The role of the Environmental Monitoring Group (EMG) to inhibit land degradation: The case of the Namakwa District Municipality, Northern Cape Province

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ABSTRACT

Land degradation has been negatively impacting the environment for a long time and the effects also affect society and the economy. Therefore, due to the impact it has on the environment, there is a need to prevent the effects from further damaging the environment. In South Africa, land degradation is common, especially the Northern Cape Province and other areas with dry climatic and mountainous conditions.

The effects of land degradation also drew the attention of NGOs, such as the Environmental Monitoring Group (EMG). The NGO took the initiative to attempt to inhibit land degradation by implementing new farming techniques to enhance a sustainable environment. As time went on the Department of Agriculture in the Northern Cape Province requested the NGO to come to Namakwa District Municipality. The purpose of inviting the NGO to the district was that the NGO should educate and inform the community members and farmers of Nieuwoudtville and Soebatsfontein on sustainable farming techniques.

Different literature studies have highlited that human's actions are the main cause of land degradation. Other causes of land degradation are environmental hazards and natural features. In an effort to inhibit land degradation, the South African government passed regulatory guidelines like the National Environmental Management Act, 107 of 1998, National Forestry Act 84 of 1998 and others. All these Acts are informed by the Constitution of the Republic of South Africa, Act 108 of 1996. Furthermore, the United Nations Organisation established Conventions on sustainable development whereby countries and NGOs around the World became members. At these Conventions, different strategies on sustainable development were discussed, which should be implemented in order to ensure a sustainable development.

Keywords:

Environment; land degradation; Non-Governmental Organisation; sustainable development

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LIST OF ABBREVIATIONS

ANC	African National Congress
ASGISA	Accelerated and Shared Growth Initiatives for South Africa
CASP	Comprehensive Agricultural Support Programme
COP	Conference of the Practice
CSD	Commission of Sustainable Development
CSR	Corporate Social Responsibility
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DLA	Department of Land Affairs
EMG	Environmental Monitoring Group
GEAR	Growth, Employment and Redistribution
IDP	Integrated Development Plan
ISRDP	Integrated Sustainable Rural Development Programme
KM	Kilometres
LADA	Land Degradation Assessment
LCP	Land Care Programme
MEC	Member of Executive Council
NBP	National Bioregional Plan
NDEAT	National Department of Environmental Affairs and Tourism
NDM	Namakwa District Municipality
NDP	National Developmental Plan
NEAF	National Environmental Advisory Forum
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
NEPAD	New Partnership for Africa's Development
NFA	National Forests Act

NGO	Non-Governmental Organisations
NGP	New Growth Path
NSSD	National Strategy for Sustainable Development
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
SADC	South African Development Community
UN	United Nations
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
WB	World Bank
WfL	Working for Land
WSSD	World Summit on Sustainable Development
WWF	World Wild Forests

CHAPTER 1: BACKGROUND AND ORIENTATION

1.1. Introduction

Non-Governmental Organisations (NGOs) have been rendering services to disadvantaged communities for a long time ago. The main reason for the provision of services was to improve the socio- economic status of the people. These services are rendered voluntarily and not for profit-making. For the NGOs to be able to render the services to the people, they depend on the donations offered by donors or government.

In South Africa, the NGOs started to exist and become active after 1948. Some reason for the development of NGOs was to respond to the passing of the apartheid policy which was discriminating the people in the country. For example, the policy preferred the White Minority population by allocating more resources to them and deprived the Black people the resources and forcefully removed the Africans people from their native land (Kuruman, Samuel, & Winston 2012: 34- 35). As a result, some of the NGOs formed were providing social services to the disadvantaged people and others focused on the political aspect and erged politicians to the apartheid system in the country.

After 1990 the NGOs continued to render different services to the people of South Africa until 1994 when the government of the African National Congress (ANC) came into power on the 27 of April 1994. The ANC led government had witnessed and acknowledged the role played by the NGOs in the country before 1994. As a result, the government wanted the NGOs to participate in the Reconstruction and Development Programmes due to their experience obtained before 1994 when they were helping the people who were neglected by the system of former governance (Kuruman *et. al*. 2012: 35).

The scope of practice of the NGOs have changed and expanded to other issues like, rural development, environmental management, health, education and the provision of social services after 1994. All NGOs are required to register their businesses with the Department of Social Dvelopmenteven though they are not regulated by the government because services are rendered for free and voluntarily. But, the NGOs have the responsibility to be transparent and accountable to their stakeholders.

According to Kuruman, *et al* (2012: 40), it is crucial for NGOs to maintain a high level of transparency and accountability as a symbol for good governance. Secondly, being transparent and accountable will help the NGOs to be credited during the allocation of resources. As a result of the opportunities created for NGOs by the government, the Environmental Monitoring Group

(EMG) NGO is among the NGOs providing voluntarily services of inhibiting land degradation to the people of South Africa

EMG is an NGO originating from the Western Cape Province in Cape Town and it has been involved in the environmental management projects from 1990 and in 2011 the Northern Cape Provincial Legislature requested the NGO to come to the Province. The government invited the NGO to come and put measure in place which will assist to inhibit land degradation in Namakwa District Municipality. Land degradation has been posing a threat to the environmental in the district, especially at Niewoudtville and Soebatsfontein villages. Therefore, the NGO has been given the responsibility to empower the community members and farmers on how to manage the land degradation in order to ensure sustainable land managment. In order to achieve thev goal of the NGO, several projects were designed and implemented in the villages and community members were involved.

1.2. Orientation and problem statement

The word “environment” refers to the surroundings in which all organics like, human beings, plants and animals are found. The survival of the living organics depends on the availability of thewater for drinking and watering of plants. Secondly, the air that is used for breathing and thirdly, the light that provide the plants with energy to make food and germinate in order to make the environment a habitable place for organics (Komane, 2005:9).

The environment is divided into four components. According to Winter *et al* (2013:27), the first component is the hydrosphere which includes all the waterbodies found on earth such as oceans, lakes, rivers, ponds and streams. The second component is the lithosphere, which forms the surface of the planet and it is formed by layers of rocks, soil and mountains. The third component is the atmosphere which provides the environment with various types of air, like, oxygen and carbon dioxide. Furthermore, the atmosphere protects living organics from harmful radiation of the heat from the sun.

The fourth component is the biosphere which is also part of the environment within which all organics like, people, plants and animals are found, and they interact with other inorganics found in the other three components. The richness of the biosphere depends on natural factors such as rain and the temperature to become a conducive space within which all organics can grow, reproduce and feed. The land also depends on natural factors such as rainfall and the temperature to develop over a certain period to meet the needs of all organics and ensure a sustainable environment (Winter *et al*., 2013:27).

Therefore, to allow land to develop and ensure a sustainable environment, it is important to identify all the factors that pose threats, and devise preventative measures to ensure a sustainable environment. One of the factors that pose a threat to sustainable environment is land degradation.

Land degradation is defined by Muir (2012:15), as the impoverishment thereof by natural causes and human action which diminishes the fertility of the soil, and results in insufficient production. It is an ancient global challenge that has been affecting the developed and the developing countries. The natural causes include: drought, strong water run- off duringheavy rainfall, severe winds, volcanic eruptions, sea water rising above sea level, and biological degradation. Besides natural causes, human action such as industrialisation, overpopulation, overgrazing, pollution, removal of plant cover, and veld fires can prompt land degradation.

In the western part of the United States of America (USA), land degradation was experienced as far back as the mid-1880s because livestock grazing was not regulated in privatelyowned areas. Therefore, the farmers took advantage of the situation whichled to the destruction of the land by grazing the livestock until the land is naked. Another example is whendrought affected agricultural land in the Great Plains in the 1930s east of the Rocky Mountain.Most farms were destroyed and natural vegetation lost (Eswaran *et al.*, 2001:1).

Land degradation in France was experienced around the 1900s when the arable land that was used for agriculture to produce food to feed the nation degraded due to human activity and population growth. The French economy was affected negatively and this led to a shortage of food and an increase in food prices (Pierre, 2010:52). The government intervened and created awareness among the communities of how to look after arable land and inhibit land degradation. Land care management projects were introduced and implemented whereby community members were actively involved and the projects restored the degraded land.

African countries also experienced land degradation in the early 1900s and it is still a threat to most today. For example, in Nigeria, the land which was used for agricultural purposes in the Calabarregionhad degraded due to human activity that included poor farming practices, overgrazing and inappropriate irrigation. Eni (2012:21) posits that more than 60% of the agricultural land in Calabar had degraded and resulted in the decrease of food production for the nation. The Nigerian government tried to intervene by implementing measures to inhibit land degradation. However, land degradation remains a challenge.

In Kenya, specifically the LaikipiaDistrict, land degradation was noticed during the early 1960s as a result of overpopulation. The Maasai communities who had occupied the Laikipia plateau from the early 20th century were forced to move to the southwest corner because the area that they

had been occupying was transformed into a commercial zone. Due to an increase in the population in the southwest corner of Laikipia plateau, the arable land which was used by the Maasai communities to feed their cattle and support the communities degraded (Speranza & Kiteme, 2012:1-11).

South Africa, like the aforementioned developed and developing countries have been faced with the problem of land degradation dating back to the early 1900s. Land degradation was associated with the climatic conditions of the country. For example, nearly 91% of the country's land surface experiences dry climatic conditions and the soil is infertile. Approximately 8% of the surface experiences extreme dry climatic conditions and the soil is infertile. Furthermore, approximately1% of the country's land surface has wet climatic weather conditions and arable soil for farming and grazing. Therefore, land surface, dryclimatic conditions and infertile soil are associated with land degradation (Hoffman *et al.*, 1999:8).

Land degradation increased rigorously after the government took over in 1910 and new land policies were formulated and passed. South Africa was unified under a single government and administration with th Act of Union of 1910, hence it was possible for the first time to have land management policy over the entire geographical area that constitutes South Africa. The passing of the Act resulted in another form of land degradation which was induced by human actions. The Native Land Act (27 of 1913), which was passed in 1913 forced 80% of the country's population to occupy 13% of the land surface and thereby expose this portion to overpopulation (Van der Walt, 1991:12). People were forced to leave the arable land which suited animal and crop farming to zones not conducive for agricultural purposes, and later converted into commercial and industrial sites.

Furthermore, the government forced communal farmers and their families to relocate to their designated communal areas as stipulated in theNative Land Act (27 of 1913). This decision impacted negatively on the communal farmers because the new designated areas made it difficult for them to continue farming because of the limited land available for farming and the climatic conditions of the areas. Consequently, the majority were ultimately forced to abandon the faming and provide cheap labour to the mines and factories. The remaining farmers were forced to make meaningful use of the limited available agricultural land to feed their communities which placed pressure on the land surface (Maje, 2008:14).

Land degradation had increased in the Republic of South Africa from the 1960s towards the 1990s due to rapid agricultural industrialisation. As a consequence of external inputs such as fertilisers enhanced agricultural production (Department of Environmental Affairs and Tourism, 2008:7). After 1994, land degradation compounde due to urbanisation. Rapid urbanisation occurred as a result of the industrial mining revolutions in the second half of the 19th century, which increased

the demand for food in the urban areas and consequently increased pressure on land with the development of industrial agriculture to feed the cities. The phenomenon of urbanisation was speeded up with the removal of the Group Areas Act which saw a rapid increase of population mobility. The majority of the people migrated from the rural to urban areas. As a result, most of the arable land surrounding the urban areas was cleared for settlement while the remainder was affected by drought and storm water.

Provinces with steep slope environments close to the escarpment such as Limpopo, Kwa Zulu Natal and the Eastern Cape were severely affected. Many communal areas in the North West, Northern Cape and Mpumalanga provinces were also degraded. The commercial farming areas with the most severe land degradation werelocated in the Western Cape and the Northern Cape provinces. Wind and water erosion is considered the major cause of land degradation which contributed towards the loss of natural plants (Department of Environmental Affairs, 2007:1).

Land degradation pose a serious threat to the environment globally. It is important to formulate an action plan that will be used to ensure that land degradation is addressed in order to create a sustainable environment. The action plan should outline strategies that will be implementated to minimise land degradation. Moreover, proper planning is required from the beginning of the process to enhance the implementation of the strategies to achieve the desired results (Gibson *et al.*, 2005:11-12).

In an attempt to address the of land degradation, which affected the socio-economic status of South Africa, the country affiliated as a member of the United Nation Conference to Combat Desertification (UNCCD). In June 1992, the organisation arranged a conference on the environment and development which took place in Rio de Janeiro, Brazil (United Nations, 2002:4).

South Africa affiliated as a member of the Southern African Development Community (SADC), which formulated an action plan referred to as New Partnership for Africa's Development (NEPAD) in July 2001 in Lusaka, Zambia. The primary objectives of NEPAD included: eradicate poverty, promote sustainable growth and development, integrate Africa in the world economy, and accelerate the empowerment of women (Department of Environmental Affairs, 2007:4).

Active participation bythe South African government in UNCCD and NEPAD, resulted in the country alerting participant representatives at the eleventh session Conference of the Parties (COP 11) that desertification, land degradation and drought were serious threats to living organisms. The conference was held in Windhoek, Namibia in September 2013. The governments were encouraged to implement appropriate policies to enhance sustainable strategies to inhibit desertification, land degradation and drought (Department of Water and Environmental Affairs, 2013:1).

The successful implementation of the conference's strategies on the environment and sustainable development should not be the sole responsibility of governments. These require joint planning between government and the private sectors' interests such as, mining, businesses and NGOs. These sectors outline their Corporate Social Responsibility (CSR) plan. With regards to corporations, environmental issues are dealt with in "Environmental Management Impact Assessments and Environmental Management Plans, rather than in Corporate Social Responsibility Plan. Furthermore, there is a need to align planning with best management practices and utilise approaches from different theories to achieve the desired outcome (Hamann, 2008:6).

The joint planning process should be informed by four values formulated by the United Nations (UN) which are; human rights, labour standards, environment, and anti- corruption. In an instance whereby a private sector is intending to provide the community with a service like opening a business, the private sectors were urged to check whether that business is in line with the acceptable norms and values of that community. For example, the mortuary business is not unacceptable in many communities (United Nations. 2001: Online).

In responding to the challenges of land degradation by addressing its impact on the lives of the communities, an NGO, Environmental Monitoring Group, initiated a number of of sustainable development projects to save the environment. The EMG, which was established in 1991, is based in Cape Town, and comprises of seven staff members. The EMG also has another office in the Northern Cape Province through which it implements projects intended to save the environment and ensures sustainable development. its mission is: "***To awaken potential in ourselves and others to engage powerfully, mindfully and creatively in our relationship with the natural environment and resource that sustain life***".

This study focused on land degradation, which drew the attention of the EMG to develop its social responsibility to assist the communities of Namakwa; and inhibit land degradation, whichposeda serious threat to the entire district in the Northern Cape Province.

1.3. Research objectives

The primary objective of the research was to determine the role of the EMG to inhibit land degradation in the Namakwa District Municipality, Northern Cape province. To achieve this primary objective of the study, the following secondary objectiveswere identified:

- Examine land degradation?
- Determine the roles of the activist NGOs in sustainable development.
- Determine the role of Environmental Monitoring Group in inhibiting land degradation.

- Propose recommendations to inhibit land degradation and ensure sustainability.

1.4. Research questions

1.4.1. What is land degradation?

1.4.2. What are the roles of the activists NGOs in sustainable development?

1.4.3. What is the role of the Environmental Monitoring Group in inhibiting land degradation?

1.4.4. What are the proposed recommendations to inhibit land degradation to ensure sustainability?

1.5. Central theoretical arguments

Land is defined as a source of life for all organics. Any disturbance thereof impacts negatively on the land and is difficult for the land to sustain life and the wellbeing of all organics. Land which cannot yield food or vegetation is vulnerable and can easily be exposed to degradation because its surface is unprotected (Gibson *et al.*, 2005:13).

Land degradation is a primordial problem that is complex, dynamic and its causes and effects differ from one country to another. Land degradation is defined as the destruction of the land surface, which impactsonthelivelihood of all organics and results in food shortage, as well as a lack of habitable place for certain living organics (Abdi *et al.*, 2013:2).

Eni (2012:28) defines land degradation as any adverse changes of the land surface that affects the potential production of the soil negatively and leads to the minimal production of food. Therefore, in an attempt to address land degradation which poses a threat to the environment, probable strategies to ensure sustainable land development at Nieuwodtville and Soebatsfontein in the Namakwa District Municipality. Amusan (2008:1) defines sustainable development as the provision of quality of life on an ongoing basis without compromising the environment, which is a source of life for all organics and inorganics, including other aspects such as economic growth that is dependent on the land.

Sustainable development is also an opportunity to access resources and utilise these objectively so that future generations could also retrieve these. Therefore, it is important to develop a sustainable development plan that will be used by any country to inhibit land degradation and ensure sustainable development. A plan should outline how the processes will unfold and aspects that should be investigated when inhibiting land degradation. The role of various participants such as the private sector and affected communities should be outlined so that they are aware of what is expected of them (Van Schalkwyk, 2012:11). Natural undisturbed environments are fully

developed and functional environments, human developments often disturb the natural functioning of such environments. Finally, there should be an awareness campaign and launching projects in communities to create an awareness of the significance to inhibit land degradation to protect the resources for future generations (Schlebusch, 2014:37).

Since from 1990 the United Nations has been pleading to private sectors, businesses and NGOs to contribution to the social objectives and values of communities in order to improve the socio economic status of the people (United Nations, 2007. 1). Therefore, some of the private sectors, including businesses took initiatives and committed themselves to assist disadvantaged communities in order to ensure sustainable development (Azapagic & Perdan, 2000:1-2).

The private sector, NGOs and civil society were requested to work together and assist disadvantaged communities in order to ensure sustainable development. The Anglo American Chairperson, Sir Mark Moodly-Stuart, accentuated that the application of sustainable development needs different sectors to work together. Furthermore, there should be strategic alliances between different sectors to distribute resources to where these are needed most, thereby minimising risks, and acknowledge and share achievements together instead of sectors working in isolation (Hamann& Boulogne, 2008:54).

All sectors that participate in the fight against land degradation are expected to work together to achieve a common goal, that is, to ensure sustainable land development and inhibit land degradation. The Department of Land Reform (DLR) developed a Land Care Programme (LCP), with the view to empower and encourage the communities and individuals to oversee the environment and ensure sustainable development to improve its socio-economic status and utilisation by future generations. The LCP also formulated strategies to manage natural resources in an efficient, effective, consistent and equitable mannerto enhance sustainable development through partnerships with the private sector, businesses, NGOs, civil society and communities (Department of Land Affairs, 2002:2).

To ensure that the plans agreed upon at Rio de Janeiro conference on environment and development that took place on the 03rd- 14th of June 1992 are implemented as agreed upon, a Commission on Sustainable Development (CSD) was established by the UN in December 1992. The primary reason for the establishment of the Commission was to complement and monitor the overall implementation of government agreements, government departments, private companies and NGOs at the conference held in Rio de Janeiro. Yet adherence to all the recommendations are of a voluntary in nature. The Commission met annually to analyse the findings, identify gaps and provide recommendations. As a result, the Commission cautioned ministers of the tasks ahead of them. Furthermore, NGOs were granted accreditation for participating in the Commission’s work (United Nations, 2002:1-2).

One of the Land Care projects initiated by the UNCCD is referred to as Working for Land (WfL) project. The primary objective of the project was to rehabilitate land that had been degraded by desertification, overgrazing, soil erosion, poor storm water management and unsuitable farming practices. The identified areas were handed to the communities who were encouraged to plant trees, and utilise other areas for grazing. South Africa, as a member of the UNCCD developed a long term strategy of how to rehabilitate the degraded land as informed by WfL objectives (Department of Environmental Affairs, 1997:1-5).

One of the areas that was rehabilitated through the WfL project was Nquthu in Kwa Zulu Natal Province. The land in the area had been severely degraded because of heavy storm water during the rainy season. A decision was taken to rehabilitate the land by creating slopes, plant grass and 1000 indigenous trees in the area. These efforts were undertaken with the intention to impede the flow of running water during the rainy season. The project employed 129 persons from the surrounding villages (SAnews, 2015: Online).

The South African government embarked on another project called Land Degradation Assessment (LADA) which was initiated by the UNCCD. The following countries participated in the project: Argentina, China, Cuba, Senegal and Tunisia. The general aim of the project was to gather information on land degradation which would enable the countries to formulate transformed policy documents and thereby implement sustainable land management programmes. The project provided the users with the developmental tools and methods that would quantify the nature, extent, severity and impact of land degradation on the dry land of the ecosystem (Lotter *et al.*, 2009:1).

The land degradation assessments are conducted at national level to also investigate sustainable land management to determine the seriousness of the degradation and how it should be inhibited. To achieve the desired assessment results, it was deemed important to include role- players, stakeholders and experts who have a thorough understanding of land degradation and approaches of how it can be controlled. At the local sphere the assessment is used to determine the current status of land degradation in a particular area and its historical development including the land users' perceptions thereof in that particular area (Lotter *et al.*, 2009:1).

LandCare, which is one of NEPADs three programmes focused on the conservation and rehabilitation of the degraded land. It was the task of every country including South Africa to ensure that relevant projects were identified and implemented. The process of rehabilitating degraded land is very expensive and time consuming. Therefore, countrieswereg granted the permission to identify critical areas on state and communal land including those that had turned into a desert due to natural disasters or man's actions. The plan was to place identified areas ona

rehabilitation programmes and grant preference to historically disadvantaged areas (Eswaran *et al.*, 2001:6).

Besides the South African government'sactive participation in the UNCCD and NEPAD, it also requested participant countries which attended COP 11, to realise that desertification, land degradation and drought were serious threats to living organisms. The former Minister of the Department of Water and Environmental Affairs, Honourable Edna Molewa accentuated that the countries should focus on addressing the causes of desertification, land degradation and drought and createa permanent solution instead of relying on the temporary. The minister encouraged countries to implement appropriate policies to enhance sustainability and inhibit desertification, land degradation and drought (Department of Water and Environmental Affairs, 2013:1).

Furthermore, the Ministry for Agriculture and Land Affairs in South Africa formulated draft national policies and legislation on land care topave the way for the implementation of the LandCare programme. The authors of the draft document included: Universities, Agricultural Research Council and officials with expertise in land care and sustainable development. Workshops were hosted throughout the country to discuss the draft policy with local community leaders, small scale farmers, women and NGOs. Furthermore, the attendees at the workshops were given the opportunity to comment and provide inputonland care and sustainable development related issues (Eswaran *et al.*, 2001:6).

It can be inferred from the above that South Africa is experiencing severe land degradation whichmustreceive urgent attention to protect land, save the environment and ensure sustainable development. Furthermore, the government is unable to make progress on on rehabilitating the degraded landon its own because of the large hectors of the land that have already been degraded, and unavailability of the resources that would be needed to rehabilitate the land. Therefore, it is crucial for the South African government to call upon the private sector and NGOs for assistance with inhibiting land degradation in order to ensure sustainable development.

1.6. Research design

Mukherjee (2017: 56) defines research design as a backbone of the research because it provides the researcher with the relevant methods to use to approach and respond to the research questions. Furthermore, the researcher will be able to prepare and arrange the documents that will be used to respond to the research questions. The study seeks to determine the role of the EMG in inhibiting land degradation in the Namakwa District Municipality, Northern Cape province. Furthermore, an appropriate design has been selected to realise the objectives of the study. The research design was divided into three sub-units: research methodology, research procedures, and data analysis.

1.6.1. Research approach

The concept research approach refers to the structured layout of different procedures that will be used to produce theory that is in line with the research conducted and there are different procedures that can be used to produce research theory like, qualitative, quantitative and others (Rahman, 2016: 104). For the purpose of this research, the qualitative procedure will be used to produce the research theory.

Flick (2014:542) defines qualitative research as a model that is used to collect and work with data that is non- numerical and interprete the data collected in order to produce meaningful theory that can help people understand other aspects. Furthermore, the qualitative research allows the researcher to analyse the views and belief of the people including the experience they have come across and develop the new ideas and theories

According to Denzin and Lincoln (1994: 2) qualitative research approach is type of social science research approach that focuses on the development of explanation of social concepts surrounding the people like, the manner in which people conduct themselves, their value and cultural belief systems. Therefore, the qualitative research allows the research to scrutinise deeper in order to come up with another understanding of the concept.

For the purpose of this study the researcher took a decision to use the qualitative approach to produce the theory about the research conducted due to the following reasons; the topic of the research is about the aspects that are impacting on the life of the people. Therefore, the purpose of the reaserch is to find out the understanding of the people and the thought they have about the particular aspect impacting on their life.

Furthermore, the qualitative research approach allows the research to have a direct communication with the participants and make use of the literature studies like, books, accredited journals, newspaper articles, official documents, internet sources and exper reports. This allows the researcher to have an opportunity to gather more data relevant to the topic. Lastly, the qualitative research approach allows the researcher to collect and work with non- numeric data that can be interpreted easily and bring new findings that can be beneficial to the people.

There are different methods that can be used to conduct the qualitative research methodology and they are; observation and immersion, interviews, open- ended surveys, focus groups, content analysis of visuals and textual materials and oral history (Aspers and Corte 2019:7).

For the purpose of the study, the method used to collect data is; literature study and semi structured interview

1.6.2. Research methods

Two types of research methods have been used to collect data and they are;

1.6.2.1. Literature study

Literature study refers to the different reading materials which provide the researcher with the information relevant to the research topic and the materials include books, accredited journals, news paper articles, internet sources, legislation and ther official documents (Tsepe, 2016: 7). The information received from the materials will provide the researcher with the theoretical background about the topic.

Literature study refer to the review and analysis of the existing reading materials that contain organised ideas about a particular topic from different authors (Oberholzer: 2016 7). Therefore, the information gathered from the reading materials will provide the researcher with the theory about the topic. For example, in case where the study had been made on the topic, the researcher will be able to know the findings and the recommendations made at that time. Again, if there were other part of the topic that was not covered, the researcher will be able to come up with his / her own new findings and recommendations.

The reason behind the use of literature study is to establish what authors are saying about land degradation and the roles played by activist NGOs in sustainable development. The information obtained from the reading materials will be analysed and be compared to the findings of the semi structured interview and finally, the researcher will be able to come up with the recommendations.

1.6.2.2. Semi- structured interviews

Semi- structured interview is defined as a meeting in which the interviewer does not follow a strictly formalised list of questions (Doyle, 2018: Online). The interviewer poses open questions to create a platform for discussion with with the interviewees like, what encouraged the NGO to be involved in land management projects and the understanding of the community members about land degradation.

The researcher chose the semi- structured interviews because method allows direct communication with the interviewee and the method allows the interviewer to have a further discussion with the interviewee in order to get more information (Doyle, 2018: Online). The semi-structured interviews had helped the researcher to understand the role and responsibilities of the each of the staff members of the Environmental Monitoring Group NGO and the understanding of the community members of Nieuwoudtville and Soebatsfontein villages about land degradation.

The questionnaires were informed by the research topic which is; the role of the Environmental Monitoring Group to inhibit land degradation: The case of the Namakwa District Municipality, Northern Cape Province. Therefore, the participants were divided into two groups which were; the staff of the EMG and the community members of Nieuwoudtville and Soebatsfontein villages. The researcher conducted the semi- structured inverviews with both the staff and community members because the NGO has been working together with the community members since the commencement of the projects.

The semi- structured interviews were conducted with nine participants, namely: EMG Programme Manager in the Namakwa District Municipality, Northern Cape Province, Project Manager who oversees the projects at Nieuwoudtvile and Soebatsfontein villages. The semi- structured interviews were conducted with the Local Project Coordinators at the two villages and the responsibility of the Local Project Coordinators was to coordinate and ensure implementation of the of the projects. The Eco Ranger was interviewed and the role of the Eco Ranger is to identify relevant trainings and to ensure implementation of the identified trainings. No semi- structured interviews were conducted with the Scientists from the Council for Scienfific and Industrial Research (CSIR) or even the relevant national and provincial departments.Lastly, two community members from each village were interviewed as well.

The participants mentioned on the above were identified to provide the researcher with the relevant information to the questionnaires formulated and the information receieved from the participants will be analysed and compared to the literature review.

The researcher wrote a consent letter to the NGO Manager to request the permission to come and conduct the interview with the staff and the community members who are taking part in the projects implemented by the NGO in the village. The letter indicated that the interview will be for academic purposes. After the receiving of the consent letter, the Manager of the NGO responded by calling the researcher to inform her that the approval to conduct an academic research has been granted.

The researcher had communicated with the staff members who have been identified to participate in the semi- structured interviews to schedule the appointments for the interviews. The semi-structured interviews were scheduled for three days, which was from the **01st- 03rd** of **October 2018** was scheduled as follows:

The figure below illustrates the semi- structured interviews conducted with the staff of the EMG and the community members of Nieuwoudtville and Soebatsfontein

No	Dates	Time	Participants	Area
1.	01 October 2018	08:00- 10:00	EMG Manager	Nieuwoudtville: EMG office
2.	01 October 2018	11:00- 13:00	Project Manager	Nieuwoudtville: EMG office
3.	01 October 2018	14:00- 16:00	Local Projects Coordinator	Nieuwoudtville area
4.	02 October 2018	08:00- 10:00	Eco Range	Nieuwoudtville: EMG office
5.	02 October 2018	11:00- 13:00 14:00- 16:00	Two community members	Nieuwoudtville village
6.	03 October 2018	08:00- 10:00	Local Projects Coordinator	Soebatsfontein area
7.	03 October 2018	11:00- 13:00 14:00- 16:00	Two community members	Soebatsfontein village

Figure 1- 1: semi- structured interviews schedule from the 01st- 03rd October 2018

Each interview was allocated a maximum of two hours and there were minor challenges experienced at Nieuwoudtville like, the scheduled time for EMG Manager was 08:00- 10:00. At around 09:15 the Manager received a call from the office in Cape Town and he had to answer the call and respond to request made. The researcher had to pause the interview for a while to accommodate the request made by the office in Cape Town.

The Manager came back for the interview at around 10:20 and there were many questions that needed to be addressed and the researcher had to call other participants to reschedule the timeframes because there was a need to continue with the interview as the Manager would not

be at the office for the coming three days. As a result, the time schedule for the semi- structured interview scheduled for the 01st of October 2018 got interrupted. The semi- structured interview scheduled for 11:00- 13:00 started at around 12:15 until 14:25 due to the delay experience during the first interview. The third semi- structured interview started at 14: 35 until 16:30.

The semi- structured interview scheduled for 02nd of October 2018 went as planned and by 15:00 the researcher was done with the interview because the two community members were found at one place. Therefore, after the interview with the first community member, the interview with the second community member started immedialtely without waiting for an hour for the next participant to come. After the interview, the researcher travelled to Soebatsfontein which is approximately 350 km from Nieuwoudtville.

The semi- structured interviews scheduled for the 03rd of October 2018 started at around 10:00 because the researcher was delayed by the terrible road conditions around the Kamiesberg Mountain. The researcher arrived at the office of the Local Project Coordinator at Soebatsfontein village at 09:00 and at that time there was already an official visit from the National Department of Agriculture, Forestry and Fisheries. As a result, the researcher had to wait until the meeting is adjourned at around 09:30 and the semi- structured interview started at 10:00 up until 11:45.

The second interview with one of the community members started at 12:00 up until 13:45 and after the interview the researcher walked to the house of the second community member to continue with the interview. The interview of the day started at 14:00 up until 16:00 and everything went well until the end of the interview because the participant was able to express himself well in English.

The other challenge experienced during the interview was the language barrier, the langage used for communication is Afrikaans, only one community member was able to express himself in English and the other three community members could only speak Afrikaans. There were two people the researcher was travelling with in order to assist with the translating of Afrikaans to the English.

The questions tabled below were formulated before in rder to ensure that the researcher can asked questions that are relevant to the research questions and with the community members the researcher wanted to ensure that all community members are asked the same questions. Therefore, the questions were formulated to ensure consistence during the interviews.

The figure below illustrates the questions prepared for the semi- structured interviews.

No	Respondents	Questions
1.	EMG Manager (EMG office)	• The company is based in Cape Town. What were the factors encouraged your company to come to the Northern Cape Province, specifically Namakwa District Municippality? • What was the status of land degradation when you arrived for the first time in the district with specific reference to Nieuwoudtville and Soebatsfontein villages? • What are the most common type of land degradation at the two villages? • What are the main causes of the types of land degradation mentioned? • What is the role of EMG in inhibiting land degradation at the villages?
2.	Project Manager (EMG office)	• List the projects identified for Nieuwoudtville and Soebatsfontein villages and what do the projects entail? • What were the reasons behind indentifying these projects? • When were the projects implemented? • Comment about the progress of the project to this date. • What was the status of land degradation when you arrived for the first time in the district with specific reference to Nieuwoudtville and Soebatsfontein villages? • What are the most common type of land degradation at the two villages? • What are the main causes of the types of land degradation mentioned? • What is the role of EMG in inhibiting land degradation at the villages?
3.	Local Projects Coordinators (Nieuwoudtvilleand Soebatsfontein)	• What are the challenges experienced during the implementation of the projects? • Are the projects relevant to the type of land degradation indentified at the villages?

		• Each project has a beginning and an end period. In case whereby a project exceeds the agreed period, how does the NGO intervenes and ensure that the project is completed? • Have you ever experience a situation whereby a project is completed and at a later stage there are major faults that cannot be left unattended? • What are the views of the community members about the projects implemented in the villages?
4.	Eco Ranger (EMG office)	• Which criteria do you use to identify trainings for the two villages? • What does the trainings entail? • How are the trainings identified facilitated? • Who are the participants? • How will you ensure that the objective of the trainings are sustained?
4.	Community members (Nieuwoudtville and Soebatsfontein)	• Do you know what land degradation is and its effects? • Do you think the village needs help regarding land degradation? • According to your understanding, what are the most common type of land degradation in your village? • What are the main causes of the type of land degradation mentioned? • What is your view about the projects in your village and were you consulted? • According to you, is EMG able to combat land degradation in the village? • Will the village be able to sustain the projects after the EMG has left the village?

Figure 1- 2: Semi- structured interview questions

1.6.3. Data analysis

Data analysis implies an interpretation of gathered raw data to provide meaning, including the review of recorded data (Parahoo, 2006:375). The collected data was analysed through thematic analysis which implies a process of identifying themes from the collected data as well as analyse and report identified thematic patterns (Bran & Clarke, 2006:73). After the semi structured interview had been conducted, the researcher analysed the data collected and formulate different themes.

Seven themes relevant to the topic were formulated and they are as follows: unavailability of technology, land surface covered by huge rocks, loss of indeginous vegetation and other plant species, invasion of alien plant, unavailability of water, shortage of funds and non rotation of crops. Furthermore, the researcher went ahead to elaborate each theme and come up with recommendations.

1.7. Ethical considerations

According to Babbie (2010:120), researchers should take cognisance of ethical considerations if the research requires the participation of human subjects. Ethical approval was requested in writing from the responsible Director and the Ethics Committee at the Department of Environmental Affairs. The Director was informedthat the study would include members of the project implemented by the relevant department. This would enable the representative to monitor both the value of the research and its compliance to ethical requirements.

The primary ethica lprinciples that were observed during the research process included: respect for the participants; confidentiality as well as beneficence/non-malfeasance. The researcher also receives the clearance letter from the university that is granting the researcher to permission to go and conduct a research. Furthermore, after the compilation of the research document, the university requires that the research document must be send for language editing and a verification certificate be issued.

During the collection of data, some of the ethical issues transpared include lack of time management like, some interview could not start on the time agreed upon and some exceeded the agreed time frame.

1.7.1. Respect of persons

Parahoo (2006:258) asserts that researchers should at all times strive to seek informed consent from the participants prior to their participation. The participants during the interviews were informed of their rights to either participate or withdraw at any given time.

1.7.2. Confidentiality

To ensure that confidentiality is maintained during the interview, the participants were assured that the gathered data would be kept safe and protected (Babbie, 2010:120). The participants were informed from the outset that the gathered data collected would be kept safe.

1.7.3. Beneficence/non-malfeasance

Beneficence refers to any action to benefit others while non-malfeasance is not to harm (Parahoo, 2006:2). Therefore, the researchershouldcreate a favourable environment during interviews so that the participants feelcomfortable.

1.8. Limitations and delimitations of the study

Limitations refer to incidents that can occur during the study which are beyond the researcher's control and in most instances limits the extent to which the researcher intends to take the study (Simon & Goes, 2013: Online). The limitations included a language barrier because the inhabitants in Namakwa speak Afrikaans. Therefore, the service of a language translator was employed. Other limitations included limited information, for example, the interviewees provided inadequate information or unavailable to participate in the interview due to other commitments.

Simon and Goes (2013: Online) define delimitations as the choices and decisions made by the researcher about the development of the study. These include a decision to research a certain topic and keep the objectives and research questions in mind. Furthermore, the researcher may decide to select theappropriate approach. The delimitations of this study included the opportunity to select a research topic of one's choice, including the research approach and methods to gather information.

1.9. Significance of the study

The findings of this study will be of significance to the communities of Nieuwoudtville and Soebatsfontein in the Namakwa District Municipality, Northern Cape Province because land degradation is a serious problem that poses a threat toasustainable environment. The negative impact of land degradation on food security, economic growth and sustainable development justifies the need for more effective and efficient approaches and techniques to manage the problem.

Land degradation poses a threat to most of the communities globally, including South Africa and the recommended approaches and techniques from the findings would be of significance to all affected communities. The recommendations would contribute towards mitigating the negative

effects of the problem and improve the prospects of economic and sustainable development including food security.

1.10. Chapter outline

Chapter 1: Background and orientation

In Chapter 1, a background and orientation of land degradation had been discussed. The chapter outlined the research objectives and research questions. Furthermore, the chapter contains the central theoretical arguments whereby land degradation had been discussed in details. The research design guided by the research approach, research methods and the data analysis. Ethical considerations have been discussed followed by the limitations, delimitations and significance of the study and lastly, the significance of the study had been discussed as well.

Chapter 2: Literature study

This Chapter will focus on land degradation.

Chapter 3: Literature study

Chapter 3 will focus on the roles played by activist NGO in sustainable development

Chapter 4: Empirical research findings

Chapter 4 will focus on the role of the EMG to inhibit land degradation in the Namakwa District Municipality, specifically at Nieuwoudtville and Soebatsfontein villages.

Chapter 5: Recommendations and conclusion

This Chapter will provide recommendations to inhibit land degradation and ensure a sustainable environment followed by the conclusion of the study.

1.11. Conclusion

Land degradation is an ageless problem that poses a threat to the environment globally. However, specifically in South Africa, the problem is worsened by its climatic conditions. Approximately 91% of the land surface comprises of dry areas that result in land degradation. Therefore, it is important for the Department of Environmental Affairs to cooperate with all relevant role- players and stakeholders to save the environment and ensure sustainable development. Land degradation affects the environment which is a source of life for all organics (people, animals and plants). Furthermore, the government has partnered with the private sector, NGOs, and civil society to

inhibit land degradation. Since vast areas of land have already degraded including the volume of resources required, the process to rehabilitate land is slow.

The next chapter will outline a theory on land degradation obtained from different literature studies. The chapter will also give a thery on the causes of land degradation and the constitutional and regulatory guidelines which provide guidance on how to look after the land in order to ensure sustainable development. lastly, the chapter will outline aa theory about sustainable development and the environment.

CHAPTER 2: LITERATURE STUDY

2.1. Introduction

Various authors have conducted research on land degradation to establish its origin, root causes, effects and provide certain mechanisms of how to remedy the effects it has on the environment. Studies have revealed that humans have contributed much towards land degradation which has become is a global phenomenon. In certain instances, land degradation has been as a result of natural hazards, such as floods, but due to inconsiderate human behaviour, that is, felling trees, it has become difficult to control floods from destroying the land.

Certain mechanisms were implemented to inhibit land degradation which are supported by statutory and regulatory guidelinesto provide guidance of how to utilise the resources. Failure to comply withlegislation would result in prosecution. Furthermore, a White Paper on Environmental Management Policy of 1997 was formulated which included strategies that could be utilised to ensure a sustainable environment.

Therefore, in this chapter, land degradation will be discussed in details including the causes of land degradation. Furthermore, the Constitutional and regulatory guidelines will be discussed with the intention to understand what need to be done in order to protect the environment and ensure sustainable development. The chapter will also outline sustainable development and the environment.

2.2. Land degradation

In South Africa land is considered as asource of opportunities for development. Therefore, it is important to care for the land because it contains non-renewable and renewable resources. Therefore, any activity that degrades land is defeating the purpose to provide opportunities for development (Department of Environmental Affairs and Tourism 2008:1).

The loss of fertility resulted in social challenges such as food shortage due to reduced arable land for farming. Such situations also result in poverty and unemploymentbecause the majority of the people work on the farms. The lack of arable land for farming led to the reduction in production and also affects the price of the goods such as maize. The population has increased and more food is required. However, in South Africa, the land is unable to produce more food to meet the demands because of degradation (Pillay, 2012: Online).

Therefore, due to supply and demand, the price of goods such as food increases considerably. Consequently, and the majority people are unable to afford the goods. Secondly, farming becomes very expensive because more fertilizer and supplements is required to enhance the

fertility of the land. As a result, small scale and subsistence farmers are unable to avoid the additional cost and there is a need to support these farmers in order to increase production and be able to afford the farming equipment and other resources (Sibhat & Qaim, 2017:1).

Land degradation is defined as a problem that is affecting the entire world and it is associated with the decrease of natural resources and decay of forests (Masila, 2016:1). Furthermore, land degradation does not only affect areas with dry climatic conditions, it affects the arid areas as well. Karlen and Rice (2015: 3) define land degradation as the deterioration of the quality of the soil as a result of different ativites taking place on the land. These activies made the land an inhabitable place for organics.

According to Sishuba (2016: Online), land degradation can be defined as an inccurable desease found in the soil irrespective of the quality of the soil. This is the reason for the arable areas be affected by deforestation, climate change and others. These activities and changes affect the fertility of the soil in different ways. Consequently, it is difficult to implement preventative measures to maintain the fertility to ensure a sustainable development.

Barac (2003:5) defines land degradation as the reductionof the available natural resources found on the land as a result of misuse and alteration of both soil and vegetation. For example, when the land is cleared for settlement and industrial purposes, it is affected which results in erosion of the top soil and more vegetation is lost when clearing the site. Therefore, it is important to ensure that natural resources such as soil and vegetation arepreserved to minimise land degradation and ensure a sustainable environment.

Furthermore, land degradation refers to the loss of certain living organisms such asflora and fauna including natural resources: minerals and water on the land (Pelser, 2017:4). The organisms and resources play an important role in the environment and when depleted, the latter is affected. Consequently, the possibility that certain living organisms and resources would become extinct.

Els (2010:4) adds that land degradation is the loss of the fertility of the land as a result of inappropriate land management which can also transpire in both arable and semi-arable areas. The process is smooth and slow. However, the effects are more severe because it impacts on the resourcesfound on the land. Due to the lack of vegetation, certain living organisms migrate to other areas for survival, while others die of hunger and or become extinct. As a result, the environment as a whole is disturbed.

Bangamwabo (2009:18) defines land degradation as the reduction of the biological nutrients of the land which reduces the production capacity. The nutrients are reduced by the removal of the top soil by water or wind and as a result the land is unable to renew itself to enable the vegetation and other plants to re-grow.

Though land degradation impacts on all countries globally, the effects are severe on the African continent. Up to 28% of the continent's land surface is declared degraded and the situation has left the majority of the people in poverty because they are directly dependenton the land as a source of food through subsistence crop and stock farming. The large number of farm workers has become unemployed because the arable land used for farming has been reduced due to degradation (Steiner, 2015:14).

South Africa, like other African countries, is experiencing land degradation which has been a concern for more than a century. The situation is aggravated by the country's climatic conditions because only 13,5% of the land surface is arable and suitable for farming (Department of Agriculture, 2007:12). Also, the country's land shape or topography which comprises of steep slopes, for example, Eastern and Western Cape, Limpopo and the North West provinces also causes land degradation (Department of Agriculture, 2007:21).

There are two forms of land degradation namely: soil and veld degradation. Soil degradation refers to the deterioration of the quality of the soil due to erosion and other activities which ultimately lead to reduced capacity to produce. Hectares of land have degraded due to soil degradation. Veld degradation refers to the deterioration and disappearance of the vegetation and other plant species. Various factors contribute towards veld degradation, for example, floods, pollution, urbanisation and drought (Hoffman *et al.*, 1999:1).

The South African government is faced with a huge responsibility to minimise the effects of land degradation and the cost of implementing appropriate measures which is costly. According to the Department of Environmental Affairs (2017 / 18: Online), an estimated budget allocated to the environmental programmes was R 3 908 870. 00 in 2017 / 18 financial year. Due to other challenges like the appointment of agents on time to implement new environmental projects, therefore, up to three areas are lacking behind and the work had been carried to the next financial year. The report also reveals that the delay in the implementation of environmental projects was caused by lack of understanding in the implementation of the National Treasury's Modified Cash Standards and incorrect allocation of the Expanded Public Works Programme budget.

In the process of inhibiting land degradation, the South African government need embarked on a number of programmes that will assist to minimize land degradation. Projects should include educational programmes on land management, protecting grassland, sustainable strategies to cut trees for domestic use and to look for financial assistance in order to ensure that programees are implemented (Uinted Nation Development Programme. 2019: Online)

Different factors have been identified for the causes of land degradation. These are discussed below.

2.3. Causes of land degradation

Three causes of land degradation which contributes towards both soil and veld degradation include: humans, environmental hazards and natural features (TAFE Queensland and Department of Natural Resources, 1999:1-2).

2.3.1. Humans

Humans play a bigger part in causing land degradation because various activities are conducted which impacts directly on the land and affect its fertility. The activities include: deforestation, overgrazing, poor land management, pollution and urbanisation (TAFE Queensland and Department of Natural Resources, 1999:1-2).

2.3.1.1. Deforestation

The concept of deforestation refers to the permanent destruction of the forests and woodlands as a result of felling and removing most of the trees in areas for domestic and commercial purposes Deforestation impact negatively on the lives of many animals and plants species which are dependent on the forests for survival (Aleman, 2018: Online). Most of the forests are destroyed for commercial purposes even though the majority of the inhabitants in the rural areas fell and remove the trees for wood as fuel to prepare food, and build kraals for domestic animals (such as cattle, goats, and sheep).

Businesses fell and remove trees for commercial purposesandutilise the wood to manufacture commercial items such as paper, furniture and homes. Another highly priced item made from trees ispalmoil from trees and timber which is in constant demand. Some of the forests were cleared to build industries and develop settlements. Given the increasing population there is high a demand of forests to use for domestic and commercial purposes. As a result, more trees have been cut down to fulfill the needs of the people and the trees have not been given an opportunity to re grow (Mkhosi, 2003:154).

Deforestation has a negative impact on the environment. The forest is a home to most of the living organisms which are seriously affected during felling because the trees lose their habitual place, while others die, become extinct and others migrate (Mkhosi, 2003:153).

Other than being a home to nearly half of all known species, including other biodiversity found on land, forests play an important role on the environment because it produces oxygen which is a source of life to all living organisms and absorbs, exhaled, carbon dioxide that increases global warming. Also, forests have the ability to reduce the speed of surface- water flow during floods because trees have strong roots and trunks, and prevent strong winds from damaging the land.

Furthermore, this allows the quality of the land to improve and increase production (Ekhuemelo *et al*. 2016:277-278).

Furthermore, forests can influence rainfall patterns such as rainforests. The rainfall is common to most of the areas which are closer to the Equator where climatic conditions are generally humid and wet. On the African continent, the Democratic Republic of Congo, Cameroon, Gabon and Kenya have rainforests as a result of the Congo Basin forest which covers portions of these countries (Shaw, 2018: Online). South Africa also has rainforests and rainfall is common at the edge of the Crocodile River, outside Nelspruit in the Limpopo Province (Coustas, 2017: Online).

Irrespective of the invaluable role played by the forests in the environment, these are being destroyed globally; systematically. For example, renowned forests have been destroyed for human settlement purposes namely: St Lucia forest in the Kwa Zulu Natal Province. The forest was considered the largest in the World. The Dukuduku forest known as the heaven of plants and animal species located in the Kwa Zulu Natal Province has been destroyed by the landless subsistence farmers (Van Cotthem, 2007: Online). The destruction of forests resulted in both soil and veld degradation. The process of rehabilitating the forest is expensive and it can take up to 20 to 30 years to fully rehabilitate (Van den Berg, 2007:19).

2.3.1.2. Overgrazing

Overgrazing implies excessive consumption of all the vegetation and plant species by animals until such time that the landsurface is exposed. In most instances animals eat the vegetation from the roots and it is difficult to re-grow. Overgrazing occurs as a result of overstocking and due to limited grazing land to feed a certain number of animals. Just like the forests, vegetation is a source of life to the living organisms and it provides shelter to the land by minimising soil erosion from wind and during rainfall. Furthermore, vegetation retains moisture on the land and reduces soil erosion which eventually leads to land degradation (Van den Berg, 2007:13).

Therefore, due to overgrazing the land is damaged and the vegetation and plant species got destroyed and dissapeared. This situation creates an opportunity for the alien plants to grow in areas where indigenous vegetation had stopped growing (Hugo, 2004:106). The bush rangelands have been destroyed by domestic and wild animals overgrazing in the area (Barac, 2003:20).

According to Barac (2003:20), the alien plants such as Prosopis and Black Wattleconsume much of the surface water which results in the rapid reduction of the underground water level. For example, forestry plantations throughout the country consume practically3% of the available surface water per annum, while the alien plants approximately 7% of the available water surface. It has not been established whether the plants are harmful or not. Consequently, forth coming

generations will not be privy to the original indigenous vegetation and other plant species (Hugo, 2004:106).

2.3.1.3. Poor land management

DAFF (2019: 2), defines poor land management as inability to look after the land that is feeding the nation by conducting the activities that are damaging the quality of the soil. The activities include the inappropriate methods of agricultural practices used by farmers on a particular land or any activity conducted on any open land that can cause harm. This includes practicing intensive farming whereby farmers are force the land to produce crops year after year without allowing it to rest and build natural nutrients again. This is associated with the utilization of chemicals and fertilizers rather than animal dung or organic matter which is natural. Intensive farming reduces the productivity of the land. According to Kaniaknska (2016: Online), these ethods of agricultural practices make it difficult for the land to recover on its own in the lang run.

Farmers tend to farm one particular crop instead of practicing crop rotation, that is, different crops are grown in the same area. Nowadays the method of farming is driven by demand from the growing population and profit incurred made from the markets than taking care of the land and enhance sustainability. According to Pillay (2012:1), some of the contributing factors associated with inappropriate agricultural practices in South Africa include over fertilisation of the land and non-rotation of crops.

These factors weaken the potential productivity of the soil and result in land degradation. Extensive use of fertilizers and non-rotation of crops weaken the quality of the land. According to Monhler and Johnson (2009:3), crop rotation plays a significant role in maintaining the quality of the land and it enhances production and ensures sustainable land utilisation.

Didiza (2004:19) defines poor land management as anunequal distribution of land. More people occupy smaller pieces of land and the situation could result in overcrowding which causes land degradation. According to Didiza (2004: 19), the unequal distribution of land in South Africa has a long history dating back to 1652 when the white Settlers arrived. The latter settlers allocated land to their people and excluded the resident indigenous majority.

Furthermore, the Native Land Act of 1913 ensured that approximately 87% of the South African land was owned by the minority whiteswhilethe majority were forced to occupy only 13% of the country's land (Roberts, 1990:63). Furthermore, the unequal distribution of land to the people living in the same country contributed towards land degradation because the majority were forced to occupy smaller pieces of land. Due to overcrowding in certain parts of the country, which resulted in land degradation, some of the arable land and forests were converted for human settlements.

In 1996, after the general democratic elections, the government led by the African National Congress (ANC) passed the Constitution of 1996. As the highest law of the land, the Constitution stipulates guidelines of theland policy and relevant related legislation like, the Restitution of Land Rights Act 3 of 1995 and Land Administration Act 2 of 1995. These Acts gave effect to the development of three land reform programmes which are the; land redistribution, land restitution and land tenure (Didiza, 2004:19).

2.3.1.4. Pollution

The word pollution refers to discharging harmful substances such as diesel, acid or contaminated water from the mines that impact negatively on the environment. The sources of these harmful substances include mines and industries. Harmful substances are deposited on the land, surface and underground water, and in the atmosphere. This occurs as a result of human action. Due to polluted arable land an adequate food supply cannot be produced to feed the people. Moreover, the quality of the land is affected, leading to inter alia, reduction in production and decay of the vegetation and other plant species (Rouwenhorst, 2007:51).

Both surface and underground water is contaminated by sewage, acid spills from the mines and power station drainage. The mines pump acid from underground and the water is contaminated. The wind blows certain harmful bacterias from the dumping sites to the rivers and eventually reach the ocean. The contaminated water is utilized by the people, plants and animals. Consequestly, the volume of clean water has diminished due to pollution (Adams, 2012: 1).

Figure below illustrates a sewage pipe transporting waste materials in the Durban Metropolitan municipality. The materials pollute the land and are eventually deposited in the Indian Ocean. Consequently, animals and plants in the ocean are under threat (Adams, 2012: 1).

Figure 2-1: Pollution in Durban, South Africa (Stuijt, 2009)

The atmosphere has been contaminated ever since the introduction of theIndustrial Revolution in the 1780s (Gabrielli, 2015: Online). The mines and industries produce huge quantities of waste in the form of smoke that contains harmful gasses, dust and other toxic chemicals. The waste materials in the atmosphere result in inhabitable environments, which result in a variety of environmental effects such as acid rainfall which is harmful to plants. Air pollution also impacts negatively on people's health and has the potential to cause other diseases: cancer, lung and kidney disorders (Rouwenhorst, 2007:51). Pollution is harmful to natural resources in the environment, namely: land, water and air.

Pollution results in land degradation. Consequently, Acts such as the National Environmental Management Act 107 of 1998 and National Environmental Management: Protected Areas Act 57 of 2003 have been implemented to mitigate the effects. Designated highly secured areas have been identified as dumping sites. Legislation stipulates that dumping sites must be far from the residential settlements and secured against human and animal trespassers because the waste materials are extremely harmful (Bosman, 1999:13).

2.3.1.5. Urbanisation

The term urbanisation refers to the migration of people from rural to urban areas. This has resulted in a drastic increase of people relocating to urban areas. There are various reasons that are influencing people to relocate like to have access to improved basic services and been nearer to facilities like banks and supermarkets. Due to migrationtourban areas, there isan increase in the demand for goods and services (Niemand, 2015:1).

Certain parts of some of the forests have been cleared for settlement purposes and for subsistence farming like, the Dukuduku Forest near St Lucia town in Kwa- Zulu Natal Province. According to Carne (2007: 1) up to 3500 hectors of of the forest is damaged. Most of the living organismslost their habitual places, others starve, while many die and become extinct (Van Rooyen, 2009:24). Human settlements were also established on arable land which has been used for farming such as Extension 6 settlements in Taung which were built on land used for farming during the Bophuthatswana government. The land had been utilisedfor farming in order to putfood on the table and people were working on those farms to able to feed their families.

According to Joubert (2016:14), humans have been influencing the environment negatively for decadesthrough harmful activities which have resulted in the degradation of the land. Due to the harmful activities, it had become difficult to manage the effects of certain environmental hazards. Humans areconsideredthe primary cause for land degradation, while environmental hazards are the secondary causesthereof.

2.3.2. Environmental hazards

The concept of environmental hazards refer to any major adverse outcome resulting from the natural processes of the earth thathas the potential to harm people. Most parts of the world experience environmental hazards which are associated with extreme and severe climatic patterns and weather conditions. Environmental hazards occur naturally and in most instances impact directly on the land. Furthermore, it reduces the productivity of the land which is a source of food for all living organisms (Kgotleng, 2014:11). The environmental hazards are discussed below.

2.3.2.1. Floods

Floods refer to the overflow of water due to heavy rainfall, ocean waves move towards the shore, dam walls and river banks break and snow melts rapidly due to global warming (Kabanda, 2012:30). Floods occur naturally, even though the effects are occasionally severe as a result of for example, felling and removing of trees. Trees have stronger roots than other vegetation like grass and shrubs which help to reduce the speed of the flow of water during floods. Floods have a severe impact on the land surface because it destroys and erode buildings, farms, forests and vegetation. These features play an important role on the land and the life of living organisms. For example, the farms produce food and provide employment while the forest is a home to most living organisms. The vegetation keepsthe land moistandminimises soil erosion which can result in its degradation.

In 2006, Taung experienced heavy rainfalls which resulted in floods. Approximately 12 villages were affected. During the floods, 1043 houses were destroyed and six people sustained injuries due to homes collapsing. Furthermore, a farm ofLucerneat the Jan Kemp areas 30 kilometers (km) Southeast of Taungwas destroyed by the overflowing Vaal River and the Spitzkop Dam. The estimated costs incurred for damages amounted to R 44 million (Kabanda, 2012:31).

2.3.2.2. Acid Rain

Acid rainfall is caused by sulphur and nitrogen from burning fossil such as coal, oil and fossil fuel. When these substances combine with water vapour, sunlight, oxygen and other gases, they form a mixture of liquid acid that falls in the form of rain. Acid rainfall is harmful to the land because it has the potential to harm the forests, vegetation and other living organisms such as insects and fungi (Miller, 1996:436).

Furthermore, acid rainfall is considered the primary cause of forest deaths in the United States of America (USA) and Europe. According to Lean &Hirichsen (1992:85), 65% of the acid rain in those areas is caused bysulphuric acid. Sulphuric acid is a mineral acid that releases heat and

corrodes metals and tissues. It has the potential to destroy wood and mostother organic matter it comes into contact with.

The research conducted by the Bench Marks Foundations (BMF) also revealed that certain provinces in South Africa have experienced acid rainfall. According to Capel (2013: Online), damage caused by acid rainfall was observed in the North West Province while certain farmers reported that their farms had been destroyed by such rainfall. Production decreased markedly. Acid rainfall is harmful to the environment because it damages the quality of both the soil and veld as well as causes land degradation (Capel, 2013: Online).

2.3.2.3. Drought

Drought is another environmental hazard that causes land degradation. It is associated with dry climatic patterns and weather conditions. Rainfall is limited and results in a shortage of water. Drought impacts directly on the land by reducing the moisture that is required by the vegetation to grow and it also keeps the land cool (Shoroma, 2014:17).

Due to dry climatic patterns and weather conditions the land becomes dry and ultimately there is high soil erosion due to strong winds. Furthermore, this resultinreducedfarmproduction, loss of vegetation, trees, bushes and certain living organisms lose its habitual place and die. The land is exposed because the vegetation and plants have perished. As a result, the land losesitsfertility and production is reduced (Shoroma, 2014:27).

According to Tsepe (2016:13), countries which have climatic conditions associated with low rainfall include: Botswana, Malawi, Ethiopia, Somalia and others on the African continent and up to 60% of subSahara Africa is faced with drought resulting in millions of people dying of hunger and starvation.

In South Africa drought is common and is harmful to the environment because it destroys both the soil and vegetation. On the 13th of February 2018, it was announced that the following provinces; Northern Cape, Western Cape and Eastern Cape have been declared drought restricted areas. According toTandwa (2018: Online), the announcement was made as a result of ongoing drought experience in the three provinces.

2.3.2.4. Cyclones

Cyclones are among environmental hazards that cause land degradation. The word cyclone refers to a violent storm in which the air circulates clock or anti-clockwise and influences the weather pattern in an area. There are different types of cyclones which include: tropical,

hurricanes, typhoons and tornadoes. Cyclones are formed during the combination of strong winds that forcefully drive water out of the oceans to the dry land (Hanney, 2015: Online).

Tropical cyclones are common inSouth Africa which emanate in Mozambique and has an influence on the weather patterns and affects the land. The Leon-Elide tropical cyclonescaused flooding and structural collapse in Limpopo in 2000. The tropical cyclone, Irina struck South Africa in 2012 and caused severe floods and damage in Mpumalanga, Kwa Zulu Natal and the Eastern Cape provinces (Walker, 2017: Online).

Environmental hazards are difficult to manage because they occur unexpectedly and the outcome cannot be predicted until it subsides. In most instances more, resources are needed to clean the mess as a result of hazards. Therefore, it is important for every country to have a disaster management unit and plan.

2.3.3. Natural features

The other cause of land degradation isnaturalfeatures which are discussed in detail below.

2.3.3.1. Mountains

Mountains are natural features found globally and occupy 20% of the earth's surface (Chen, 2001: Online). Mountains cause land degradation because of the high steep slopes, which prevent the rainand moisture from the oceans from reaching areas on the other side of the mountain. Consequently, such areas receive either less or no rainfall at all. The areas on the side of the mountain that receive less rainfall are referred to as theleeward side, while the side that receives adequate rain and moisture is called the windward side (Barrow, 2013:1).

Figure below illustrates the effects of mountains on areas found on the leeward side.

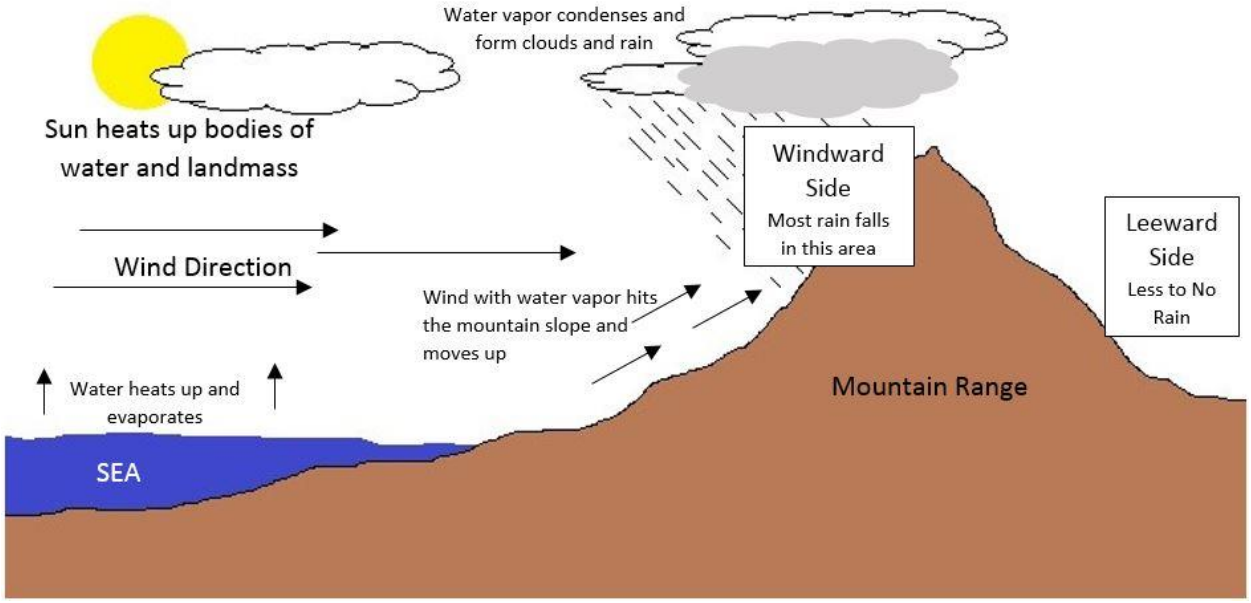

Figure 2-2: How landforms affect global temperature and weather (Anon, 2015)

Therefore, the areas found on the leeward side become deserts and are referred to as the rain shadow side. Rain shadow refers to a patch of land that has become a desert because the mountain ranges block the rain and moisture from reaching the area. Such patch of land degrades and it is difficult for any living organisms such as humans, animals and plants to survive (Barrow, 2013: Online).

In South Africa, the Cathedral Peak area in Kwa- Zulu Natal Province is situated on the southern side of the Drakensberg Mountain.Consequently, this area has experienced land degradation. According to Asmal (1995:16), other than land degradation caused by human action, the areas climatic conditions also contribute thereto. The area experiences extreme dry winters and limited rainfall in summer because mountain ranges prevent the warm wind from reaching the area. Therefore, land degradation has been experienced since 1945 and both the soil and vegetation have been severely affected.

2.3.3.2. Climate change

Climate change refers to the increasing change in climate over an extended period (Maake, 2014:22). The changes are noted as a result of increasing global temperatures because the greenhouse gasses trap more heat in the atmosphere, and as the temperature increases, the snow packs on the mountain ranges and at the poles melt faster. The sea ice melts and results

in an increased water level in the ocean which poses a threat to the coastal communities. Moreover, periods of drought become extensive and extreme.

Climate change causes land degradation because of the rising temperatures and the impact of the droughton the fertility of the soil. Consequently, it is difficult for the land to produce food. Certain plant species and wild animals become extinct. According to Maake (2014:26), the effects of climate change in South Africa are severe on the farming sector, especially maize production. The increasing temperatures have led to the reduction in the production of maize. The forestry sector has also been affected by increasing temperatures.

2.3.3.3. Salinisation

According to Bui (2017:3), salinisation refers to the salt contents that accumulate in the soil. The salt contents increase to such a level that it damages the quality of the soil and is harmful to the plants. There are various natural processes that directly contribute towards the increase in the soil's salt content that is, raising sea level - water from the ocean is deposited on the land. Secondly, the weathering of rocks and other minerals during decomposition increases the salt content and excessive utilization of fertilizers can also contribute thereto.

If the salt contents reach a point whereby the water in the soil is unable to dissolve and flush the salt, the soil is harmful because the plants will absorb the contaminated water. Eventually, the plants will be affected, destroyed and result in land degradation (Mashimbye, 2013:29).

Salinisation has a negative impact on the South African agricultural sector. Research has been conducted to determine the extent and severity of the salt content in the water. According to Taaljard (2016: Oline), the research was conducted at various irrigation areas namely: Vaalharts, Loskop, Vredendal, Makhathini, Douglas including those which had not been taken care off. The outcome of the research revealed that the salt contents had accumulated in most areas which comprise of 1,5 million hectors of land for farming. The land was affected by the salt content in the soil.

The aforementioned factors which cause land degradation require animmediateintervention by the government, private sector, NGOs and civil society to save the land which is a source of food for all living organisms. There is a need to implement legislation to regulate land resources and how these should be utilised to ensure a sustainable environment. The legislation would provide the people with strategies to inhibit land degradation.

For the purpose of the study, the causes of land degradation that are specific to the study areas of the Namakwa District Municipality in the Northern Cape Province are; drought, natural features like, mountains, the Kamiesberg Mountain near Soebatsfontein village and climate change.

2.4. Constitutional and regulatory guidelines

Different authors have reveal that land degradation has been a concern in South Africa for more than a century. After 1910 another form of land degradation prompted by the people surfaced as a result of the implementation ofthe Native Land Act of 1913. The Act forced 80% of the population to occupy 13% of the land surface which resulted in overpopulation and in turn, land degradation (Van der Walt, 1991:12).

When the ANC- led democratic government came into power in 1994, a new Constitution was passed, which is regarded as the highest law of the land. The Constitution stipulates that the environment must be regulated (Department of Environmental Affairs, 2007:4).

2.4.1. Constitution

The Constitution of the Republic of South Africa of 1996 emphasises that the environment should be protected from any form of danger. Chapter 2, section 24 has indicated that every citizen person has the right to leave in the environment that cannot pose any threats to their health. Furthermore, Section 24 (b) outlines that the environment should be protected against any form of harm like pollution and other ecological degradation in order to promote conservation and ensure sustainable development. The Constitution allows use of natura resources, but at the same, it put emphasise on using the resources economically in order to promote sustainable development (RSA, 1996: 9)

Furthermore, the Constitution stipulates that the environment and the resources should be protected against any form of harm that may affect the wellbeing of the people. Also, the Constitution accentuates the importance and the need to preserve the resources found in the environment for the next generation. Therefore, it is the responsibility of the state to protect the environment and ensure sustainable utilization of the resources (Rouwesnhorst, 2007:5).

Therefore, the state must ensure that all environmental-related legislation conforms to the requirements of Section 24 of the Constitution of the Republic of South Africa and make provision for the prevention of land degradation. Furthermore, the various causes of land degradation which destroys and minimises arable land to produce food to feed the nation must be inhibited (Rouwesnhorst, 2007:5).

Chapter 3, section 41 (h) of the Constitution underscores cooperation amongst the spheres of government: National, Provincial and Local. For the three spheres to promote the principle of cooperative government, mutual trust and good faith, it is imperative to assist and support each other including governments with which the country has relations (RSA, 1996:25).

Chapter 6, section 144, 2C (VI) of the Constitution outlines the responsibility of the national over the provincial sphere to ensure that the environment is protected. Therefore, it is the responsibility of the national government to ensure that the national policy for the protection of the environment is available, including norms and standards for implementation by provincial governments. These policies will provide local government with guidance of how to protect the environment (Glazewski, 2000:132).

Chapter 7, section 156 of the Constitution provides that the local government promote a safe and healthy environment to ensure a sustainable environment. To achieve this objective, Metropolitan, District and Local municipalities were established to render social services to the public. For the municipalities to promote a safe and healthy environment as required by law, social services such as the removal of domestic refuse to designated dumping sites realise. The municipalities should also ensure that proper sanitation is maintained and serviced regularly so thatrefuse is removed regularly and avoid spills onto the land. This would enable the municipalities to ensure a sustainable environment which is conducive for all living organisms (RSA, 1996:87).

The Constitution of the Republic of South Africa stipulates basic guidance of how the country and all the departments can be managed, including the protection and the management of the environment with specific reference to land degradation.

2.4.2. Regulatory guidelines

In order to adhere to and ensure implementation of the Constitution, a number of regulatory guidelines were passed:

2.4.2.1. National Environmental Management Act (NEMA) 107 of 1998

The National Environmental Management Act (NEMA) 107 of 1998 was passed by the government to ensure proper environmental management and sustainable development. The objective of the Act is to manage the environment in its totality and such related issues are considered such as identification of environmental risks, mitigation strategies, retain sustainability, enhance compliance and take disciplinary steps against any person, company or country responsible for the degradation of land. Environmental inspectors must be appointed to enforce the law against anyone who contravenes the requirements of the Act (RSA, 1998a:31).

Furthermore, the Act accentuates integrated environmental management by taking into consideration the role of stakeholders such as the private sector, NGOs, civil society and the requirements of international principles and practices. The Act considers international practices to adhere to the resolutions of international conferences because the country is also a signatory to those organisations. Participation by other stakeholders plays asignificant role with regard to

environmental management and what can be done to ensure a sustainable environment (RSA, 1998a:32).

The Act provides strategic guidelines, plans as well as implementationguidelines of environmental management referred to as the Environmental Management Plan (EMP). The plan places the protection and promotion of the needs of the people such as the provision of houses at the forefront. One of the needs is to build homes which directly impact on the environment. Hectares of land must be cleared to construct houses (RSA, 1998a: 34).

Therefore, the Act requires that the National Environmental Advisory Forum (NEAF) be formed in order to advise the Minister about the need to avail land to construct homes and what can be done with the living organisms in the area. The forum also proposed recommendations of how to protect living organisms should the land be converted for the construction of houses (RSA, 1998a:20).

2.4.2.2. National Forest Act (NFA) 84 of 1998

The government passed the National Forest Act (NFA) 84 of 1998 to protect the forests and trees. The Act provides guidelines of how to achieve sustainable forest management. The criteria, indicators and standards set to ensure special protection of certain forests and trees further accentuate that all activities related to felling, damaging or destroying any trees in the forests are strictly prohibited (RSA, 1998b:1).

Section 4 of the aforementioned Act also provides the Minister with powers to declare any forest area whether natural or artificial as protected. If any activities threaten the safety of the forests and trees, the Minister has the power to intervene and provide preventative measures as well as implement the rehabilitation process if required (Van den Berg, 2007:57).

2.4.2.3. National Environmental Management: Protected Areas Act (NEMPAA) 57 of 2003

The primary purpose of the National Environmental Management: Protected Areas Act (NEMPAA) 57 of 2003 is to provide measures to protect living organisms in certain areas including those with special natural features. The Act stipulates the establishment of a national register wherein these areas are recorded. Furthermore, it is the responsibility of all spheres of government to protect these areas to ensure a sustainable environment (RSA, 2003:5).

Other areas that must be protected and recorded in a national register according to the Act include: heritage sites and forests. The Act strictly prohibits activities such as hunting without

ministerial permission. The primary objective of the Act is to ensure a sustainable environment in all protected areas (RSA, 2003:9).

2.4.2.4. National Environmental Management: Biodiversity Act (NEMBA) 10 of 2004

The National Environmental Management: Biodiversity Act (NEMBA) 10 of 2004 was passed with the intention to manage plants and animals on land. To achieve this objective, the Act focuses on the establishment of biodiversity institutes at which these plants and animals are kept, develop trade plans and issue permits, as well as control invading species (RSA, 2004:12).

The establishment of biodiversity institutes is to ensure the sustainable utilisation of plants and animals to minimise these from becoming extinct. The aforementioned Act stipulates the development ofa trading plan whereby permission be sought before any organs of state tradesinplants and animals; poaching animals is a criminal offence; and measures of how to eradicate alien plants and invading animals is described. The reason for radical action is to prevent alien plants from threatening indigenous vegetation. However, no scientific study has been conducted hereon. Therefore, proper procedures and a report be submitted to the relevant authorities on the prevention of alien plants (RSA, 2004: 113).

The South African government became a signatory in international and regional conferences which focus on sustainable development to adhere to the required norms and standards (United Nations, 2002:4). The implementation and adherence to the requirements of the regulatory guidelines remains a challenge because resources such trees are being felled without due consideration of the damage to forests (Mkhosi, 2003:154). Further, the law stipulates that designated areas at a distance away from townships be utilised as a dumping site for waste (Bosman, 1999:13).

2.5. Sustainable development and the environment

Sustainable development refers to the proper utilization of environmental resources to meet human needs and simultaneously the same resources should be available for future generations (Amusan, 2008:1). According to the Department of Environment and Tourism (2008:6), sustainable development includes understanding the relationship and interdependency between people, the economy and the environment.

Furthermore, sustainable development is an on-going process that requires multi stakeholder participation to work together towards the wellbeing and quality of life of the people, improve the economy of the country and share the resources equitablyas well as preserve the environment for the future generation (DEAT, 2008:7).

Therefore, sustainable development and the environment should be considered as one because of the interrelation of the activities, programmes and projects of environmental management.

2.5.1. History of environmental management

The need to protect environmental resources came after the Industrial Revolution which took place between 1760 and 1820s. The Industrial Revolution introduced new ideas and methods such as the shift from doing industrial work manually to mechanically. As a result, the shift brought about great changes to society, the economy and the environment (Schlebush, 2014:1).

Some of the changes as a result of theIndustrial Revolution included the development and rapid growth of urban areas; construction of homes by the wealthy while the poor reside in unbearable conditions; and new methods of transportation to improve rural life. The revolution also improved the working conditions. Skilled workers were highly paid, working hours were reduced, and women were allowed to join the work force. The labour unions were able to negotiate on behalf of the workers and several significant labour laws were passed to protect the workers. Child labour was forbidden (Blowfield& Murray, 2011:32).

Blowfield and Murray (2014:32) posit that the Industrial revolution had brought changes to the economy. Due to the introduction of machinery, the production increased. The machines were able to produce a large number of goods within a short period compared to the goods produced before the Revolution. As a result, many factories were able to accumulate big profits which allowed them to grow. The agricultural sectors also grew because of new farming methods. Chemicals and fertilisers were introduced to increase production on the farms.

Although the industrial revolution had brought about positive changes to society, the economy and the environment, it was abounded by several challenges. The challenges brought about negative results that affected society, the economy and the environment. For example, the industries could only employ a certain number of people because most of the work was done mechanically compared to the number of people who were employed before the industrial revolution, which was labour intensive. Consequently, many migrated to urban areas to seek employment. However, this migration had a negative impact on the urban areas which expanded rapidly. The sudden population growth resulted in a shortage of municipal services such as water and, sanitation and led to the development of informal settlements.

Therefore, the aforementioned had a negative impact on the resources of the environment. Consequently, all the countries around the world realised the negative impact of the industrial revolution. Various countries gathered to discuss and develop strategies to retain a sustainable environment. This is discussed below.

The extensive literature review revealed that the environment had been affected by the developments. Therefore, it was important to implement the requirements of the environmental management conventions to ensure sustainable development.

2.5.2. Sustainable development and environmental management conventions

The first conference on environmental management arranged by the UN took place in 1972 in Stockholm, Sweden. The conference focused on issues which affect the environment as a result of human action. The economic and social challenges which affect the environment was focused upon. A decision was also taken to develop the United Nations Environment Programmetoprovide guidance to members of how to take care of the environment (Department of Economic and Social Affairs, 2015:1).

In 1987 the United Nations arranged a world commission on environment and development. The commission was tasked to develop a report. The countries agreed on how to protect the environment for future generations. That report was referred to as the Bruntland Report. The commission also brainstormed various ideas on sustainable development which should be implemented to enhance a sustainable environment (United Nations, 2018:1).

In 1992 a UN conference on environment and development took place in Rio de Janeiro. The primary purpose of the conference was to encourage members to ensure environmental development, take resolutions and adopt three agreements. The conference tabled a set of principles that explained the rights and responsibility of the state with regard to the environment and sustainable development. Secondly, the conference developed a plan of action which comprised of 21 agenda items, hence referred to as Agenda 21 for implementation to promote sustainable development and thirdly, develop a set of principles to manage the forests sustainably. In order to ensure that the agreed resolutions were implemented, the conference took a decision to establish a commission on sustainable development. The purpose of the commission was to ensure full implementation of the agreements adopted at the conference (United Nations, 2002:1-2).

Furthermore, the Conference announced that two multilateral treaties, United Nations Framework Convention on Climate Change and the Convention on biological diversity would be implemented and members were requested to participate actively. The Conference explored initiatives of how to ensure sustainable development on aspects of the environment such as to inhibit land degradation. The South African government was not part of the 1972 Conference, 1987 World Commission on Environment and Development and the Rio conference of 1992 (United Nations, 2018:1).

The South African government became a member of the United Nations Convention to Combat Desertification (UNCCD) to combat desertification in 1995. The intention of the convention was to develop initiatives to inhibit desertification that was highlighted during the Rio conference of 1992. Therefore, the purpose of the convention was to develop strategies to combat desertification whereby a sustainable environment can be ensured. The implementation of the strategies to combat desertification would contribute towards alleviation of drought and its global impact. The members of the Convention comprised of persons from various continents and sectors such as governments, private sectors, NGOs, international, regional and local communities. They shared various ideas of how to ensure a sustainable environment (United Nations, 2002:4).

The Convention acknowledged participation of the inhabitants so that they become aware of the reality surrounding them and possibly contribute towards developing strategies to ensure a sustainable environment. Furthermore, the convention required each country to develop its national action plan to address challenges that impede sustainable environment (Van den Berg, 2007:35).

In response to the requirements of the UNCCD, the South African government developed a national action plan that outlined its intention to inhibit land degradation to ensure a sustainable environment. For the national action plan to succeed, the government implemented a number of environmental projects across the country. The intention of these projects was to inhibit land degradation and create awareness of a sustainable environment. One of the environmental projects was referred to as Working for Land (WfL) which focused on rehabilitating of land that had been degraded by storm water. For example, theNquthu area in Kwa Zulu Natal which was destroyed by storm water during the rainy season (SAnews, 2015: Online).

The United Nations Convention on Biological Diversity encouraged its members to work together to promote and protect various living organisms found in the environment. Each government was required to develop a national biodiversity strategy and an action plan with specific objectives to illustrate how the plan would be implemented. Among the strategies listed was the protection and conservation of different biodiversity to ensure sustainable environment (Department of Water and Environmental Affairs, 2013:1).

The South African government became a member of is the United Nations Framework Convention on Climate Change (UNFCCC) in 1997 and the primary function of the UNFCCC was to address factors that contribute towards global climate change. The convention urged its members and other countries to minimise greenhouse gas concentration in the atmosphere to prevent further damage of the ozone layer. To achieve the objectives of the convention, the members were

encouraged to develop projects and become active participants in creating awareness (Van den Berg, 2007:37).

In 1997, the United Nations General Assembly called a special meeting in New York to report on progress made in the implementation of the Agenda 21. Furthermore, the purpose of the meeting was to help countries to develop strategies that will be used to implement the strategies agreed upon (Van den Berg, 2007:36).

The Sorld Summit on Sustainable Development took place in Johannesburg, South Africa in 2002 and is referred to as the Johannesburg Declaration on sustainable development. The primary function of the Summit was to review the progress made in the implementation of the Agenda 21 since its adoption in 1992. As a way forward, the summit also developed an implementation plan to assist fellow countries. In 2012, the United Nations Conference on Sustainable Development took place in Rio de Janeiro. The members discussed the challenges which impact on sustainable development, including how they would like the environment to be in the future. In 2015, the United Nations Summit on sustainable development took place in New York at which the members took a resolution to achieve sustainable environment by 2013 (United Nations, 2018:1).

Other than being a signatory in international conventions, the South African government also affiliatedinconventions at the regional level. One of the conventions is the New Partnership for Africa Development (NEPAD), that is, for African countries. The objective of the convention was to protect and rehabilitate degraded land to achieve the objective of the convention. Threeprogrammes were developed and each programme focused on a specific aspect of the environment. The Land Care programme, for example, was implemented which focused on providing countries with strategic plans and implementation of rehabilitation programmes to ensure a sustainable environment (Eswaran *et al*., 2001:6).

The primary purpose of the Conventions on sustainable development and environmental management was to ensure economic growth, proper extraction of and utilisation of the minerals from the environment, minimise depletion and ensure the provision of social services to improve the socio-economic status of the people (Schlebusch, 2014:1).

Therefore, to ensure that the objectives of the Conventions on sustainable development and environmental management are achieved, it is important to develop appropriate strategies to enhance the objectives. Various strategies will be discussed below.

2.5.3. South African strategies for a sustainable environment

When the ANC-led democratic government came into power in 1994, the intentions of the government were to improve the socio-economic status of the poor. The country became part of

the global village and signatory of the United Nations. Therefore, in response to the requirements of the United Nations, the government prioritized economic growth, provision of social services to the poor, environmental management and utilisation of the wealth of the country accordingly. Different strategies were developed to enhance the achievements of the intentions of the government to ensure a sustainable environment (Bond & Morrison-Saunders, 2011:4).

The South African government aligned itself with the requirements of the Agenda 21 that was adopted in 1992 and formulated a White Paper on Environmental Management Policy (WPEMP) which was adopted in 1997. This was done to ensure a sustainable environment. The policy was utilised as a tool to provide guidance on the implementation of strategies to enhance sustainable development. Therefore, the government appointed the National Department of Environmental Affairs and Tourism (NDEAT) as the leading department responsible for the integration, coordination and implementation of the WPEMP.The department was assigned the responsibility to ensure that the environmental rights are enforced (Department of Environmental Affairs and Tourism, 1997:8).

The WPEMP of 1997 outlined the vision, principles, strategic goals, objectives and regulatory approaches that should be implemented to ensure sustainable environmental management (DEAT, 1997:4-5). The vision is to have a **"**society which is in harmony with its environment**"**. Therefore, the policy is applicable to all government departments and requires all role- players and stakeholders that have impact on the environment to be active participants.

Furthermore, the policy aimedto encourage the people of South Africa to work together to ensure clean air, water and green spaces to live in harmony in their natural surroundings and ensure sustainable environmental management. In order to support the vision of the policy to ensure sustainable environmental management, the Department formulated a National Strategy for Sustainable Development (NSSD). A plan of action was developed to implement the NSSD (DEAT, 1997:6).

Implementation of the NSSD requires cooperation with all role- players and stakeholders and countries to ensure sustainable environmental management. Furthermore, the action plan requires government departments to work together and focus on improving the wellbeing of society, grow the economy and protect the environment (DEAT, 2003: 2.

To enhance strong relations between the spheres of government and other stakeholders, each state organ was assigned specific tasks. For example, the Office of the President was given the responsibility to ensure a proper and sound strategic planning system on all matters related to the environment. At a political level, six committees have been constituted which comprise of Ministers. The primary functions of these committees are to formulate policy recommendations

which are inclusive of other departments which are also role players in achievingasustainable environment (DEAT, 2003:23).

At an operational level, the various structures provide coordinated support to the three spheres of governmenttoachieve a sustainable environment. The committee on Environmental Coordination was constituted as required by the NEMA and it is headed by the Department of Environmental Affairs and Tourism. Furthermore, the committee comprises of representation from the nine national departments including the provinces. The function of the committee is to promote integration and coordination of environmental functions. These functions are implemented by various structures found within the three spheres of government (DEAT, 2003:23).

To ensure that NSSA is implemented successfully, a National Environmental Advisory Forum was constituted to inform the DEAT Minister of stakeholder views regarding the implementation of the national environmental management principles. The forum also provides reports to advise the Minister on matters of environmental management, governance and monitoring compliance. To ensure continuous implementation of the NSSD, an annual review to monitor the effectiveness of the policy and much focus on the variety of issues related to sustainable development initiatives. Therefore, all the provinces are required to submit reports to the DEAT, for example, the State of the Environment Reports. The Annual Performance Report on Sustainable Development must outline the performance of the province and the extent to which it has met its commitment to Agenda 21. Lastly, every national department and province that may exercise its functions and activities that has negative impact on the environment must declare such events and submit the annual progress report (DEAT, 2002:4).

The DEAT consolidates the gathered reports and compiles the Environmental Implementation Plan (EIP) which is in turn submitted to the Office of the Minister who is required to interrogate the Plan to check compliance with the national environmental management principles. Furthermore, the EIP must outline strategies that must be utilised to ensure adherence to environmental management principles stipulated in the Act. After the interrogation the DEAT prepares the Annual Compliance Report which outlines the progress and adherence to environmental management principles including achievement of the EIP objectives (RSA, 1998 (a):34).

Another strategy was developed in South Africa namely: National Development Plan (NDP) Vision 2030, which was launched in 2012. The objective of the strategy is to ensure a sustainable environment. The objectives include, *inter alia*, addressing education. The country's education system must empower the people to take responsibilityof the natural resources and other living organisms in the environment, enhance economic growth and the provision of social services to ensure asustainable environment (National Planning Commission, 2012).

Strategies for a sustainable environment have been developed primarily to protect the resources within the environment, specifically, the land which is a home to all living and non-living organisms. Therefore, the successful implementation of strategies for sustainable environment requires the collective participation of all role- players and stakeholders within and outside government. Furthermore, there should be clearly defined roles and responsibilities for each participant to enhance a smooth transition.

2.6. Conclusion

Land degradation is a sensitive and diverse problem that affects the World as a whole as a result of various factors which influences the causes of land degradation. For example, deforestation which is primarily as a result of felling and removing trees increases the impact of floods. The trees have strong roots and trunks that can reduce the flow- speed of the water during floods and minimise land degradation.

The South African Constitution is the highest law in the land. All Acts and policies are informed by the constitution, which implies that any action that contradicts the Acts and policies is considered a criminal offence and responsible persons would be prosecuted. Therefore, all persons responsible for land degradation must be taken to task to ensure that the offence does not repeat itself.

Therefore, it remains the responsibility of the Nmakwa District Municipality to ensure that land degradation is given the necessary attention in order to minimize the effects. Lastly, the community members of Nieuwoudtville and Soebatsfontein villages have the responsibility to look after their villages, especially, now that they have been made aware of the factors causing land degradation and the NGOs has been empowering them with the strategies to minimize land degradation and ensure sustainable development.

The next chapter will be focusing on the roles played by activist NGOs on sustainable development

CHAPTER 3: LITERATURE STUDY

3.1. Introduction

The word activists refer to a group of people who are rendering different voluntarily services to the people and protect the environment in order to ensure sustainable development. These group of people function independently of the government and their services are not for profit making, hence they are called the Non- Governmental Organisations (NGOs). The activist NGOs develop in different phases like, the NGO can be started by a small group of people focusing on a particular issue in a village and the group will develop and grow until it is recognised national and went on to be recognised internationally and focus on issues affecting the world.

The NGOs are divided into two groups namely; the Operational and Advorcacy NGOs. The services rendered are grouped according to their nature and they are playing different roles in the society in order to ensure that there is sustainable development. Though the NGOs have always been working hard to ensure sustainable development, there are other different aspects posing a threat to sustainable development

Records had showed that the activist NGOs have always been concern about the status of the environment and this had resulted in the establishment of NGOs like World Wildlife Fund, Greenpeace and Environmental Monotoring Group. Therefore, the aim of this chapter is to determine the roles played by the activist NGOs in sustainable development. Furthermore, the chapter will focus on sustainable development versus corporate social responsibility and the threats blocking sustainable development.

3.2. Development of activist NGOs

O'Connor (2001:63) had outlined that the NGOs develop in phases as a result of any threat that is impacting directly or indirectly on the lives of the people and some people will start to notice the impact of that threat and stated to take any action that will assist to alleviate the threat. Other people who were not even aware of the threat or do not see it as harmful will start to take note as well and immediately or later they will join the group that is concerned and the group will grow. As time goes on the group will be able to take their concerns to another level like, by registering their concerns to higher office of authority or at political desk.

According to O'Connor (2001:64) people can be influenced by different things to become members of a particular NGO. But what is important for the members is to work together towards achieving a common goal of rendering services to improve the socio- economic status of the people. Furthermore, members of all NGOs are advised and taught not to think of the benefits

from what they are doing or being rewarded for the work done because the common goal of the NGOs is provision of services to the people who are in need. As a result, members of the NGOs must work towards achieving a common goal.

The activist NGOs are operating at different levels. For example, there are NGOs that are operating in the communities and they are called Community- Based Organisations. Such NGOs are initiated by people within a particular village and they include the educational organisations which create awareness about a particular issue in the community. the women's organisations which also empower women about any role they can play in the economy (William, 1991: 1).

The other group of the activist NGOs are operating at national level and in most cases some members or staff of such NGOs are professionals depending on the nature of services rendered by the NGO. Furthermore, some of the NGOs operating at national levels have operational branches operating at other areas like, the EMG NGO has an office at Niewoudtville and the main office is in Cape Town. The last group of the NGOs operate at international level like, the World Wildlife Fund NGO and Red Cross. Such NGOs are financial well established and they have the potential to provide other local NGOs and institutions with funds to implement their projects in order to ensure sustainable development (William, 1991: 1).

Therefore, for the activist NGOs to be able to achieve the goal of protecting the environment and ensure sustainable development, there are different roles they have to the play.

3.3. Roles of activist NGOs in sustainable development

According to Hall- Jones (2006: 1) the scope of practice of the NGOs is broad, but their focus is the provision of services to the people and ensure sustainable development. The services rendered are different in nature like, there are NGOs which are rendering the charitable services. Charitable services refer to the services which are rendered to the people who are unable to help themselves due to the prevailing circumstances, like, the services given to people after one of the environmental hazard had passed. The people will be left with no basic services like, shelter, food and others.

The activist NGOs are also responsible for the provision of services to the people whereby the NGOs develop programmes about a particular issue and involve the people to participate in such programme (William, 1991: 1). For example, the EMG NGO develop a programme on the farming strategies to plough plants on a dry climatic conditions and the NGO empowered the farmers on how to use the strategies.

There are other NGOs rendering participatory services. This is the service whereby the NGOs will be availing different materials for a project that is about to roll out in a particular community

and the NGO involves the local people to participate during the implementation (William, 1991: 1). For example, the EMG had provided the farmers at Nieuwoudtville with the farming equipments and materials for the farmers to be able to start with the ploughing of the wild rooibos tea. Therefore, the farmers were actively involved so that they can be able to do the work themselves if the NGO is no longer in the area.

The last type of services offered by the activist NGOs is called the empowering services (William, 1991: 1). This is the service rendered to the people with the intention to create an awareness about anything that can pose a threat or to empower the people about new development that concern them. For example, some of the community members of Nieuwoudtville and Soebatsfontein were aware that there is land degradation in their villages, but some were not aware that they are also contributing to land degradation The coming of the EMG NGO at the Namakwa District Municipality had empowered the community members about land degradation, the community members realised that some of them had been causing more harm on the land. With the empowering services, the NGOs play the role of facilitating the ideas that can be applied to improve the situation and allow the community members to participate.

Some of the activist NGOs are rendering the services mentioned above simultenousley and some NGOs only focus on one of the service mentioned and in most cases the availability of resources and the capacity are the determining factors. For the activist NGOs to be able to achieve the services mentioned above and ensure sustainable development, they NGOs should be involved and participate in different in roles and the roles are:

The different roles played by the environmental activist NGOs in ensuring sustainable development are:

3.3.1. Involvement of the society

One of the role that the environmental activist NGOs should partake on is to recruit society in order to establish their understanding about sustainable environment so that their imputs can be taken into consideration as well. The platform will create a conducive environment for the NGOs to be able to spread the theories about environment to the society and how to ensure sustainable development (Tschentscher, 2016: 9). Therefore, in the process of creating awareness about sustainable development, the society will become empowered and be able to do some of the things recommended by the NGO and also refrain from other activities that they have been doing due to lack of knowledge about sustainable development.

For the activist NGOs to be able to create awareness about sustainable development, the NGO has to embark on a number of campaigns in order to find the views of the society about the environment and sustainable development. Furthermore, the NGOs can develop number of

programmes about environment and sustainable development and schedule a plan which outlines how the programmes will be rolled out to the society (Tschentscher, 2016: 9). Such outreach programmes are useful especially when the society is fully involved in the implementation process because the NGO will be able to have a direct conversation about land degradation with the society.

3.3.2. Society Representative

Another role that the activist NGOs should play, is the role of being a society representation because of the role the NGOs play between the society and the government. NGOs are working with the society at the grass roots level and they are aware of the realities and challenges facing the society. Secondly, though the NGOs are independent of government, but they are working with government, therefore, they are in a better position to represent the society at higher authorities (Volmink and Van der Elst, 2017: 14).

Therefore, the NGOs have the potential to lobby for policy changes which will work in favour of the society because they are aware of the realities at grassroots level and the challenges down. Beside lobbying for policy changes, the NGOs can make it possible for the authorities to come down to the society to witness the reality themselves so that the informed decisions can be taken (Volmink & Van der Elst, 2017:14). As a result, the government will be able to transform and amend some clauses of the legislation and policies governing the environment and pass new laws that will support the goal of sustainable environment.

3.3.3. Facilitator of projects and programmes

The other role that the activist NGOs can play is to facilitate the projects and programmes. NGOs are good at facilitating their own projects and programmes when one is looking at the work done and the timeframes taken to complete the task and their ability to respond during a disaster. NGOs had been doing excellent work to improve the livelihood of the people. Therefore, in order to ensure sustainable development, the government should allow the NGOs to facilitate the government's projects and programmes related to environmental management. The government have projects and programmes that are of beneficial to the people, but in most cases many of the projects and programmes collapse along the way due to unnecessary delays. If the projects and programmes were facilitated by the NGOs, the delays would have been minimul and that would have had saved the government a lot of money (Tschentscher, 2016:9).

The other cornerstone for the successful implementation of projects and programmes by the NGOs when compared to the government, is the level of skills and the morale of the staff. The staff is doing a voluntary work for the benfit of the society and secondly, the political interfence is also minimum unlike in government whereby most of the decisions are influence by politics.

3.3.4. Promotion of accountability and transparency

Lastly, the role that the NGOs can play is to promote accountability and transperancy. Most NGOs are operating from a limited budget, but the budget is able to sustain them until the project or programme is completed. According to Kumaran *et al.* (2012: 31) being accountable and transparent in what you are doing symbolise good governance. Therefore, looking at the way projects and programmes are managed by the NGOs, the government can involve the NGOs to come and provide support and assistance in the implementation processes of government projects and programmes. Furthermore, the NGOs will be able to assist the government with the accurate information relevant to environmental management which will be needed for decision making like, to draft contracts, policies and legislation on environmental management.

3.4. Sustainable Development versus Corporate Social Responsibility

Authors define the concepts sustainable development and corporate social responsibility differently. Though both concepts, that is sustainable development and corporate social responsibility show concerns about the people, economy and environment but, they are focusing of different aspects. Below are the definations of the two concepts, that is sustainable development and corporate social responsibility.

Van Schalkwyk, (2012: 11) has defined sustainable development as the ability ot to have access to, and be able to utilise resources without compromising the future generations the opportunity to have access to and be able to utilise such resources. Therefore, it is important to ensure that the system and methods used do not deplete the minerals nor harm the ecosystem and deny the fure generation the opportunity to have access as well.

According to Amusan (2008:1) sustainable development means a proper way of providing quality of life to the society on a continuous basis and maintain a balance between economic growth, the environment and the provision of social services. Therefore, the provision of quality of life to the society will enhance a sence of ownership and belonging whereby the society will be able to look after the resources of the environment and allow the economy to grow.

Sustainable development can be defined as a system that seek to maintain a balace between the environment, social and encomic aspects in order to allow the environment to carry the future capacity. If there is balance the future generations will be able to used the environmental resources (O'Connor: 2001:48).

According to Ebner and Baumgartner (2006: 2) sustainable development in a country or community is measured by the improvement in the economy, proper utilisation of resources extracted form the environment and the provision of social services like, health, education, shelter

and consistant sercurity services. The provision of education services will empower the community members to look after themselves and the resources of the environment.

Corporate Social Responsibility is defined as a business commitment whereby private sectors are commiting themselves toward the achievement of sustainable development. This can be achieved only if businesses comit themselves to look after the environment where the businesses are operating. Corporate social responsibility is requesting businesses to be friendly to the environment (Blowfield and Murray, 2011: 7).

Wilson (2001:120) defined Corporate Social Responsibility as a documented plan of action undertaken by any private sector like, businesses, mines and others with the intentions to commit themselves and esures sustainable economic grow which will benefit both the society and the businesses. Furthermore, this can be achieved if the private sector can refrain from the wrong corporate behaviour of destructing the environment and put the lives of the society at risk. For example, many private setors had been digging at the villages to extract the minerals and such communities had never benefited and the private sector left the big holes which are posing a threats to the community members and livestock, especially during rainy seasons.

According to Roseland (2001: 6) Corporate Social Responsibility plan is informed by the need of the society and it should be in line with the norms and values of that particular society as well. Therefore, it is important for the private sectors to come up with a programme that will outline the activities intending to carry out to the society and the ativities should be able to enh ance economic and social development of the society which will lead to sustainable development.

The NGOs are doing the best to protect the environment in order to ensure sustainable development, there are threats blocking the intentions of the NGO.

3.5. Threats to sustainable development

Different factors have been identified as having the potential to pose threate to sustainable development and they are;

3.5.1. Environmental threats

One of the environmental threats on sustainable development is climate change. Climate change is defined as the extreme changes on the climate patterns as a result natural causes and man's action (Maake,2014:22). It is associated with extreme changes in the temperature of the seasons. Therefore, the extreme changes of the temperatures and changing seasons have negative impact on the land, like, hectors of land have been degraded and need to be rehabilitated.

3.5.2. Economic threats

The main economic factor that is posing a threat to the NGOs from doing their work is lack of funding due to misunderstanding between the funders and the NGOs. For example, in South Africa, after 1994 the financial funders and donors provide financial assistance to the NGOs which have aligned their scope of work to the government policies. Many NGOs were left out and some were forced to shift their scope and align it to the government policies (Volmink & Van der Elst, 2017: 19).

Furthermore, the global financial system is also posing a threat to sustainable development. According to United Nations System Task Team (2013:7), the financial system is affected by different things like, the financial policies which are not clear on what should be done to ensure sustainable development. The role players do not have a common understanding about sustainable development goals and things like, mismanagement of the finances and corruption also contribute to insufficient funds.

3.5.3. Social threats

The social factor that is posing a threat to sustainable development is population increase. The population is increasing at a higher rate as a result of high birth rate and also the migration of people from their place of birth to the other place. According to Mothibe (2012:2), South Africa is ranking at the top with high birth rate. As a result, resources are needed like, hectors of land had to be cleared for settlement to accommodate the growing population. On the other hand, the environment is damaged and sustainable development is compromised because the same land that has been cleared for settlement purposes could have been used to produce food for the nation.

3.5.4. Health threats

The last factor that is posing a threat to sustainable development is the out break of the Human Immunodeficiency Virus (HIV) and Acquired Immuno Deficiency Syndrome (AIDS) pandemics and other life threatening diseases like, cancer, diabetics and the diseases have presented a mojor threat to sustainable development in all setors. According to Adelzadeh (2003:138), the diseases have been taking away the lifes of many people and this has put risk to the soil and underground water. The soil and underground water are likely to be contaminated because of improper burial practices and impact on the health status of the people, especially the majority people at the rural areas who are using raw resources for medicines and as food.

3.6. Conclusion

In conclusion, it is evident that the activist NGOs have demonstrated great potential in rendering different services to the people in order to ensure sustainable development and the expertise of the NGOs in needed to improve the services rendered by government department. Therefore, in order to ensure the delivery of quality services to the people within the required timeframes, the government should expand the scope of practise of the activist NGOs by involving them in all government departments.

The role players in the achievement of sustainable development need to find a way of working together and address the aspects posing threats to sustainable development. finally, the role players need to g to the rural areas to empower the people about health factors without undermining the tradition or their life style.

The next chapter will focus on the role of the Environmental Monitoring Group in inhibiting land degradation in Namakwa District Municipality, Northern Cape Province.

CHAPTER 4: EMPIRICAL RESEARCH FINDINGS

4.1. Introduction

This chapter will focus on the role of the EMG in inhibiting land degradation in the Namakwa District Municipality with specific reference to Nieuwoudtville and Soebatsfontein villages. The chapter will first give an overview of the Nmakwa District Municipality and look at the history of the EMG in sustainable development. The effects of land degradation on the communites of Namakwa District Municipality. Lastly, the chapter will outline the data gathered during the semi-structured interviews conducted at Nieuwoudtville and Soebatsfontein villages and the data collected will be analysed and linked to the theory outlined in chapter 2 and 3 of the research. This chapter aims to focus on the role of the EMG in inhibiting land degradation in Namakwa District Municipality, Northern Cape,

4.2. Overview of the study area

The Namakwa District Municipality (NDM) is one of the five district municipalities that forms the Northern Cape Province.Other district municipalities include: Pixely ka Seme, Frances Baard, John Taolo Gaetsewe and ZF Mgcawu. In terms of land surface, the NDM is the largest district municipality in South Africa with a land surface of 126 747.43km^2. Furthermore, the Municipality is divided into six local municipalities namely: Karoo-Hoogland, Hantam, Kamiesberg, NamaKhoi, Richtersveld and Khai-Ma (Statistics South Africa, 2011: Online).

The figure below illustrates the location of all the local Municipalities of the Bamakwa District Municipality in the Northern Cape Province.

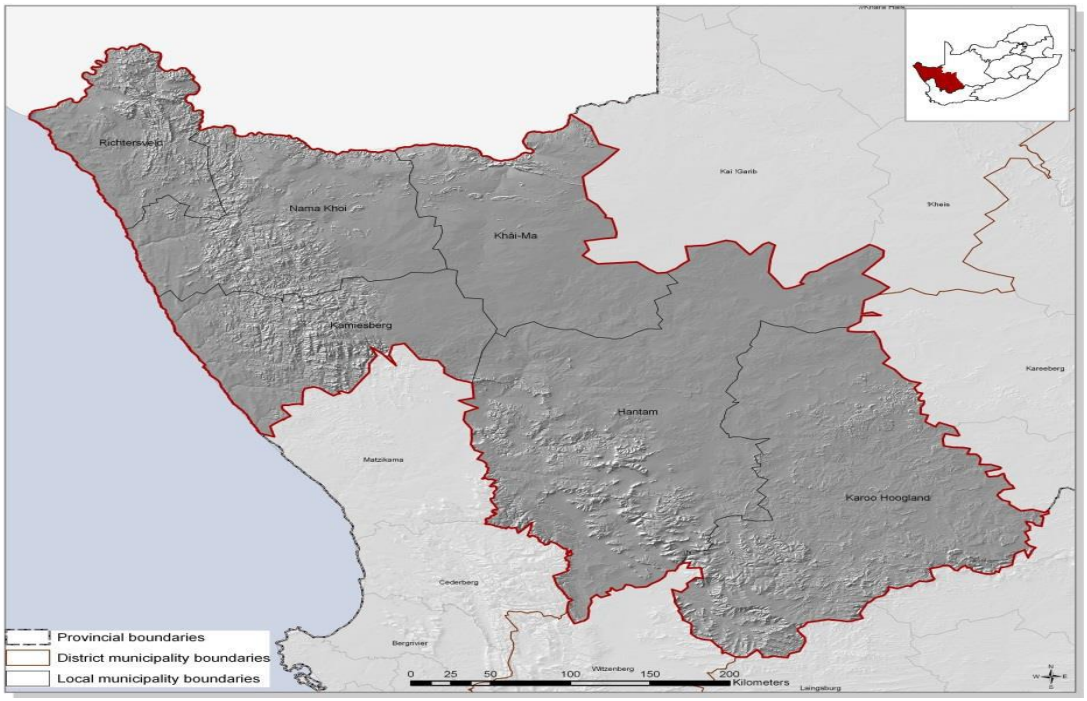

Figure 4- 1 Map of Namakwa District Municipality (illustrates six local municipalities) (Bourne *et al*., 2015)

4.2.1. Geographical location of Namakwa District Municipality

Geographically, the NDM is located within the NorthWestern corner of South Africa. On the West the province borders the Atlantic Ocean and Namibia and the Orange River forms the border to the North and the Olifants River to the south. In the Northeast direction, the Municipality shares the border with the ZF Mgcawu; on the East with the Pixely ka Seme District Municipality; in the South the Municipality borders the Western Cape Province. The Executive Major of NDM is Mr Vass and the Municipal Manager is Mr. Fortuin.The seat of the municipality is in Springbok in the NamaKhoi Local Municipality (Namakwa District Municipality, 2017:11).

4.2.2. Population of Namakwa District Municipality

Though, NDM is the largest municipality in terms of land surface, but it is the least in terms of the population which total approximately 115488. The 2016 census figures revealed a decline in the population compared to 2011 which was approximately 115842. The total number of the entire population of the Municipality comprises only 10% of the total population of the Northern Cape Province (Namakwa District Municipality, 2017:8).

The population comprises of 87% coloured; 8% whites;2% African and 0,54% Indians/Asians. In terms of gender distribution, the males make up 50,27% of the total population and females 49,73%. The Afrikaans language is utilisedpredominantly as a medium of communication (Namakwa District Municipality, 2012:18).

4.2.3. Climatic conditions: Namakwa District Municipality

The NDM's climatic conditions have been influenced by a number of natural factors such asthe cold Benguela sea current from the Atlantic Ocean; mountains that border the district between the Western Cape Province and Namibia; Kamiesberg Mountain within the district; Circumpolar West airstreams; and the subtropicalhigh-pressure system from the Southern Hemisphere. The district experiences winter rainfall which is influenced by the cold air from the ocean and the Peak rainfall over the KamiesbergMountains. The area is also prone to heavy dew during springand beginning of summer which is generated by the cold Benguela current (Davis *et al*., 2016:2).

The average temperatures throughout the year are mild and range between 13°C and 21°C. The temperatures increase above 30°C as a result of the dry and hot winds which blow over the high areas towards the west of the Municipality. These winds are dry and referred to as berg winds. The hot berg winds warm the land and moisture is lost through evaporation which damages the quality of the land and proves difficult for any plant and animal species to survive, and therefore causes degradation of land (Davis *et al*., 2016:2).

4.3. Effects of land degradation on the Namakwa District Municipality communities

The NDM was considered a home to a large community of plants and animals such as zonal vegetation, desert species, fynbos, Nama-Karoo and succulent species. These species are found in various local municipalities (Namakwa District Municipality, 2008:15).

Due to the impact of land degradation, the beauty of the municipal area has faded. The contributory factor includes activities conducted by human actions such as pollution, deforestation, environmental hazards such as floods, droughtsand natural features such as mountains. These activities impacted largely on both the living and non-living species in the district. The mining sector in the district caused severe land degradation, although most of the mines have now been closed. The sector had re-shaped the land surface of the district and contributed to the loss of living organisms.

Stock farming with cattle, goats and sheep is still practiced. Stock farming requires much land and water for survival. Over the past decade, the number of the livestock in the district has increased drastically. This contributed towardslandbeingdamagedand the consequent reductioninvegetation cover (Bourne *et al*., 2015:18).

Both drought and overgrazing damage the land and it is difficult for the vegetation and plant species to grow. This led to the invasion of alien plants which further pose additional danger to the land and result in the loss of indigenous plant species and water. Common alien plants in the

NDM include: Prosopis and Black Wattle which grow along the banks of Orange River. Research has revealed that the alien plants consume a large amount of water which is a scarce resource in the NDM (Namakwa District Municipality, 2008:30).

Due to lack of protection certain indigenous vegetation in the district was harvested for utilisation in other fields. For example, Hoodia plants are utilised in the weight loss market. The plant was used by the San during hunting to minimise the craving for food. Most plant species are under threat as a result of illegal harvesting and the removal of plant species from its habitual environment (Namakwa District Municipality, 2008:32).

According to the Namakwa District Municipality (2008:27-28), up to 173 vegetation and 38 other plant species are under threat. The vegetation and other plant species arenot protected. The situation in certain local municipalities is severe.

The effect of land degradation also impacts on wild life. For example, herbivores animals were affected and some migrated to seek green pastures, while others perished due to hunger and became extinct. As a result, predators such asjackalsand leopardsare drawn closer to the communities to look for food and this may pose a threat to the livestock and humanbeings.

The effects of land degradation are severe in the NDM. A structured intervention to protect the remaining land as well as rehabilitate other parts to ensure a sustainable environment is imperative. The EMG volunteered to implement projects in Nieuwoundtville and Soebatsfontein and thereby protect the land and ensure a sustainable environment. According to the Namakwa District Municipality. (2012. 13- 14), the climate change is impacting on the severly on the farms and there is a need to bring new farming strategies for implementation.

4.4. History of Environmental Monitoring Group NGO

The EMG is a NGO formed in 1991 in Cape Town by a number of academics, professionals and activists who were interested in discussing and developing transformed environmental policies for democratic South Africa. The primary objective of the NGO was to impress upon the society the significant role played by the environment in one’s daily life as well as how to address issues which affect the environment (Swanby & Law, 2011:1).

The NGO produced a booklet entitled: “Towards Sustainable development in South Africa”. The book encouraged society to inculcate and respect the environment. According to the NGO, a sustainable environment and economic development can only be achieved if a friendly relationship exists between society and the environment. Therefore, society must understand the role of the environment and manage the natural resources (Law, 2014: Online).

Therefore, to achieve the intended objectives of a sustainable environment and economic development, the NGO developed four themes namely: water, rural livelihoods, fair-trade and climate change. These themes are interrelated and interdependenton each other. If these are implemented accordingly, the objective can be achieved (Law, 2014:1-28).

According to the NGO, an adequate supply of water plays a significant role in the environment by helping the plants species and vegetation to grow and reduce land degradation. Furthermore, plants like trees also assist in reducing soil erosion during heavey rainfall by reducing the speed of the water during run off. Secondly, rural communities need to be encouraged to participate in environmental management activities to value the significance of natural resources and address any problems which pose a challenge to the environment.

Therefore, the NGO engaged with the communities and empower them on sustainable land management in order to ensure sustainable land management. The NGO wanted the people to benefit from the economy, for example, small scale farmers and farm workers. This can be achieved if the principle of fair trade is applied. Lastly, society should be made aware of the methodologies and strategies of how to adapt to the effect of climate change (Koelle *etal*., 2014:49). The NGO has employed ten permanent staff and has office in Nieuwoudtville, in Namakwa District Municipality, Northern Cape province.

4.5. Study representation

Semi-structured interviews were conducted inNieuwoudtville and Soebatsfontein villages. A total number of nine participants were interviewed. Five of the participants included EMG staff members, that is, the Manager, Projects Manager, Local Project Coordinators and Eco Ranger. Four of the participants were community members, that is, two from each village.

The semi-structured interview questions were informed by the main responsibility of the EMG staff members like, the questions prepared for the Eco Ranger were about identifying and facilitation of trainings because the staff member is responsible for identifying and facilitation of trainings.

The semi-structured interview was scheduledfor the community members. The objective was to establish their understanding on land degradation and whether the community members would be in a position to inhibit the degradation on their own after the NGO leaves the area. Furthermore, the community members would be able to impart the knowledge to forthcoming generations.

4.5.1. Role of EMG in the District

The EMG Manager revealed that the NGO had relocated to the Northern Cape Province because of an official request by the Member of the Executive Council, department of Agriculture. The department sought the NGO to empower the farmers to become more proactive in farming as well as work with the communities to work towards sustainable development. Consequently, the NGO relocated to the Northern Cape Provine and opened an office in Nieuwoudtville. According to the Manager, when they arrived at the Municipality they found out that most of the land surface is severely damaged with little vegetation and other plant species as a result of land degradation.

Moreover, Soebatsfontein was severely affected compared to Nieuwoudtville village. Both veld and soil degradation is common in the district because of the type of soil in the two villages. The primary cause of land degradation is drought and it has contributed to the loss of top soil through erosion and the quality of the soil has been affected as well. Secondly, overgrazing results in land degradation because of limited grazing land for the livestock. The Manager also revealed that non-rotation of crops at some of the farms contributed towards the decay of the soil. The EMG Manager outlined that the NGO wanted farmers to apply agricultural techniques like mono crop cultivation of rooibos plantsand fynbos plants because they are able to survive in harsh conditions.

4.5.2. Different projects implemented

The NGO is working with the two communities in the Suid-Bokkveld and Kamieskroon areas and implemented projects at Nieuwoudtville and Soebatsfontein. The primary objective of EMG is to empower the communities to protect the natural resources and ensure sustainable land management. The projects include the installation of the water tanks and planting of rooibos. Both play a meaningful role towards sustainable land management.

The NGO assisted Soebatsfontein village to install water tanks for domestic use and to water vegetable gardens due to the lack of water in the area. The NGO elected to embark on the Climate Proofing Rooibos and Fynbos Production projects because of the heat and drought in the area. These plants can survive under dry climatic conditions. Furthermore, the farmers received appropriate farm tools such as spades, wheelbarrows, forks including seeds and fertilizersfrom the NGOs to prepare the land.

As a result of the long drought that has been taking place at Nieuwoudtville and Soebatsfontein villages, soil has been eroded by the wind. The NGO intervene and assist the farmers to plant rooibos plants and fynbos plants in the farms because these plants are able to survive in dry climatic conditions and the NGO was funded by the Gef Small Grant and LOTTO to ensure that the farmers are able to get farming equiptment and materials. At Soebatsfontein, the NGO was able to by materials like, water tanks. .

The type of land degradation common in the two villages is both veld and soil degradation as a result of the lengthy drought. Secondly, the type of soil in the village has compromised the land because the soil is sandy and unable to retain both the water and moisture for a length of time. Therefore, it is difficult for any vegetation and other plant species to grow. The Nieuwoudtville area is situated among huge rocks while Soebatsfontein on the leeward side of the Kamiesberg Mountain. These natural features contribute towards land degradation.

4.5.3. Role of local project coordinators

The primary responsibility of aocal project soordinators at EMG is to coordinate projects for the villages and ensure the availability of resources required. Each village was allocated a Project Coordinator.

The Local Project Coordinator based at Nieuwoudtville village revealed that shortage of funds posed a serious challenge. The NGO receive funds from donors like Gef small grant and LOTTO and sometimes the it takes a while before the funds could be transferred to the NGO and situation delay the implementation of the projects

The second challenge is the distance to deliver materials to the farms. The materials like wheelbarrows, spades, forks, waterpipes, fertilisers and seeds are procured at Nieuwoudtville and delivered to farms of which the nearest is 30kms from Nieuwoudtville, while the furthest is 97kms away. In most instances the volume of the materialslike wheelbarrows, spades, forks, waterpipes, pipes connector, water tanks, fertilisers and seeds is huge and all cannot be delivered simultaneously. Furthermore, access to the farms is difficult because the condition of the roadsis sandy and rocky.

According to the Local Project Coordinator at Nieuwoudtville, the NGO assists the farmers to plough and plant various plants that can survive in the dry climatic conditions. The area has been faced with drought for a lengthy period of time, which contributed towards land degradation. The farmers sow rooibos plants to protect the land from further damage.

Instances in which projects exceed the timeframe and the work is incomplete, funds are availed by the NGO to assist the farmers. To date, the projects have been coordinated successfully and the farmers are happy with the work conducted by the NGO. According to the local project coordinator at Nieuwoudtville, there is improvement on the farms that have been rehabilitated.

According to the Local Project Coordinator at Soebatsfontein, the challenges they are faced with during the implementation of the projests at the village is shortage of the people with technological skills. Specific skill is required to, for example, install water tanks. Consequently, the NGO has to recruit skilled personnel which is expensive.

Secondly, the lack of technological networks like Telkom lines, Vodacom and MTN network aerials andWi fi to ensure continues availability of network at Soebatsfontein poses a challenge, especially when there is a need to communicate with the EMG office in Nieuwoudtville. Consequently, the Local Project Coordinator has to call another person at the EMG office at Nieuwoudtville. In certain instances, the person called is unable to capture all the information over the phone. For example, the number of water tanks delivered did not correspond with total number of taps for installation.

The third challenge is the lack of transport to deliver materials because of the distance between Soebatsfontein and Kamieskroon where goods are procured. This resulted in a delay in deliveringgoodswithin the timeframe to the community. Furthermore, the condition of the road from Soebatsfontein to Kamieskroon is poor because the road winds along theKamiesberg mountains.

EMG always intervenes when the project exceeds the scheduled time for completion. For example, when the water tanks were installed the households were expected to pay for the installation. However, certain households could not afford to make payment and the project was stopped. EMG intervened and processed payments for the families who were unable to pay so that the water tanks could be installed.

According to the Local Project Coordinator of Soebatsfontein, all the projects were implemented successfully. Lastly, the community members were happy with the projects implemented in the area, especially the installation of the water tanks. Furthermore, the Department of Agriculture provided vegetable seeds and water. The only concern raised by the community was that the water tanks were too small and unable to water the plot. As a result, the quality of the vegetables was compromised.

The pictures below illustrate the compost and vegetable plot. Seedlings are transferred from the compost to the plot

Figure 4- 2: Compost and vegetable plot (Own photographs)

4.5.4. Facilitation of various training

Training is facilitated at EMG by the Eco Ranger and the person is also responsible for the identification of training courses for the two villages. The NGO had employed two Eco Rangers for the two villages on contract and at the end of the contract the NGO did not renew the contracts due to shortage of funds. However, one of the person who was employed as an Eco Ranger took a decision to render voluntarily services and continue to work for the NGO. Furthermore, the NGO requested the person to facilitate the trainings atSoebatsfontein which is approximately 350 kms away from Nieuwoudtville.

Most of the training revolved around crop farming like rooibos plantsand fynbos plants because the plants can survive in dry climatic conditions. As a result, the NGO usesthe method to inhibit land degradation. The training was offered to the farmers to enhance their skills in new techniques about farming. The project managers at the EMG including community members interested in farming were also trained.

According to the Eco Ranger, the farmers and community members showed interest in the training because they were able to execute the tasks on their own. Most of the farmers proceeded to implement compost making and use the plants for vegetable food plots at their homes. The NGO was pleased with the outcome because the objectives had been achieved.

4.5.5. Community members' participation

The community members interviewed at Nieuwoudtville revealed that they are aware of land degradation and its effects on crop farming. According to the community members the type of the

soil at their village is sand and it is also contributing to land degradation because the soil cannot keep moisture for a long time. Furthermore, they also revealed that large amount of land surface in the village is covered by huge rocks. Therefore, they need assistance to remove the rocks which limit the availability of land which could be used for crop farming such as maize and nuts.

The figures below illustrate the land surface of Nieuwoudtville village. The soil is sandy and the land surface is covered by large rocks.

Figure 4-3: Land surface of Nieuwoudtville village (Own photographs)

The community members are aware of the projects implemented by EMG and confirmed that they were informed of the role played by the NGO. According to the community members at Niewoudtville, the EMG managed to improve the areas they had attended to. Furthermore, the participants confirmed that they would be able to work on their own if the NGO left the area because the training had empowered them to work on their own.

The community members interviewed at Soebatsfontein responded that they are aware of land degradation and its effects that limit farming. The village needs assistance to protect the land against degradation. Both soil and veld degradation is the most common caused by drought that affected the area for extensive periods. Furthermore, the rainfall hasdiminishedandexposed the land to the heat from the sun. This situation made it difficult for the vegetation and other plant species to grow in the village.

The community members are aware of the projects implemented by the EMG and confirmed that they were informed about the NGO. According to the community members, the installation of the water tanks through the assistance provided by the EMG had eased their lives. The NGO empowered them on how to do a composite, which would enable them to make their own vegetable garden. Furthermore, the community members confirmed that they were able to work on their own should the NGO leave the area. They had received adequate training that had

empowered them to work on their own. However, their primary concern was the unavailability of water, which logically affected existing projects.

4.6. Conclusion

Land degradation in Namakwa District Municipality has existed for a lengthy period of time and no attempt was made to inhibit it. The effects were huge and had a negative impact on the socio-economic status of the inhabitants of Nieuwoudtville and Soebatsfontein. The hectares of land that had degraded could have been used to produce food to feed the nation including other countries. For the farms in the area to be able to produce food for the nation, it is important for the farmers to plant lot of trees and use the water from the Orange river to water them. In the long run will grow. The trees have potential to influence the climate and eventually the will be rainfall.

Therefore, land degradation should be addressed as a provincial problem whereby various sectors and departments come together to conduct a thorough analysis of the situation and formulate strategies to address these concerns. Instead, make it the responsibility of the Provincial Department of Agriculture and the NGO.

The situation at Soebatsfontein is complex. The NGO plans have been affected by factors such as the unavailability of technological network which resulted in poor communication. Other than external challenges, the NGO faced challenges emanating from within, for example, inadequate budget. Irrespective of the circumstances mentioned community members confirmed that the NGO had brought life to their villages. They are also hopeful that the NGO will one day win the fight against land degradation. Though the NGO has been taking the responsibility to minimize land degradation at Nieuwoudtville and Soebatsfonteing villages, the fight against land degration need joint- participation of all role- players, stakeholders and community members.

The next chapter will outline a summary of chapter 2, 3 and 4 and the research findings of the semi- structured interviews conducted with the staff of EMG and the community members of Nieuwoudtville and Soebatsfontein villages. The chapter will outline the recommendations of the researcher to address findings identified in order to ensure sustainable development. Lastly, the chapter will outline the conclusion, which summarises the entire research

CHAPTER 5: RECOMMENDATIONS AND CONCLUSION

5.1. Introduction

The chapter will provide a summary of chapter 2, 3 and 4. Furthermore the chapter will outline the findings of the semi- structure interviews and the recommendations for each finding of the semi- structured interviews conducted and the concluding remarks.

5.2. Summary of chapter 2

Chapter two of the research is about land degradation. In this chapter various authors and other official documents were consulted to establish the understanding about land degradation. and the causes of land degradation. The chapter otlines the causes of land degradation and the different legislation passed by the government with the intertion to protect the environment and ensure sustainable development. Furthermore, the chapter outlines the role played by the countries of the world to ensure that the environment is protected. The United Nations had been arranging Conventions and Summits to discuss the status of the environment and to develop strategies that will be used to ensure sustainable development. The invitation to attend the Conventions was extended to all members of the Conventions including the NGOs.

5.3. Summary of chapter 3

Chapter three of the research is about the roles played by the activist NGOs in sustainable development. The chapter provide information about the development of activist NGOs and the different kind of services they are rendering. Again, the chapter outlines the different roles played by the activist NGOs in order to ensure sustainable development. Two concepts that is, sustainable development and corporate social responsibility were discussed with the intention to establish the link between the two concepts and the differences. Lastly, the chapter outlines different threats hampering sustainable development.

5.4. Summary of chapter 4

Chapter five of the research outlines the role played by the EMG NGO in inhibiting land degradation at Namakwa District Municipality. The chapter provide geographical location of the Namakwa District Municipality, the population and the climatic conditions of the district. Furthermore, the chapter outlines the findings of semi-structured interviews conducted with the staff members of EMG and the community members of Nieuwoudtville and Soebatsfontein villages at Namakwa D istrict Municipality. Furthermore, the chapter will provide

recommendations proposed by the researcher for each of the findings which the Environmental Monitoring Group.

5.4.1. Findings gathered during the semi- structured interviews

- **Unavailability of technological networks**

The Soebatsfontein village is located within the Kamiesberg Mountain and high hills of Namakwa National Park.This situation has a negative impact on the communication network connections. Due to the poor network connection, it is difficult for the staff working at Soebatsfontein to communicate with the EMG office at Nieuwoudtville. The technological network connections play an important role in the study because it is used for communication of the things needed for the projects or to report on the progress made by the community. Therefore, it is important for the staff at Soebatsfontein to able to communicate with the staff members at the EMG office without any struggle.

- **Land surface covered by huge rocks**

The land surface at Nieuwoudtville is covered by huge rocks which have reduced the land surface that could have been used for farming. The rocks also affect access roads to the nearby households and the farms. Moreover, during rainfall, water flows at a high speed and washes away the top soil. Consequently, the quality of the land deteriorates and results in land degradation. The cause of the indigenous vegetation to disappear is the long drought and the situation were also made worse by the increasing temperatures as a result of climate change.

- **Loss of indigenous vegetation and plant species**

The indigenous vegetation and plants species have almost disappeared at Nieuwoudtville and Soebatsfontein villages because of soil and veld degradation. Some of the vegetation and plants species have become extinct. This situation created an avenue for alien plants to invade the village.

- **Invasion of alien plant species**

Alien plant species are foreign plants and most of these invade the land which is bare due to degradation. These plants pose a threat to the indigenous plant species. The research revealed that the plants consume large quantities of underground water because of its long roots.

- **Unavailability of water**

There is a serious shortage of water in Namakwa District Municipality, especially at Soebatsfontein village. The community members survive as a result of water which is delivered to them. Secondly, the community uses rain water; however, the area had not received adequate rainfall for an extensive period.

- **NGO experiences a lack of funds**

The EMG Manager revealed that the NGO was unable to fill two existing vacancies due to the lack of funds. The NGO renders services to the villages, which are a distance from each other. Furthermore, the current staff structure has to be reviewed regularly.

- **Non-rotation of crops**

Planting the same crop repeatedly isunwisefor the soil and the method of farming can also have negative impact on the productivity of the soil which result in reduced production. There are different reasons for not rotating crops, however, this method is harmful to the soil.

5.4.2. Recommendations

The primary aim of the study was to determine the role of the EMG to inhibit land degradation in the Namakwa District Municipality, Northern Cape Province. Therefore, the proposed recommendations are based on the results of the findings to ensure a sustainable environment. The following recommendations areproposed:

- **Recommendation 1: Provision of technological networks at Soebatsfontein**

The Soebatsfontein area is inhabitable for humans. According to the community members, they used to live around the Kamiesberg Mountain. After 1994, the Northern Cape Provincial government took a decision to relocate the inhabitants to the low-lying area of Soebatsfontein. This decision needs to be revised because the area is isolated and is a long distance from almost all conveniences.

The area is located on the leeward side of the Kamiesberg Mountain which always experiences dry climatic conditions because the mountain obstructs the rain- bearing winds (moisture) from reaching the area. The high lying areas of the Namaqua National Parkare situated on the opposite side of the mountain. Therefore, since the location of Soebatsfontein is locked within these high areas, the channels of communication isachallenge.

The Northern Cape Provincial government must intervene and involve the national Department of Communication to assist in availing communication networks at Soebatsfontein. Private

communication sectors such as Telkom and Vodacom should be involved in the discussion of how they can assist. Eskom should also be included to discuss the provision of electricity.

- **Recommendation 2: Clearing land surfaces**

Namakwa District Municipality is the largest municipality in terms of land surface. However, the majority of its geographical responsible area is rocky and the soil is sandy, especially at Nieuwoudtville. The rocksmake it difficult for community members to enjoy open spaces that can be utilised for economic purposes. The rocks also impede access to the nearby households and farms.

Therefore, the municipalities and the Dprovincial department of Public Works and Roads should assist the communities by clearing the rocks and create access roads to the farms and households. Cleared areas can be used for farming, preferably, tall indigenous trees, like the pine or gum. These types of trees can grow up to a height of 16-51 meters tall depending on the area's climatic conditions and care provided (DAFF, 2013:4-21). Due to the height, these trees have the potential to retain moisture and influence the climatic conditions of an area.

Clearing of the rocks will create more open land that will be used to plant trees that will help to influence the climatic cpnditions of the area and other preventative measures can be put in place as a back up plan in case there is floods like, the creation of streams around the around the land cleared that will control water during floods. Once the trees are grown, they will assist to control water during heavy rainfall.

- **Recommendation 3: Crop farming and livestock rotation**

Indigenous vegetation and other plant species disappear as a result of, *inter alia,* overgrazing and illegal harvesting. The stock farmers should be encouraged to practice crop farming and after harvesting the crops, the stock should be relocated to the farms. This will allow the land time to recover and crops can be planted at the appropriate time. Furthermore, the livestock can be released into the veld. This should be done on a regular basis, which would allow the land adequate time to recover. Secondly, the farmers can be requested to keep a certain number of livestock to allow the land to recover.

- **Recommendation 4: Removal of alien plant species**

Alien plant species in most instances invade naked land. The Department of Environmental Affairs has a report listing types of Alien plants in South Africa and the report is updated whenever there is new information received (DEA, 2019: Online). This will require a team- approach by various government departments (IGR: Inter-governmental relations) and role- players such as private

sector, NGOs and local communities to avail resources. People should be recruited to clear the land of alien plants and pesticides be applied to ensure that these do not grow again. Therefore, the land should be rehabilitated by planting trees, which have the potential to retain moisture, ultimately influence the climatic conditions of the areas and help to facilitate more regular rainfall.

- **Recommendation 5: Provision of water**

Water is a scare resource in Namakwa District Municipality and the situation is severe at Soebatsfontein village. Therefore, to address the identified finding, it is recommended that the government assist the communities to dig (or drill borehoes) for underground water. Community members utilise the wind mills to pump or extract underground water which is dependent on the wind to pump water.

Therefore, the same method can be used to solve water shortage in the Municipality. Another method to address the identified finding is to utilise water from the river. For example, the water from the Orange Riverwhich passes through the Municipality can be utilised to supply the area for domestic purposes and farming.

The Orange River is perennial, that is, the river flows permanently. Therefore, there is a need to build a dam in which to store and purify the water from the river so that clean water can be supplied to the entire Municipality. The two proposed projects will require large sums of funding which cannot be the responsibility of any department, private sector or NGO only. The projects require national and provincial government, including relevant stakeholders to participate.

- **Recommendation 6: Funding for the NGO**

EMG is providing fine work by embarking on land management projects to ensure a sustainable environment. The environment is a source of life for all living and non-living organisms. The NGO is attempting to make it conducive for living organisms to survive, for future generations.

Currently, due to the lack of funding, the NGO is unable to fillvacant posts. Unfortunately, the situation has a negative impact on services to be rendered. Therefore, it is recommended that the NGO engages the private sector, international funders and associations such as the United Nations for funding. Furthermore, the NGO should engage national government department such as theDepartmentof Agriculture, Environmental Affairs, and Water and Sanitations for funding.

Furthermore, the NGO needs to review the existing hierarchy at the Nieuwoudtville office because the two villages are a big distance from each other. If the NGO can employ more persons, one could visit the farms while the other remain in the office to execute administrative work. As a result, both the field work and office administration would not be affected.

- **Recommendation 7: Provision of resources**

Non-rotation of crops is harmful to the soil and at the Namakwa District Municipality the farmers are forced to farm one crop because of the dry climatic conditions and lack of water. Therefore, the farmers try to farm crops that can survive in dry climatic conditions. However, the method of farming affects the productivity of the soil, which results in land degradation.

To enable the farmers to rotate the crops at the farms, the Namakwa District Municipality, through the Northern Cape Provincial government, should ensure the supply of water in the area. The availability of water will allow the farmers to rotate the crops and water the land regularly.

It is also recommended that the Northern Cape Province department of Agriculture assist the farmers with agricultural equipment and resources such as seeds and fertilizer since these resources are expensive. The Department can lease the equipment and have an agreement with the farmers of how to repay the government as well as discuss the provision of subsidise dseeds, chemicals and fertilizer. Exerssive use of chemicals and fertilers is harmful to the soil and it can lead to land degradation as well. Therefore, it is important for the farmers to use the chemicals and fertilizer responsibly and also apply the organic faming and replacement of soil nutrients through organic means.

Regarding the farms that had not been farmed over an extensive period of time, the government can approach the owners to rent orpurchasethe farms through land restitution. The farms can be utilised to produce food. All of these efforts will have a positive influence on the climatic conditions of the Namakwa District Municipality and further make it possible for the NGO to ensure sustainable environment.

5.5. Conclusion

In conclusion, land degradation is a problem that needs to be addressed immediately because it impacts on the society, economy and the environment. Therefore, it must be addressed to ensure sustainable community development. Various factors have been identified as the root causes of land degradation. Intervention strategies have been formulated which must be implemented.

Furthermore, legislation has been passed to protect the land and take legal action against any person who conducts activities that place the value of the land at risk. In the case of natural hazards that are complicated and difficult to manage, legislation and measures can be applied.

In the case of the Namakwa District Municipality, land degradation can be overcome if water is availed to the farms because the primary challenge is drought. Other NGOs should be encouraged to also embark on land management to ensure sustainable development.

The study endeavoured to contribute to the body of knowledge of land degradation in the Namakwa District Municipality and provide recommendations based on the findings. The recommendations aim to add value to the EMG decision-making processes, government departments and further motivate other NGOs to participate in the fight against land degradation.

LIST OF REFERENCES

Abdi, O.A., Glover, E.K. &Luukkanen, O. 2013. Causes and Impacts of Land Degradation and Desertification: Case Study of Sudan. *International Journal of Agriculture and Forestry,*3(2): 40-51.

Adams, N. 2012. Business Report: Water pollution in Mpumalanga mines may cause food crisis. Pretoria: Grain SA.

Adezadeh, A. 2003. The challenge of sustainable development in South Africa: Unlocking people's creativity. United Nations Development Programmes: Oxford university

Aleman, J. C. (2018). Environemt: Deforestation in tropical Africa is not bad as previously thought (Online), South Africa: Mail & Guardian. Accessed 27 Frbuary 2020.

Amusan, A.S. 2008. Incorporating sustainable development principles into future direction of the petrochemical industries. Potchefstroom: NWU. (Dissertation-Masters).

Anon. 2015. How landforms affect global temperature and weather. Available at http://worldlandforms.com/landforms/how-landforms-affect-global-temperature-and-weather/. Date of access: 10 Oct. 2018.

Asmal, O.E. 1995. Land degradation in the Cathedral Peak Area of the Natal Drakensberg: 1945 to 1992. Rondebosch: UCT. (Dissertation-Masters).

Aspers, P. & Corte, U. 2019. What is qualitative in qualitative research. *Qualitative Sociology*, 42: 139- 160

Azapagic, A. &Perdan, S. 2000. Indicators of sustainable development for industry: a general framework. *Process Safety and Environmental Protection*, 78(4): 243-261.

Babbie, E. 2010. The practice of social research. 12th ed. Wadsworth: Belmont.

Bangamwabo, V.M. 2009. Spatial and temporal extend of land degradation in a communal landscape of Kwa- Zulu Natal, South Africa. Pietermaritzburg: UKZN. (Dissertation-Masters).

Barac, A.S. 2003.EcoRestore- a decision support system for the restoration of degraded rangelands in Southern Africa. Potchefstroom: NWU. (Dissertation-Masters).

Barrow, M. 2013. The mountain environment. Available at http://www.primaryhomeworkhelp.co.uk/mountains.htm. Date of access: 28 Feb. 2018.

Berry, L.2001. Land degradation in China: Its extent and impact. World Bank: Global Mechanism.

Blowfield, M. & Murray, A. 2011.Corporate responsibility: a critical introduction. New York: Oxford University Press.

Bond, A.J. & Morrison-Saunder, A. 2011. Re-evaluating sustainability assessment: Aligning the vision and the practice. *Environmental impact assessment review*, 31(1): 1-7.

Bosman, C. 1999. Waste disposal or discharge: A harmonized regulatory framework towards sustainable use. Potchefstroom: NWU. (Dissertation- Masters).

Bourne, A.P., Deabreu, C., Donatti, C.I., Scorgie, S. &Holness, S. 2015. A Climate Change Vulnerability Assessment for the Namakwa District, South Africa: The 2015 revision. Conservation South Africa, Cape Town.

Bran, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative in Psychology,* 3: 77-101.

Bui, E.N. 2017. Causes of soil salinization, sodification and alkalinization: The Oxford Research Encyclopaedia of Environmental Science. Oxford Index: Oxford University Press.

Carnie, T. 2007. Conservation of Dukuduku flops. htttps://www.iol.co.za. Date of access: 29 Oct 2019.

Capel, J. 2013. Bench Marks Foundation: Rain and contaminated water impact farming and harm community. Available at http://www.ngopulse.org/press-release/acid-rain-and-contaminated-water-impact-farming-and-harms-communities. Date of access: 17 Mar. 2018.

Chen, D. 2001. The physic fact book. An encyclopedia of scientific essays: Areas of earth's land surface. Available at https:hypertextbook.com/facts/2001/DanielChen. Date of access: 12 Feb. 2018.

Coustas, W. 2017. 15 Inspiring South African rainforests facts: South Africa's only forest. Available at http://blog.sa-venues.com/attractions/south-african-rainforest. Date of access: 20 Apr. 2018.

DAFF (Department of Agriculture, Forestry and Fisheries). 2013. Champion trees of South Africa. Available at https://www.nda.agric.za/doaDev/sideMenu/ForestryWeb/webapp/docs/CHAMPION%20TREES%20OF%20SA%20Aug%202013.pdf. Date of access: 15 Feb. 2019.

DAFF (Department of Agriculture, Forestry and Fisheries). 2019. Land use and soil management. Pretoria: Government Press.

Davis, C.L., Hoffman, M.T. &Roberts, W. 2016. Recent trends in the climate of Namaqualand: A megadiverse arid region of South Africa. *South African Journal of Science*, 112(3/4): 1-9.

DEA (Department of Environmental Affairs). 1997. Working for Land: Project. Pretoria: Government Press.

DEA (Department of Environmental Affairs). 2007. Land degradation: State of the environment in South Africa. Pretoria: Government Press.

DEA (Department of Environmental Affairs). 2017 / 18. Annual report. Available at www.environment.gov.za.

DEA (Department of Environmental Affairs). 2019. Alien invasive plants list for South Africa. Available at www.environment.co.za. date of access:20 Feb 2020.

DEAT (Department of Environmental Affairs and Tourism). 1997. White Paper on Environmental Management. Pretoria: Government Press.

DEAT (Department of Environmental Affairs and Tourism). 2002. Recommendations from the Agenda 21. Pretoria: Government Press.

DEAT (Department of Environmental Affairs and Tourism). 2003. Johannesburg Plan of Implementation World Summit on Sustainable Development: JOPI Response Strategy 2003. Pretoria: Government Press.

DEAT (Department of Environmental Affairs and Tourism). 2008. People- Planet- Prosperity: A national framework for Sustainable Development in South Africa. Pretoria: Government Press.

Denzin, N. K. & Lincoln, Y. S. 1994. Handbook of qualitative research. London: Sage Publications.

DESA (Department of Economic and Social Affairs). 2015. United Nations Conference on the Human Environment. Available at http://www.sustainabledevelopment.un.org. Date of access: 30 Mar. 2018.

Didiza, T. 2004. The importance of a successful land reform programme in South Africa.National land tenure conference. Durban: Butterworth.

DLA (Department of Land Affairs).2002. Guidefor National LandCare Programme: Small Community Grant Component. Pretoria: Government Press.

DOA (Department of Agriculture). 2007. Strategic Plan: Sectoral overview and performance. Pretoria: Government Press.

Doyle, A. 2018. The balance: What is a semi structured interview. Available at www.thebalancecareer.com.Date of access: 22 May 2017.

DWEA (Department of Water and Environmental Affairs). 2013. Causes of desertification, land degradation and drought. Pretoria: GovernmentPress.

Ebner, D, & Baumgartner, R. J. 2006. The relationship between sustainable development and corporate social responsibility. Paper presented at Corporate Responsibility Research. Dublin.

Ekhuemelo, D. O., Amonum, J. I. & Usman, I.A. 2016. Importamce of forests and trees in sustaining water supply and rainfall. *Nigeria Journal of Education, Health and Technology Research,* 8: 277-278.

Els, Y. 2010.The implementation of selected technologies to enhance the restoration of indigenous tree species in the deforested riparian areas in the Mapungubwe National Park, South Africa. Potchefstroom: NWU. (Dissertation- Masters).

Eni, I. 2012. Effects of Land degradation on Soil Fertility: A CaseStudy of CalabarSouth, Nigeria: University of Calabar. (Dissertation- Masters).

Eswaran, H., Lal, R. & Reich, P.F. 2001. Land degradation: An overview. Response to land degradation. Paper presented at Proc. 2nd. International Conference on land degradation and desertification. New Delhi, India.

Flick, U. 2014. An introduction to qualitative research (5th ed.). London: Sage Publications LTD.

Gabrielli, P. 2015. World Economic Forum: When did humans start polluting the earth? Available at https://www.weforum.org/agenda/2015/02/when-did-humans-start-polluting-the-earth? Date of access: 11 Mar. 2018.

Gibson, D., Paterson, G. & Newby, T. 2005. Land: National state of the Environment project. Cape Town: SRK Consulting.

Glazewski, J. 2000. Environmental law in South Africa. Durban: Butterworth.

Hall- Jones, P. 2006. The rise and rise of NGOs. Available at www.globalpolicy.org. Date of access: 20 Jan 2020.

Hamann, R. & Boulogne, F. 2008. Partnership and cross sector collaboration. (*In*Hamann R., Woolman, S. &Sprangue, C.,*eds*. The Business of Sustainable Development in Africa. Pretoria: Unisa Press. p. 54-83).

Hamann, R. 2008. Introducing corporate citizenship. (*In* Hamann, R., Woolman, S. &Sprangue, C., *eds*. The business of sustainable development in Africa. Pretoria: Unisa Press. p. 1-35).

Hanney, 2015. What causes a cyclone? Available www.quora.com. Date of access: 19 Mar. 2018.

Haradhan, M. 2018. Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People*. 7 (1) 23- 48.

Hoffman, M.T., Todd, S., Ntshona, Z. & Turner, S. 1999. Land degradation in South Africa. National Botanical Institute: Cape Town.

Hugo, L.M. 2004. Environmental management: An ecological guide to sustainable living in Southern Africa. Pretoria: Ecoplan.

Joubert, T. 2016. Multiple performance indicators as standard to assess and quantify the ecological condition of a site. Potchefstroom: NWU. (Dissertation- Masters).

Kabanda, T.H. 2012. Land use / cover changes and vulnerability to flooding in the Harts catchment, South Africa. Mahikeng: NWU. (Dissertation- Masters).

Kanianska, R. 2016. Agriculture and its impact on land use, environment and ecosystem services. Available at www.intechpen.com. Date of access: 25 Feb 2020.

Karlen, D. L., & Rice, C. W. 2015. Soil degradation: Will humankind ever learn? Sustainability. 7, 12490- 12501.

Kgotleng, M.L. 2014. The role of African cultural astronomy in disaster management among Barolong Boora-Tshidi, Mahikeng in the North West Province.Mahikeng: NWU. (Mini-dissertation- Masters).

Koelle, B., Oettle, N. &Parring, S. 2014. Experiential learning for adaptation. Cape Town: Indigo Development and Change.

Komane, F.N. 2005. The assessment of environmental awareness of the secondary school learners in the Mabopane District. Potchefstroom: NWU. (Mini-dissertation- Masters).

Kumaran, M., Samuel, N. & Winston, L. 2012. The NGO sector in South Africa: history, issues and prospects. *Journal for development and leadership,* 1 (3) 31- 45.

Law, S., *ed*. 2014. An Annual Report: A summary of the work and achievements of the Environmental Monitoring Group. Available at http://www.emg.org.za/images/downloads/publications/2014%20Environmental%20Monitoring%20Group%20-%20Summary%20Annual%20Report.pdf. Date of access: 12 Oct.2018.

Lean, G. &Hinrichsen, D. 1992.Atlas of the environment. London: Helicon Publishing.

Lindeque, L. 2009. Draft progress report: Mapping land degradation and conservation in South Africa. South Africa: Pretoria.

Lotter, L., Stronkhorst, L.D. & Smith, H.J. 2009.Report: Sustainable Land Management Practice of South Africa. Pretoria (GW/A/2009/102).

Maake, P.A. 2014. Local development, mitigation and adaptation strategies on climate change. Mafikeng: NWU. (Mini-dissertation- Masters).

Maje, M.A. 2008. The land redistribution programme in the Northern Cape Province. Bloemfontein: UFS. (Mini-dissertation- Masters).

Mashimbye, Z.E. 2013. Remote sensing of salt-affected soil. Matieland: University of Stellenbosch. (Thesis- PHD).

Masila, M. S, 2016. Effects of land degradation on agricultural on agricultural land use: A case study of smallholder farmers' indigenous knowledge on the land use planning and management in Kalama division, Mahakos country. Kenya: SEKU. (Thesis- Masters).

Miller, G.T. 1996. Living in the environment. Belmont: Wadsworth.

Mkhosi, N.E. 2003. The evaluation of the state of grass species composition in some degraded tribal areas in the Zeerust district (North West Province). Mahikeng: NWU. (Dissertation-Masters).

Monhler, C.L. & Johnson, S.E. 2009. Crop rotation on organic farms: A planning manual. Ithaca: New York.

Mothibe, M. M. 2012. Teenage pregnancy in South African schools: From vulnerability to empowerment. Vanderbijlpark: NWU. (Dissertation- Masters).

Muir, P. 2015. Western public land as an example. Oregon: State University.

Mukherjee, M. 2017. Areview of research design. *International Journal of Advanced Engineering and Management.* Vol 2(3), 56- 59.

Namakwa District Municipality. 2008. Namakwa Bioregional Plan: Biodiversity Sector Plan. Northern Cape Province: Kimberley.

Namakwa District Municipality. 2012. IDP (Integrated Development Plan). 2012- 2016. Northern Cape Province: Kimberley.

Namakwa District Municipality. 2017. IDP (Integrated Development Plan).2017- 2022. Northern Cape Province: Kimberley.

National Planning Commission. 2012. National Development Plan: Vision 2030. Pretoria: Government Press.

Neuman, W.L. 2006. Social research methods: Qualitative and Quantitative approaches. 5th ed. Boston: University of Wisconsin.

Niemand, P.D. 2015. Analyzing the spatial persistence of population and wealth during Apartheid. Potchefstroom: NWU. (Dissertation- Masters).

Njenga, S. & Smith, A. 2007. Leading the way through CIS: A guidebook for corporate social investment practitioners. Randburg: Knowres.

Oberholzer, I. 2016. Inverstigating the challenges of sustainable rehabilitation by selected mining companies in South Africa. Potchefstroom: NWU. (Mini- dissertation- Masters).

O'Connor, R. N. 2001. Environmental NGOs and CBOs: Towards an understanding of their role in the development and environmental law. Natal: UN. (Dissertation- Masters).

Oberholzer, I. 2016. Investigating the challenges of sustainable rehabilitation by selected mining companies in South Africa. Potchefstroom: NWU. (Mini- dissertation- Masters).

Parahoo, K. 2006. Nursing research: Principles, Process and issues.2nd ed. Palgrave Macmillan: Houndmills.

Pelser, J.J. 2017. Evaluation of selected restoration technologies in degraded areas of the Mokala National Parks, South Africa. Potchefstroom: NWU. (Dissertation- Masters).

Pierre, B. 2010. A land degradation assessment and mapping methods: A standard guideline proposal. Available at https://www.youscribe.com/catalogue/documents/autres/a-land-degradation-assessment-and-mapping-method-a-standard-1903195. Date of access: 10 Feb. 2017.

Pillay, K. 2012. South African and global food security is under threat. Available at https://www.iol.co.za/dailynews/opinion/south-african-and-global-food-security-is-under-threat-1370824. Date of access: 09 Feb. 2018.

Rahman, S. 2016. The advantages and disadvantages of using qualitative and quantitative approaches and methods in language testing and assessment research: Aliterature review. *Journal of Education and Learning*, 6(1):102- 112.

Roberts, M. 1990. A history of South Africa. London: Longman.

Rouwenhorst, E.K. 2007. The South African legal framework for the conservation of biodiversity. Potchefstroom: NWU. (Dissertation- Masters).

RSA (Republic of South Africa). 1996. The Constitution of the Republic of South Africa: Act 108 of 1996. Cape Town: Government Press.

RSA (Republic of South Africa). 1998a. National Environmental Management Act 107 of 1998. Cape Town: Government Press.

RSA (Republic of South Africa). 1998b. National Forest Act of 84 of 1998. Cape Town: Government Press.

RSA (Republic of South Africa). 2003.National Environmental Management: Protected Areas Act 57 of 2003. Cape Town: Government Press.

RSA (Republic of South Africa). 2004. National Environmental Management: Biodiversity Act 10 of 2004. Cape Town: Government Press.

Roseland, M. 2000. Sustainable community development: Integrating environmental, economic, and social objectives. *Progress in planning*, 54(2):73- 132.

SAnews. 2015. South Africa invests in land rehabilitation. Available at https://www.brandsouthafrica.com/south-africa-fast-facts/social-facts/land-rehab-130815. Date of access: 19 Feb. 2018.

Schlebusch, S. 2014. Planning for sustainable communities: Place - making through layout and design approaches. Potchefstroom: NWU. (Dissertation- Masters).

Schoeman, F., Newby, T.S., Thompson, M.W. & Van Den Berg, E.C. 2010. Final report to the Food and Agriculture Organization of United Nations: South African national land cover change map. South Africa: Pretoria.

Shaw, E. 2018. The biggest forest in Africa: Travel tips- USA Today. Available at https://traveltips.usatoday.com/biggest-forests-africa-107011.html. Date of access: 25 Apr. 2019.

Shoroma, L.B. 2014. Mitigating the effects of re current drought. The case of Setlagole community, Ratlou Municipality (North West Province). Potchefstroom: NWU. (Mini-Dissertation-Masters).

Sibhat, K.T. &Qaim, M. 2017. Rural food security, subsistence agriculture, and seasonality. Available at https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0186406.Date of access: 25 Apr. 2019.

Simon, M.K.& Goes, J. 2013. Dissertation and scholarly research: Recipes for success. Create Space Independent. Available at https://www.researchgate.net/publication/282979346. Date of access: 24 May 2019.

Sishuba, S. 2016. SA's soil erosion crisis. Available at https://www.farmersweekly.co.za. Date of access: 12 Feb 2020.

South Africa Human Development Report. 2003. The challenge of sustainable development in South Africa: Unlocking people's creativity. South Africa: Government Press.

Speranza, C.I.& Kiteme, B. 2012. Small-scale farming in semi-arid areas: livelihood dynamics between 1997 and 2010 in Laikipia, Kenya, Nairobi.

Statistics South Africa. 2011. Northern Cape municipalities. Available at https://municipalities.co.za/provinces/view/7/northern-cape. Date of access: 23 Aug. 2018.

Steiner, A. 2015.The economics of land degradation in Africa. Kenya: Nairobi.

Stuijt. A. 2009. Dangerous water pollution in South Africa. Available at http://censorbugbear-reportsblogspot.com/2009/03/south-africa-claims-water-is-basic.html.Date of access: 14 Mar. 2018.

Swanby, H. & Law, S. 2011. An Annual Report: A summary of the work of the Environmental Monitoring Group for the year 2011. Available at

http://www.emg.org.za/images/downloads/publications/2011_EMG_summary_annual_report.pdf Date of access: 1 Sept. 2018.

Taaljard, A. 2016. South African water research commission: Supporting sustainable development through research funding, knowledge creation and dissemination. Available at http://www.wrc.org.za. Date of acces: 13 Apr. 2018.

TAFE Queensland and Department of Natural Resources. 1999.Major causes of land degradation. Available at https://www.dlsweb.rmit.edu.au/Toolbox/Indigenous/ecotourismtoolbox/topic_ei/ei_bi01_read04.htm. Date of access: 19 Feb. 2018.

Tandwa, L. 2018. Drought crisis: 3 provinces declared national disasters. Available at https://www.news24.com/SouthAfrica/News/drought-crisis-3-provinces-declared-national-disasters-20180213. Date of access:2 Feb. 2018.

Tsepe, N.C. 2016. The drought relief scheme in the Northern Cape Province (2013 / 2014): An analysis of the intergovernmental communication approach. Potchefstroom: NWU. (Dissertation- Master).

Tschentscher, T. 2016. Promoting sustainable development through more effective civil society participation in environmental governance: A selection of country case studies from the EU-NGOs project. UNDP, New York

UNDP (United Nations Deelopment Programmes). 2019. Combating land degradation and securing a sustainable future. Available at www.undp.org. date of access: 17 Jan 2020.

UN (United Nations). 2002. Commission on sustainable development. Toolkit for women. New York: United NationPlazza.

UN (United Nations). 2001. The UN protect, respect and remedyframework for business and human rights. Available at www.business-humanrights.org. date of access: 27 Feb 2020.

UN (United Nations). 2007. The United Nation Development Agency: Development for all. New York: United Nation.

UN (United Nations). 2018. United Nations documents. Environment. Available at https://www.unenvironment.org/about-un-environment/evaluation/our-evaluation-approach/un-environment-documents. Date of access: 12 Mar. 2018.

UNSTT (United Nations System Task Team). 2013. Financing for sustainable development in the global partnership beyond 2015. New York: United Nations.

Van Cotthem, W. 2007.Deforestation in South Africa. Available at https://desertification.wordpress.com/2007/04/30/deforestation-in-south-africa-ccd-coalition-olyecology/. Date of access: 29 Mar. 2018.

Van den Berg, L. 2007. The evaluation and promotion of best practices for the restoration of arid and semi-arid rangelands in Southern Africa. Potchefstroom: NWU. (Thesis- PHD).

Van der Walt, J. 1991. Land reform and future of land ownership in South Africa. Cape Town: Juta.

Van Rooyen, N.D. 2009. Diversity and distribution of birds in villages in the Kalahari. Potchefstroom: NWU. (Dissertation- Masters).

Van Schalkwyk, B.B. 2012. Critical analysis of sustainable community planning and development principles as applied within the Tlokwe Municipality. Potchefstroom: NWU. (Dissertation- Masters).

Volmink, J, & Van der Elst, L. 2017. The evolving role of 21st century education NGOs in South Africa: Challenges and opportunities.

Walker, A. 2017.Dineo's dangerous siblings: 4 other cyclones that hit South Africa this century. Available at https://memeburn.com/author/andywalker/page/68/. Date of access: 30 Mar. 2018.

William, C. 1991. Non- governmental innitiatives in ADB: The urban poor and basic infrastructure services in Asia and the pacific. Asian Development Bank, Manila.

Wilson, F. 2001. Minerals and migrants: How mining has shaped South Africa. *Deadelus*, 130(1):99- 121.

Winter, K., Wilson, L., Oelofse, C. & Smith, D.D.2013. In search of Geography: Grade 12 Learners Book. Britain: Oxford.