expansion and intensification of agriculture, and the destruction of natural habitats. One of the major causes of environmental degradation in India could be attributed to rapid growth of population, which is adversely affecting the natural resources and environment. The growing population and the environmental deterioration face the challenge of sustained development without environmental damage.

It has been generally discovered that in most continents of the world population growth have severe pressure on land that ends up with uncontrollable land degradation for instance according to the report presented by Department of Environmental Affairs and Tourism (1999), population growth increases the demand for land transformation for settlement, agriculture, recreation and the demand for resources such food, fuel, building and furniture materials papers and board, minerals and water. High population growth rates are also an important factor contributing to the creation of poverty. Urbanisation, industrialisation, infrastructure development, and pollution also result from an expanding population.

The world's net land under cultivation has scarcely expanded since 1960, with millions of acres of farmland gobbled by urban development while roughly equal amounts of less fertile land come under the plow. The doubling of humanity has cut the amount of cropland per person in half. And much of this essential asset is declining in quality as constant production saps nutrients that are critical to human health, while the soil itself erodes through the double whammy of rough weather and less-than-perfect human care. Fertilizer helps restore fertility (though rarely micronutrients), but at ever-higher prices and through massive inputs of non-renewable resources such as oil, natural gas, and key minerals. Phosphorus in particular is a non-renewable mineral essential to all life, yet it is being depleted and wasted at increasingly rapid rates, leading to fears of imminent of peak phosphorus.
(http://www.theguardian.com/environment/2011/oct/14/1)

The impact of population growth in rural areas can push communities into unsustainable practices, such as the burning and razing of natural forests in order to plant crops, over-cropping and subsequent depletion of fragile arable land and over-pumping of groundwater
(https://www.unfpa.org/6billion/populationissues/development.htm)
Because of population growth and environmental degradation, land that can be used for personal, industrial, or agricultural purposes is becoming increasingly scarce. Of course, possession of land means access to many other resources, such as minerals, timber, and animals, and land therefore often holds a high economic value. In addition, communities often have strong emotional and symbolic attachments to land and the resources on it. It is easy to see why competition for control of valuable land, including issues of government authority and regulation, can cause or sustain conflict (United States Institutes of Peace, 2007)

4.4.2 Government laws and policies

In the past during apartheid era in South Africa there were policies and legislations that were governing the settlement of the people. These policies and legislations have both negative and positive driving forces on land degradation. The policy or law which is regarded as the one that had a huge negative impact on the environment in South Africa is the historic Land Act of 1913 that had led the severe distorted demography and settlement patterns. The Black people in South Africa were chased away from their place of origins and were concentrated in areas which are not suitable for farming practices and the fertile ones were occupied by White farmers, Blacks were regarded as sources of labourers.

Clarke (2012) regards the Native Land Act of 1913 as marking the onset of segregation in South Africa where Black Africans were forcibly removed from urban or ‘white’ areas to demarcated homelands or Bantustans, and were prohibited from owning or renting land outside of these areas (Perret, 2002). The Transkei and Ciskei were two of the homeland areas which existed within what is now known as the Eastern Cape Province. The ‘Homeland’ policy dramatically shaped the history of South Africa (Beinart, 2012). White farmers

had privileged access to natural resources, infrastructure, and financial and agricultural facilities (Perret, 2002), whilst these homeland areas become progressively over-populated, degraded and unproductive (Davies et al., 1985).

The 1936 Native Trust and Land Act introduced the 'Betterment' scheme and implemented within these homelands. This scheme was a way of transforming and dividing up the current land use reserves into residential units, arable and grazing units which were fenced, and grouping the households together in village clusters. This scheme was met with resistance as the locals saw it as a scheme of loss: livestock loss through culling, reductions in the availability of arable land, and restrictions on the use of grazing land (Beinart, 2012; Davies et al., 1985; De Wet, 1989; McAllister, 1989). Moving from a relatively sparse settlement to a more concentrated one had its problems.

According to South African History Report, the most visible impact of the Act was that it denied Africans access to land which they owned or had been leasing from White famers. Sol Plaatje wrote, "As a result of the passing of the Natives Land Act groups of natives are to be seen in the different Provinces seeking for new land. They have crossed over from the Free State into Natal, from Natal into the Transvaal, and from the Transvaal into British Bechuanaland. Evidently, the Act seized the very asset which was central to lives of African people and rendered them destitute.(Plaatje, 2007).

The blacks in all provinces were concentrated on poor lands which are not suitable for agricultural development where topography has steep slopes, vegetation which is unpalatable with sour grazing lands, rocky and mountainous.

4.4.3 Uneven distribution of wealth

According to the United States Institute of Peace (2007), natural resources are an integral part of society, as sources of income, industry, and identity. Developing countries tend to be more dependent on natural resources as their

primary source of income, and many individuals depend on these resources for their livelihoods. It is estimated that half of the world's population remains directly tied to local natural resources; many rural communities depend upon agriculture, fisheries, minerals, and timber as their main sources of income. Developing country's ability to modernize economically is often dependent on access to natural resources. Water is essential for both successful agriculture and manufacturing; for example, the lack of clean water for the labour force can drastically inhibit a country's economic growth.

In most rural areas or underdeveloped where the income is very low , most people are dependent on natural resources to meet their nutritional, medicinal, housing material and their household energy needs for cooking. In some cases the collect on an exploitative basis these natural resources from these areas to generate the much needed income in supplying that product to meet the demands from urbanised or more developed areas. Meyer, Kellner and Viljoen (2002) are stating that poverty forces people to live unsustainably in their struggle for survival. This leads to overexploitation of the land in the short-term, which has long-term negative consequences.

4.4.4 Climate change

The global warming on earth which is a result of different industrial activities which are taking place in the first world countries tempers with climatic conditions in the world. This has a negative and high impact in the climate change which is a result of ozone layer formed. This brings a negative impact on agricultural development and biodiversity in general.

Richardson (1999) in support of the above statement, climate change alters the physical environment in ways that directly affect living organisms. Changing temperatures and water availability conditions are likely to induce stresses in vegetation and component plant species, and may encourage mobile organisms to alter their distribution in the medium to long term. Climate changes will possible cause a gradually increasing pressure on the tolerance limits of native species. By causing these stresses in native species, climate changes could also favour the success and spread of alien plant species.

Climate change is expected to impact multiple sectors of the economy including water management, agriculture, health and food security (Drimie and Gillespie, 2010).

4.4.5 Natural disturbances

Hoffman and Todd (1999) in their findings are stating that natural disturbances like floods, droughts, winds, fire, earthquakes, outbreaks of pests and diseases, occur from time to time. Although man has little or no control over these natural events, risk management to minimise their economic, social and environmental effects is important. Responsible management of land, which helps maintaining their proper functioning, also favours the recovery of the ecosystems after natural disturbances. For example, drought may form a catalyst for desertification, but soils that are already degraded are more prone to drought. Degraded soils will also suffer more severely from the impacts of drought.

4.4.6 Increased mobility of people

The report by the Department of Environmental Affairs and Tourism (1999), the acceleration of the international human movements and international trade has introduced many alien species into this country, both intentionally and unintentionally. Certain introduced species can rapidly dominate the ecosystem, particularly when they are disturbed or stressed, replacing natural vegetation and animals, or using large amount of water. This reduces the functionality of the natural system and lowers their ability to support the natural life forms, including humans.

4. 5 Government Policies, legislations and programmes enhancing land Degradation in South Africa

4.5.1 Constitution of the republic of South Africa

The Constitution (Act No. 108 of 1996): Section 24 of the Bill of Rights (Chapter 2) provides that everyone has a right to an environment that is not harmful to their health or well-being and to have the environment protected for the benefit of the present and future generations, through reasonable legislative and other measures that (a) prevent pollution and ecological degradation (b) promote conservation and (c) secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development. The section continues by illustrating government's duty in protecting the environment, including providing for matters such as a marine protection contingency plan (The South African Constitution, Act 108 of 1996, Section 24b (ii). South Africa has also signed a number of international agreements as a testimony that conservation is of utmost importance in this country. Some of the key international environmental obligations to enhance environmental protection include Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973; United Nations Convention on Biological Diversity 1992 which, according to Kepe and Wynberg (1999) cited by Kobokana is the most important and overarching of these agreements; Convention to Combat Desertification 1992; Convention Concerning the Protection of the Worlds Cultural and Natural Heritage 1997 and Southern African Development Community Protocols, such as SADC Protocol on Wildlife Conservation and Law Enforcement 1997.

4.5.2 National Environmental Management Act

National Environmental Management Act 107 of 1998; This Act provides a framework to set national norms and standards, alternative dispute resolution procedures and comprehensive environmental management principles, integrated environmental management and sustainable use. This act looks at providing for co-operative, environmental governance by establishing

principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith. Everyone has the right to an environment that is not harmful to his or her health or well-being; the State must respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities; inequality in the distribution of wealth and resources, and the resultant poverty, are among the important causes as well as the results of environmentally harmful practices; sustainable development requires the integration of social, economic and environmental factors in the planning. Implementation and evaluation of decisions to ensure that development serves present and future generations; everyone has the right to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development: the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must co-operate with, consult and support one another;

4.5.3 Conservation of Agricultural Resource Act

To provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

The objects of this Act are to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.

In order to achieve the objects of this Act the Minister of the Department of Agriculture Forest and Fisheries may prescribe control measures which shall be complied with by land users to whom they apply. These control measures are; the cultivation of virgin soil; the utilization and protection of land which is cultivated; the irrigation of land; the prevention or control of waterlogging or salinization of land; the utilization and protection of vleis, marshes, water sponges, water courses and water sources; the regulating of the flow pattern of run-off water; the utilization and protection of the vegetation; the grazing capacity of veld, expressed as an area of veld per large stock unit; the maximum number and the kind of animals which may be kept on veld; the prevention and control of veld fires; the utilization and protection of veld which has burned; the control of weeds and invader plants; the restoration or reclamation of eroded land or land which is otherwise disturbed or denuded; the protection of water sources against pollution on account of farming practices; the construction, maintenance, alteration or removal of soil conservation works or other structures on land;

Under conservation of agricultural resource act, the National Minister of the Department of Agriculture, Forestry and Fisheries has a scheme which is funded in a form of grant to provinces in concurrence with the Minister of Finance through appropriate budget in parliament.

This money was mostly paid in a form of subsidy to land users for the following activities: the construction of soil conservation works; the reparation of damage to the natural agricultural resources or soil conservation works which has been caused by a flood or any other disaster caused by natural forces; the reduction of the number of animals being kept on land in order to restrict the detrimental effect of a drought on that land; the restoration or reclamation of eroded, disturbed, denuded or damaged land; the planting and cultivation of particular crops which improve soil fertility or counteract the vulnerability of soil to erosion; the combating of weeds or invader plants;

4.5.4 Alfred Nzo District Environmental Management Plan

According to the report presented in the Alfred Nzo District Environmental Management Plan (2010) it is said that there is a tendency to take for granted that resources such as water, soil, the different plants and animals will always be there, and not to examine the activities and programs including those legally sanctioned and how they affect the people's ability to make a living on the land now and into the future. Environment and development are frequently in conflict as there are often no immediate tangible benefits that can be derived directly from conservation and contribute to the upliftment of residents at household level. Natural resources are a source of food and survival and there are contradictions encountered as communities express the desire to utilize the resources and conservation authorities express the need for conservation. A balance therefore has to be sought that seeks to carry out conservation with full participation of the surrounding communities. Environmental management should be an integral consideration in Alfred Nzo development planning if long term solutions in the management of natural resources, human health, economic growth, energy, transportation, agriculture, industrial development and international trade are being sought. The current accelerated degradation has to be slowed, halted and reversed if meaningful and sustainable development are to become a reality in the District.

4.5.5 National Environmental and Biodiversity Act

This act ensures the provision for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute.

4.5.6 Conclusion

All the stated above Acts, frameworks, legislations and municipality environmental management plans are mostly concerned with

- Preventing the pollution and ecologically degradation
- Promote conservation
- Ecologically sustainable development
- Protection of the environment
- Co-operative, environmental governance by establishing principles for decision- making an environmental issues
- Integrated social and economic planning
- Maintenance of the production potential of the land by combating and prevention of soil erosion
- Utilization and protection of vegetation

According to the above bullets all of these acts and frameworks are not trying to tackle and address the problem of the land in Alfred Nzo which is already degraded. The department of Agriculture Forestry and Fisheries is trying to provide funding in a form of conditional grants to Provinces for Land Care Programme which is implemented in terms of Conservation of Agricultural Resource Act, Act 43 of 1983. The Eastern Cape Provincial Department of Rural Development and Agrarian Reform does not provide funding from the Provincial voted fund/equity share for LandCare. It is clear that this programme is hundred percent supported by National Department. The officials of the Provincial Department of Agriculture in the Eastern Cape are regarding this programme as just the additional project by National Department of Agriculture Forestry and Fisheries. Some other support directorates it is very difficult to support the programme, they make it clear that they do not have a capacity to implement LandCare since the programme is not featuring in their provincial plans.

4.6 General overview of the Eastern Cape Province with a focus on the Ntabankulu in Alfred Nzo

4.6.1 Location

The Eastern Cape Province is situated in the south eastern part of South Africa. It is 169 580 km^2 in extent. The eastern part of the Province is composed of former homelands of former Transkei and Ciskei where most people still live in poverty-stricken informal settlements and poorly managed small towns (Bank and Minkley, 2005) cited by (Clarke 2012). Ntabankulu Local Municipality is situated in Alfred Nzo District Municipality, off the National Road (N2) between Mt Frere and Mt Ayliff. Ntabankulu Local Municipality has been incorporated into Alfred Nzo District Municipality with effect from May 2011, from O.R. Tambo District Municipality. Towns in close proximity are Mt. Ayliff, Kokstad and Mt Frere. Flagstaff is accessible through T19 gravel road to the south of Ntabankulu town.

Figure 1: Geographic Composition of Alfred Nzo District

Municipality	Area K m2	Percentage of the district area
Matatiele	4352	39%
Mbizana	2806	25%
Umzimvubu	2506	23%
Ntabankulu	1455	13%
Alfred Nzo	11119	100%

The municipality falls within the great Umzimvubu and Mzintlava Rivers. The terrain is largely mountainous and extends to about 800 and 1600m above sea level. Consequently, the local municipality has been named Ntabankulu for this ‘raison d'être’. The area is largely surrounded by forestry raging from commercial to indigenous.

4.6.2 Socio-economic context

4.6.2.1 Poverty levels Vs. Employment levels

Ntabankulu is one of the municipalities with the highest levels of poverty, illiteracy and unemployment in the Eastern Cape. The rationale for this cause is that the majority of the population does not actively contribute towards the local economy, with only about 11% of households that are in formal employment. This emphasizes need for municipal planning to focus robustly on infrastructural development that facilitates local economic development initiatives that will enable the community to generate income.

Source: Statistics SA (Census 2011)

The rate of unemployment as estimated by Census 2011 was approximately 75% in 2001and approximately 51% in 2011. The youth appear to be highly unemployed estimated to be 82% in 2001 and to have decreased to 61% in 2011.

4.6.2.2 Access to social grants

As a result of the low level of education and high unemployment rate, the municipality experiences high levels of poverty, thus increasing dependency on government's social grants. The Department of Social Development (DSD) is servicing 18 wards of the municipality. The department renders eight (8) programmes which include:-

- Probation services
- Poverty alleviation
- HIV / AIDS
- Community development
- Victim empowerment
- Subsistence abuse.
- Disability
- Child, Youth and family

Dependency ratio is at 91.7%. Approximately one third of all households receive social grants, from two main grants, the "child support grant" and the "old age grant". About 7% of households receive employer grant while 10% of the households receive foster care grant and impressively 19% receive child

support grant; 38% of the household receive social relief grant and 11% of the household receive Disability grant, and finally 15% of the household survive on old age grants.

4.6.2.3. Education

According to Ntabankulu Community Based Plans conducted by Sullivan, Fadane & Associates as appointed by Department of Local Government and Traditional Affairs in partnership with the Ntabankulu Local Municipality discovered that very low levels of education are evident, which is a major detriment to the economy and development of the municipality. Approximately17. 8% of the population has no schooling and 96.2% is at primary education. There are very few individuals (2.3%) in the municipal area that have a higher education level and even less people have gone to adult education centres. This clearly demonstrates a generally high illiteracy level and the lack of skills in the area.

Ntabankulu has low levels of educational with only 9.7% of the population having completed matric and only 2.3% completed higher education. This compares poorly against the Eastern Cape. This has implications on the worker profile, as individuals that have not reached a certain level of educational attainment are often faced with barriers to entry into the formal employment market. This has further bearing on the nature of investment activity that will be feasible and sustainable in the area. Without the provision of adequate education and training, a skills deficit may constrain future development within the Ntabankulu Local area. There is a conspicuous lack of senior secondary schools with less than 10% percent of schools providing secondary level education. This is aggravated by poor access to these facilities. The only higher education facility is satellite Ingwe FET situated within Ntabankulu Urban area**.**

This lack of secondary and tertiary education facilities contributes significantly to the low literacy and education levels and lack of graduates in the area.

4.6.3 Biophysical Resources

4.6.3.1. Vegetation

The study area is very diverse and complex with endemic plants and areas of high diversity. Much of the vegetation in the area has been destroyed or severely degraded. Most endemic plants are confined to grasslands, the most severely threatened vegetation type in the area. The vegetation consists primarily of grasslands, with forests restricted primarily to river gorges. The natural vegetation that is found in an area is classified as Dohne Sourveld, which belongs to the group of the temperate and transitional forest and shrub. The vegetation has however been transformed by human activities.

4.6.3.2 Geology and Soil

In terms of a Land Type Survey study conducted by the Agricultural Research Council (ARC), soil in Ntabankulu Municipality areas is made up of undulating plateau between 800 and 1600m above sea level. The area underlay Beaufort Geology Group of the Karoo Super Group, which comprises shale, mudstone, limestone, and coal. This type of geology has high potential of eroding, low potential for underground water supplies but suitable for foundations. The area's soils is moderately hydromorphic, shallow to partially shallow, sandy grey with Kroonstad (contains particles of clay subsoil) and Cartref (shallow with particles of stony soil). It is suitable for grazing, agriculture and development.

4.6.3.3 Temperature and Rainfall

The area's rainfall varies between 700 to 1100mm per annum. Similar to the rest of the country, the area also receives most of its rainfall during summer, about 70% -100% and 20% - 30% in winter. The temperature ranges between -8ºC to 36°C in summer and -4°C to 22°C in winter. The prevailing winds are strong south-easterly winds; this makes the area vulnerable to tornadoes which normal strikes once or twice in a year. These winds are extremely hot and dry and this has various consequences to agriculture, namely:

(1) Damage leafy crops,

(2) Blow off plateau towards coast, and

(3) Hot winds damage crops, particularly seedlings.

4.6.3.4 Water sources

The main source of water in this area is Umzimvubu river which perennial. It is used as the source of water for irrigation practices in the projects although there are lot of challenges like the high bill from Eskom which is caused by high cost of irrigation. This results to project not to be economically viable.

4.6.3.5 Topography

The topography of the area consists substantially on the one hand of a central plateau ranging between 800 and 1400 m elevation and a high plateau leading to the Drakensberg mountains ranging between 1500 and 2200m elevation. Significant parts of the district consists of a severely fragmented topography leading to the Indian Ocean. In this area there are some steep slope that results to water-runoff that causes serious soil erosion.

4.7 Current land use of the area

Agriculture represents the main economic activity of the area. However, the majority of the existing farming activities consist of traditional subsistence farming practices. Existing commercial agriculture is largely confined only to the Matatiele/Cedarville areas. Prevailing soil and rainfall conditions indicate that there is potential for more and efficient agricultural development. However, much of such development would be in the traditional settlement areas. It is suggested, therefore, that such developments must be on a community basis. As a result, substantial input is required in terms of relevant education, skills training, management and marketing skills training as well as linkage to markets. There are also some forests plantation and also indigenous forests in this municipality area

4.7.1 Agricultural development

4.7.2 Livestock farming

In this village people are farming with both large stock and small stock under a communal system. They are farming for traditional and social status. They do not rely on their livestock for source of income. During site visit it was observed that grazing lands are not fenced as a result there are no veld management practices. This resulted to poor veld conditions. There is also no

controlled stocking rate in this area, there is overgrazing that caused serious soil erosion. The carrying capacity of the grazing lands of this area is 6ha/AU.

4.7.3 Settlement area

The study area is considered among the poorest in South Africa since it is in Alfred Nzo District Municipality which is regarded as the one of the nodal areas in the Eastern Cape Province. It is characterized by scattered subsistence settlements, with some villages fairly inaccessible. The local authority and the head of the community is Headman who is acting as the custodian of the land since the land is under communal land ownership. During the field trip, it was observed that contours which are found here and the slopes suggest that the land was previously cultivated and that it is now covered by dense grassland. Currently most areas are used as grazing lands. This area is described as underdeveloped since it has no developed infrastructure despite the fact that it is along National road Number 2 (N2) which is stretches between Umtata and Kokstad.

4.8 Existing infrastructure

In this village there is electricity which is used for household and also it is used in the project for irrigation practices. There is no developed access road to the project site. The project site is well fenced. There are machinery and equipments like tractors and implements in the projects which were donated by different government departments like Department of Social Development, Department of Local Government, and O.R. Tambo District Municipality and Ntinga O.R. Tambo Development Agency which was also the implementing agent in the project. There are also pit toilets in this village which were provided as well by O. R. Tambo district Municipality. The arable and grazing lands are not fenced.

4.9 Field findings

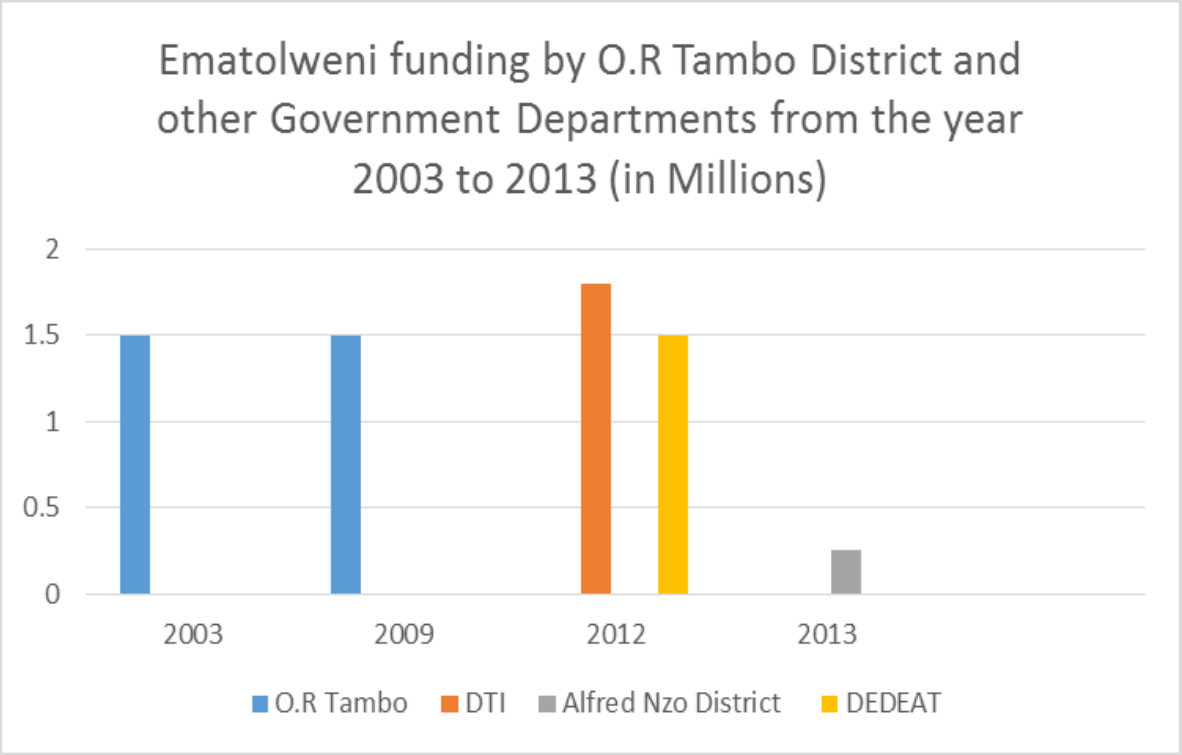
During the site visit and interviews with the project members it was discovered that they were getting lot of assistance from government Department

pertaining the implementation and running of the project but currently there is no up and running assistance pertaining the combating of the prevailing land degradation that is dongas which are caused by water run-offs in the community .Donga erosion is a serious problem in this project and community enlarge has faced the problem because it is advancing towards the cropping area and also during rainy season the project site is not accessible at all because to get to the site it is the must to cross the dongas using the poorly constructed waterway crossing system.

4.9.1 Findings from project members

All respondents indicated that they are grazing their livestock on an open grazing where there are no veld management practices, there is overstocking, overgrazing that resulted to erosion. During the interview chairperson of the project told that they are using heavy machinery like tractor during operations like ploughing, discing, planting and spraying. One respondent made it clear that during heavy summer rains the water from the nearby hill floods and wash away their crops.

During the site visit the respondents told that they received the funding from Ntinga O.R Tambo Development Agency which is an implementing agent for O.R Tambo District Municipality. They were granted funding for irrigation system, fencing, stipend for labour, connection of electricity and cost of irrigation, production inputs like fertilizers, herbicides and seeds. The initial funding was an amount of R 1.5 million in 2003. In 2009 they received a grant of R 1.5 million for renovation of fencing, container which serves as storage and farm house. In 2012 the National Department of Trade and Industry bought for the project a tractor, trailer, boom sprayer, planter and disc. In 2012 again the Provincial Department of Economic Development, Environment and Tourism granted them an amount of R 1.5 million for big tractor, heavy disc and Toyota bakkie.



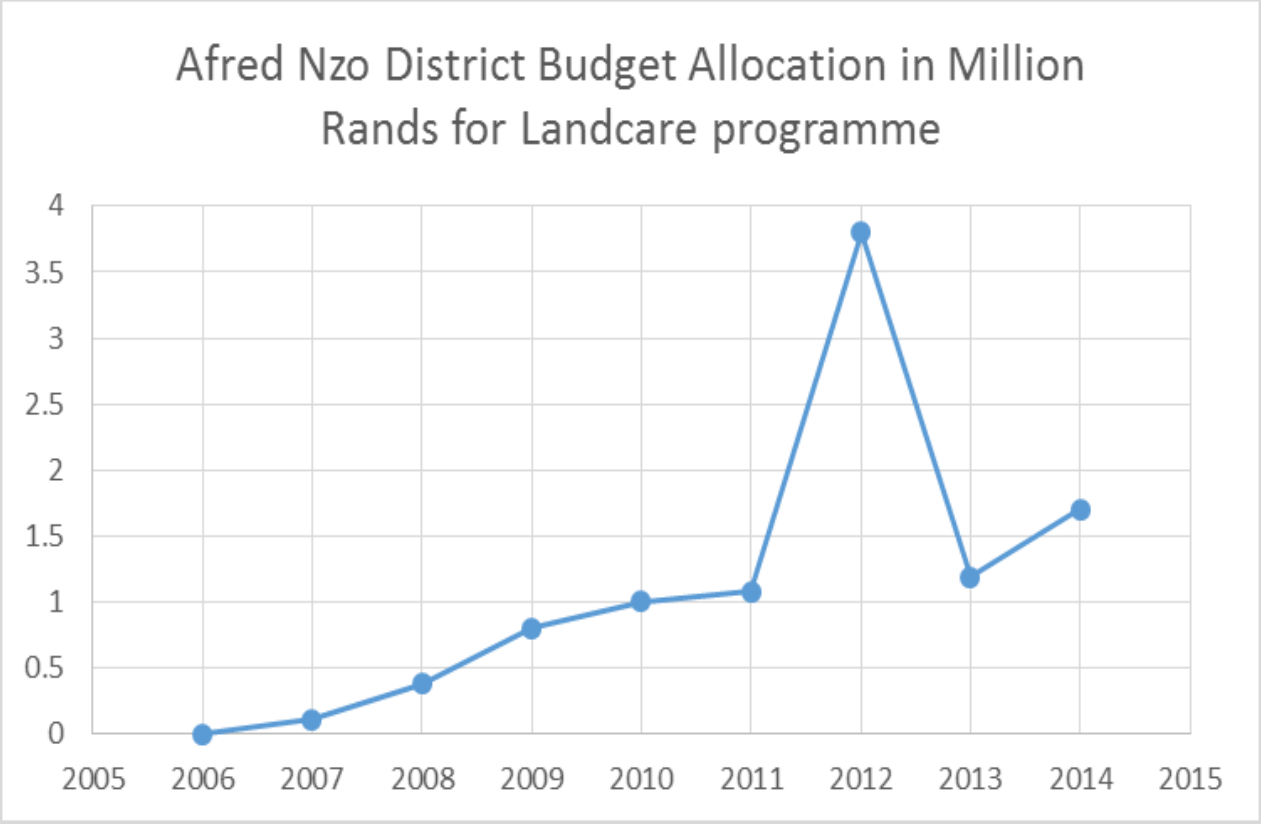
During the interview the chairperson made it clear that the change of Municipality political demarcation severely affected the operations of the project. The Ntabankulu and Bizana Local Municipality were incorporated in Alfred Nzo District from O.R. Tambo District Municipality. All the support and operational costs of running the projects stopped drastically from 2013 since they were under new political administration which was not responsible for the initiative of the project. The Department of Rural Development and Agrarian Reform from Alfred Nzo District funded only production inputs which were costing about R 250 000.00 for chemicals, fertilizers, seeds.

4.9.2 Findings from Government officials/Extension Officers

During the interview with Agricultural Extension Officers, they made it clear that in 2013 the local Department of Rural Development and Agrarian Reform was approached by the project members through the assistance of the ward Extension Officer. They (project members) forwarded their application so that they can be assisted by Government to combat the land degradation in this area. The Department of Rural Development and Agrarian Reform earmarked this project to assist it through programme called Land Care for land

rehabilitation in the degraded areas, this is a programme of the National Department of Agriculture Forestry and Fisheries. In this programme National Department is providing assistance in a form of financial support which is conditional grants for land rehabilitation through provision of soil conservation works and infrastructure which are fencing, gabion, waterway crossing, storm canals, planting of conservation vegetation, encouraging Conservation Agriculture and provision of the awareness campaigns. During interviews they had an opportunity to present the detailed budget which used to be allocated to the entire district. They made it clear that this budget was not spent according to the activities in the business plans but all directed to fencing which is also one of soil conservation works. The reason for focusing on fencing of degraded lands, is because the Alfred Nzo District is under staff when it comes to the Engineering Directorate and that result to the lack of capacity in the district to spend the money allocated for LandCare infrastructure.

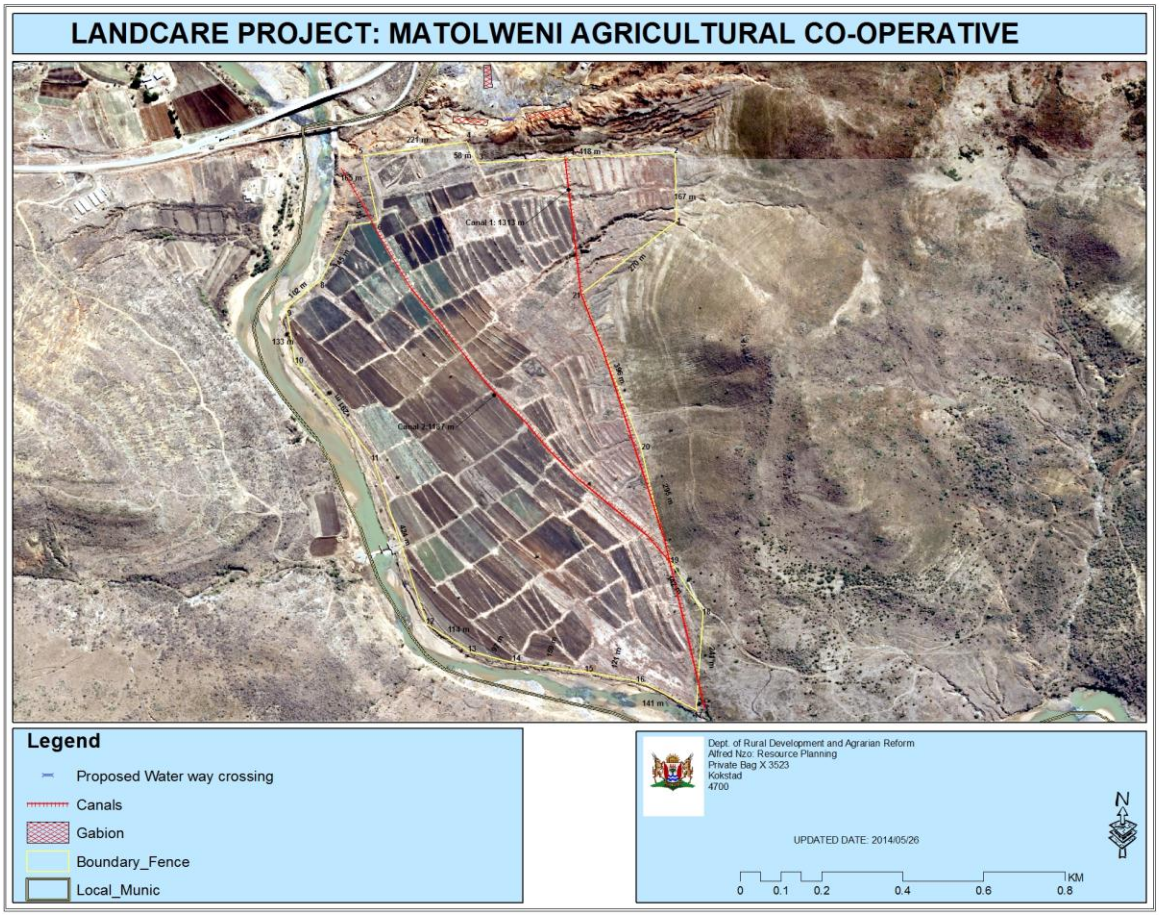
They provided the budget allocation from the year 2006 to 2014.



4.10 Government Intervention

The officials of the local Department of Rural Development and Agrarian Reform prepared feasibility study, project plan and costed business plan and submitted to National Department of Agriculture Forestry and Fisheries for funding through the Provincial Department of Rural Development and Land Reform. The summary of project plan is presented as follows;

Figure 3: Proposed project plan



Below in the next page is a proposed project activity breakdown

Activities	Sub-activities	Start date	End date	Inputs required for activity	Deliverables	Activity cost
Land care awareness	Social facilitation	July 2014	October 2014	Extension officers Promotional material	Sustainable use of natural resources	R65 000.00
Buying of protective clothing	Procurement process.	July 2014	July 2014	Service provider, SCM	Protective clothing	R20 000
Billboards	Project identification	July 2014	July 2014	Service provider, SCM	Identification	R35 000.00
Storm water canal	Procurement process	August 2014	October 2015	SCM, Service provider	Appointment of service provider	R 700 000.00
Gabion construction	Procurement process	October 2014	December 2014	SCM, Service provider	Appointment of service provider	R450 000.00
Training on gabion construction	Identifying project members for the training	October 2014	October 2014	Service provider	Better knowledge of gabion construction	R120 000.00
Fencing Material	Procuring the fencing material	December2014	February 2014	Service provider Extension officers Fencing material,	Erecting fencing	R 221 083.07
Training on fencing	Identifying project members for the training	December 2014	December 2014	Service provider Extension officers	Knowledge of erecting fence	R 65 000.00
Job creation	Funds for wages	August 2014	July 2015	Implementation of the project activities.	Creation of jobs through project activities	R 351 450
Water way crossing	Procurement process	May 2015	July 2015	SCM, Service provider	Appointment of service provider	R 750 000.00
Total						**R 2 777 533.07**

The proposed plan and funding were approved by the National Department of Agriculture Forestry and Fisheries. An amount of R 1 762 million was allocated to the project but due to lack of capacity in the Engineers of the Provincial Department of Rural Development and Agrarian Reform only one conservation work that was implemented successfully, that is fencing. This lack of capacity to the Engineers was caused by the shortage of staff in the Engineering Directorate.

5. Discussions and Recommendations

To reduce the effect of land degradation in Alfred Nzo enlarge, government should strengthen the intervention programmes and provide more support to the LandCare programme which was the concept introduced in Australian and adopted in South Africa in 2001. This programme is assisting at restoring sustainability and productivity to land and water management in both rural and urban areas. It is holistic in nature, encompassing integrated sustainable natural resource management. It is highly recommended because it is community based and community led and it also assists in achieving sustainable livelihoods through capacity building, skills development. This programme involves wide range of partnerships with a wide range of groups from within and outside government.

Government can pay more focus on the establishment of the programmes that will contribute towards biodiversity conservation through ensuring that communities and individuals adopt an ecologically sustainable approach to the management of environment and natural resources, while improving their livelihood. To ensure that people are using the soil, water, and vegetation resources in such a manner their own quality of life is improved and that future generations will also be able to use them to satisfy their needs, meaning which cultivation, livestock grazing and harvesting of natural resources should be managed in such a manner that degradation such as soil erosion is curtailed.

Government can encourage more application of appropriate development technologies both in rural development and agricultural practices that will be conservative in natural resources through promotion of agricultural soil conservation that will practice *no till farming* where crops are allowed to remain rather than being ploughed under at the end of the season. This practice keeps soils anchored in place rather than having bare ground exposed to wind and water.

Use of terrace farming is also recommended whereby there is use of topography of the land to slow water flow through a series of terraces. This manipulation of the water flow will assist in the prevention of the gathering speed and washing soil away from cropping area.

Lastly the practice of contour farming which can be seen as the replication of the effects of terrace farming but on a small scale. It is encouraging that rather than planting crops in a straight vertical rows, crops must be planted following the contour of the land scape. Crops which are planted up down hillsides can create pathways for water to flow whereas planted parallel to the land slow the flow of water that prevents soil erosion.

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