Abstract

Attention to the implementation of policies related to biodiversity in Namibia can improve the sustainable use of natural resources in terms of environmental sustainability and empowerment of resource users. This study investigates policies related to biodiversity within the Namibian legislative framework. The specific objectives of this study were to make an assessment of the appropriateness of these policies in general; to investigate the level of understanding of these policies among people from selected local communities; and to get specific opinions and perceptions on these policies from policy makers.

The study provides a synthesis of recent literature, including primary biodiversity research, government legislation, international guidelines and other relevant scientific references. Biodiversity is highly hypothesized. The literature review revealed that the loss of world biodiversity is occurring at an unprecedented rate and its loss is partly already irreversible and is closely linked to non-sustainable development practices.

Six Namibian policies related to biodiversity were analysed: Environmental Assessment Policy (1994); National Agriculture Policy (1995); National Land Policy (1998); National Water Policy White Paper (2000); National Forestry Policy (2001); and Namibia's Aquaculture Policy (2001). The analysis was largely conducted as a desktop study of available literature relevant to these policies and by means of SWOT analysis. The results show that Namibia has developed a number of policies related to biodiversity but there is a lack of implementation strategies.

Interviews were held with policy makers to determine their perceptions of biodiversity policies. The results show that the policy makers' have a fairly broad understanding of the policies related to biodiversity. The study suggests that policy makers should adopt participatory approaches during the process of making policy to involve those who will be directly affected by policies related to biodiversity.

To determine local perspectives on policies related to biodiversity, interviews with local communities in two rural areas of the Kavango and Omusati Regions were conducted. The fieldwork method was strongly based on the local communities' knowledge of their own local situation and build upon on their understanding of policies related to biodiversity.

The results from the interviews show that the majority of interviewees in rural communities are aware of the existence of the mentioned policies, or at least their associated legislation and regulations, but have very little knowledge and understanding of policies themselves. The study emphasizes that the local communities' understanding of policies related to biodiversity is essential. The underlying importance of local communities is two-fold: The community members are the key for the implementation of policies related to biodiversity at the grassroots level and, with high dependence on natural resources, they are the primary beneficiaries of biodiversity. The main challenge is to ensure that people in local communities have a better understanding of the implications of biodiversity policies. Moreover, a better understanding may ensure that the existing policies have a real influence in guiding the sustainable management and use of biodiversity and natural resources in the country, especially in rural, populated regions.

The critique of biodiversity policies, alongside the analysis of perspectives held by decision makers and representatives from the two rural communities in northern Namibia demonstrate that progress has been made to develop policies and programmes for biodiversity in Namibia. However, much more effort is required to ensure that these policies do not remain solely good ideas on paper. However, the study concludes that much more effort is required to ensure that all policies related to biodiversity are in fact implemented.

Keywords: *policy, biodiversity, local communities, policy makers, Namibia*

Acknowledgements

Genuine appreciation goes to all the people who supported me in this thesis and who have made great contributions to help me with its completion. To be more precise I would like to thank my supervisors: Dr Pierre Smit and Dr Patrik Klintenberg for their productive comments, back-up and assistance to keep me in the right direction. I would also like to thank you for editing support, especially on language and grammar. Special thanks goes to Dr Mary Seely for constructive comments and words of encouragement.

I would also like to thank the University of Namibia, specifically the Department of Geography, History and Environmental Studies, for all their support during the two years of research. Special thanks goes to the people who were contacted for interviews. I also want to thank the staff of the Desert Research Foundation of Namibia for making me feel at home. The research would not have been a success without the sponsorship from BIOTA and technical support from the Desert Research Foundation of Namibia. Finally, I want to thank God, my family and friends for their support and for always being there for me.

Declarations

I, Alex A.T. Moses, declare hereby that this study is a true reflection of my own research, and that this work or part thereof, has not been submitted for a degree in any other institution of higher learning.

All sources that I have used or have quoted have been indicated and acknowledged by means of complete references.

---------- [Signature] Date----------

Alex A.T. Moses

List of abbreviations

BIOTA	Biodiversity Transect Analysis of Southern Africa
CBM	Community Basin Management
CCL	Cabinet Committee on Legislation
CITES	Convention on International Trade in Endangered Species
DEA	Directorate of Environmental Affairs
DRFN	Desert Research Foundation of Namibia
EA	Environmental Assessment
FAO	Food and Agriculture Organisation of the United Nations
GRN	Government of the Republic of Namibia
ICES	International Council for the Exploration of the Seas
IEM	Integrated Environmental Management
IUCN	International Union for the Conservation of Nature and Natural Resources
LAC	Legal Assistance Centre
MAWF	Ministry of Agriculture, Water and Forestry (From 2005 until now)
MAWRD	Ministry of Agriculture, Water and Rural Development (since 1990 until 2004)
MDG	Millennium Development Goals
MET	Ministry of Environment and Tourism
MFMR	Ministry of Fisheries and Marine Resources
MLRR	Ministry of Land, Rehabilitation and Resettlement
MRLGHRD	Ministry of Regional and Local Government, Housing and Rural Development
NAP	Namibia's Agricultural Policy
NAPCOD	Namibia's Programme to Combat Desertification
NBP	National Biodiversity Programme
NBSAP	National Biodiversity Strategy and Action Plan
NCCC	Namibia Climate Change Committee
NDMP	National Development Master Plan

NDP1	National Development Plan One (For the period 1995 - 2000)
NDP2	National Development Plan Two (For the period 2001 - 2007)
NDP3	National Development Plan Three (For the period 2008 - 2011)
NGO	Non Governmental Organisation
NLP	National Land Policy
NNDPF	Namibia's National Development Planning Framework
NPC	National Planning Commission
NWRMR	Namibia Water Resource Management Review
NWPWP	National Water Policy White Paper
PRS	Poverty Reduction Strategy
SADC	Southern African Development Community
SDC	Sustainable, Development Commission
SWOT	Strengths Weaknesses, Opportunities and Threats
UNCBD	United Nations Convention on Biodiversity
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
VDC	Village Development Council
WASP	Water Supply and Sanitation Sector Policy
WPC	Water Point Committee
WSSD	World Summit on Sustainable Development

Table of contents

List of Figures

List of Tables

List of Boxes

Chapter 1: General introduction

Biological diversity and sustainable development issues are major international concerns. Recently, conservation of biological diversity has been recognized in the international community, including policy makers and scientists, as essential for the very survival of human beings on the planet. In spite of increasing international support for biodiversity conservation, especially after the United Nation's Rio de Janeiro conference and subsequent United Nations Convention on Biological Diversity (UNCBD) in 1992, it is still not clear which institutional arrangements effectively can promote conservation and wise use of biological diversity. Many believe that unclear policies and programs, focused on the agricultural sector worldwide, are at the heart of the present crisis of biodiversity loss (Barbier *et al*. 1995:18).

Among ecologists and environmental scientists there is at least a general consensus that maintaining a minimum level of biological diversity is of critical importance to the health of ecosystems and maintenance of the food chain for humans (Gowdy 1997). But not all analysts and decision-makers give equal value to preservation of biological diversity, especially while implementing policies and programs for economic development.

In principle, it is generally recognized by scientists and policy-makers that failure to properly understand the economic aspects of biodiversity resources, and failure to reflect the social value of biodiversity resources in the market arena, are two of the major reasons for the present threats to biodiversity worldwide (Michael 1998). It is therefore useful for experts from all disciplines to be concerned with the economic consequences of biodiversity preservation.

Many countries around the world have implemented policy instruments related to biodiversity, in order to provide support and guidance for integrated land and natural resources management for sustainable development (Sterner 2003). For the past years there has been growing concern throughout the world regarding imminent mass extinction of animals and plants (Huntley 1989).

Although there are policies related to the conservation of biodiversity in place in many countries, the consequences of biodiversity loss is still a pressing concern (Reid and Miller 1989). Biodiversity loss disrupts the functioning of ecosystems, making them more vulnerable to perturbations and less able to supply humans with services they need. The consequences are often harshest on the rural poor, who depend most immediately upon local ecosystem services for their livelihoods. Biodiversity loss also poses a significant barrier to meeting the Millennium Development Goals (MDG). The MDGs were developed as a direct outcome of the UN Millennium Conference and further expanded at the World Summit for Sustainable Development (WSSD) in 2002. Namibia is addressing the MDGs through a

number of programmes and interventions including macro-policies such as the National Development Plans, Vision 2030 and the National Poverty Reduction Action Programme.

People's understanding of policies related to biodiversity, especially those who are directly dependent on natural resources for their livelihoods, is of importance when dealing with sustainable development and biodiversity resources. There is a wide range of policy factors that affect how natural resources are used and managed. In some cases, the impact of policy on biodiversity conservation may be unclear, but the intentions of the policies may be desirable (Dewdney 1996).

Namibia is a country located on the southwest coast of Africa. It is bordered by Angola to the north, Zambia to the northeast, Botswana to the east, South Africa to the southeast and south, and the Atlantic Ocean to the west (Figure 1). A land of contrasts, Namibia is one of the most sparsely populated countries in the world. An estimated population of 2 million in 2007 is spread over a surface area of 823,680 km², implying that the average population density is only about 2.5 persons per km². The low population density is due to the vast areas with hyper-arid (12%) arid (16%), semi-arid (69%) conditions, and only 3% of the land being sub-humid.

The Namibian population is skewly distributed. In the Namib Desert for example, population densities are as low as 1.5 persons per km², while the densest populated areas in Namibia are located in the central north, where figures are as high as 26 people per km². This skew distribution is closely related to the availability of natural resources (NPC 2002 b: 19).

Following international trends, Namibia has generally been moving towards selecting and implementing various developmental policies in its effort *"to ensure that Namibia enjoys optimal participation and integration in the global village"* (NPC 2002 b: 45). In addition, the importance of development agendas, including not only economic but also social and environmental concerns, were recognised after the adoption of Agenda 21 principles at the Earth Summit in Rio de Janeiro in 1992.

In Namibia, policy makers formulate policies and make decisions at national level with the purpose of influencing rural communities at the grassroots level, in terms of natural resources use. This approach can obviously be subjected to many gaps and shortcomings in the flow of information. To address this potential weakness, this study makes an assessment of the policies related to biodiversity in Namibia, in particular the Omusati and Kavango Regions, to identify the level of understanding about biodiversity policies among rural people. According to a study that was conducted in Ndiona constituency in the Kavango Region in 2003, it is clear that the needs of local communities, depending directly on natural

resources, should be mainstreamed in order to encourage local participation in policy development (Matros 2003).

Namibia's commitments and efforts to combat desertification and biodiversity loss have been recognised on international level (MET 2005). However, the country does not have a specific national policy on biodiversity conservation. The closest to such a policy is Article 95 (1) of the constitution, which specifically refers to conservation of biodiversity. There exists a drafted National Access to Natural Resources and Benefit Sharing Policy, which is central to the implementation of the Convention on Biodiversity (CBD); a convention which was ratified by Namibia in 1997. The National Biodiversity Strategy and Action Plan (NBSAP)[1] largely fulfil the role of a national biodiversity conservation policy, and include specific references to its role in strengthening the implementation of Article 95 (1) of the constitution.

In order to implement the provisions of the CBD at national level, Namibia's National Biodiversity Programme (NBP) was launched in 1995 by the Ministry of Environment and Tourism, with the aim to improve the quality and quantity of biodiversity information; and to plan locally suitable means to monitor and analyse processes threatening biodiversity (MET 2005). Although Namibia does not have a national strategy for sustainable development yet, the most recent National Development Plan (NDP3) and Vision 2030 (see section 2.5) have attempted to place sustainable development at the heart of national planning (NPC 2008).

The NDP2 is geared to achieve the medium term objectives of Vision 2030, this plan is therefore the first medium term strategy for implementing some of the aims of Vision 2030 (NPC 2003). Vision 2030 presents a clear view of where Namibia wants to be in the future. The overall objectives are to transform Namibia from a developing lower middle-income to a developed high-income country by 2030 (NPC 2003).

[1] See section 2.5 for background to the NBSAP

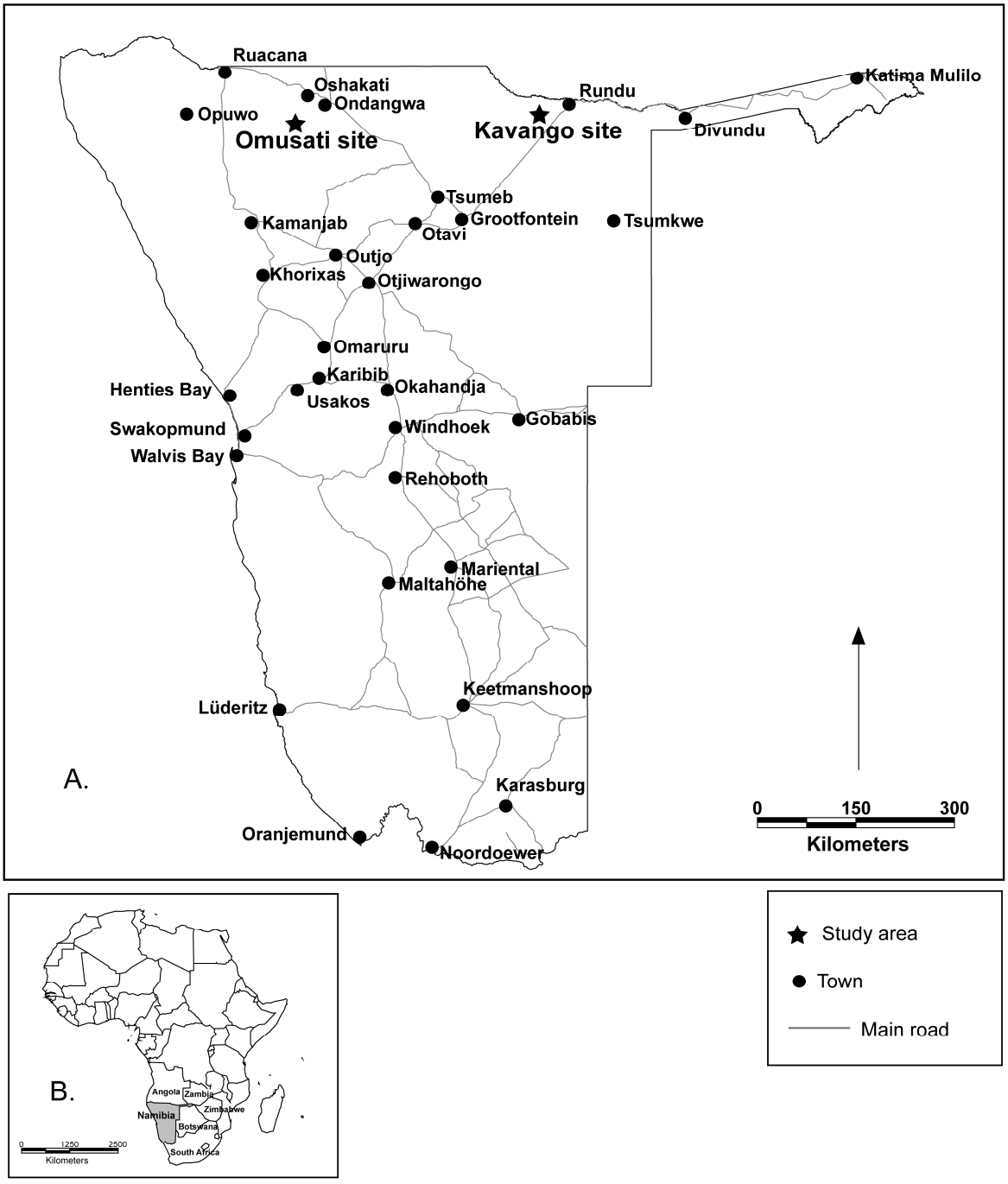

Figure1: Map A, Namibia with main towns, the road network and the two study sites. Map B Namibia's location on the African continent.

1.1 Aims and objectives

Firstly this study is being conducted because Namibia has developed a number of policies related to biodiversity since independence, but so far there has been no study that has particularly assessed these policies related to biodiversity, to determine whether there has been progress made in terms of implementation or whether these policies remain solely good ideas on paper collecting dust on shelves.

Secondly, the study is being conducted in order to provide background information on policies related to biodiversity in Namibia with a unique perspective and understanding of various principles as they are applied in the field of research and sustainable development.

The three overall objectives of this study are: 1) to make an assessment of policies related to biodiversity in Namibia, 2) to identify the level of understanding of people in two Namibian rural communities about policies related to biodiversity, and 3) to investigate the perceptions of Namibian policy makers on policies related to biodiversity. In order to do this, three basic questions were established:

- Where does Namibia stand in terms of policies related to biodiversity?
- How do these policies influence rural livelihood strategies?
- Do these policies increase awareness among natural resource users?

The study was conducted in two different rural communities of Omusati and Kavango Regions. The specific study areas were chosen because they are located in two of the most highest populated regions in Namibia. There are about 201,093 people in Kavango Region while Omusati has 228,364 people (NPC 2002a). These two regions offer comparable natural resources and, in both cases, the people are highly dependant on these natural resources for many aspects of their livelihood[2] (NPC 2006). High population density heightens human impact on the environment, and affects the quality and availability of natural resources. The close link between natural resources and livelihood, and the relatively high population densities makes it particularly important to understand local communities response to legislation related to the use of natural resources and socio-economic change in the Omusati and Kavango Regions. This investigation is limited to the spatial context of central northern and north-

[2] Food, water, building materials, biomass energy etc

eastern Namibia only. However the finding of the study might apply to other regions in the country and other semi-arid areas of southern Africa.

The selection of the study sites was done with the intention to evaluate and compare the perceptions and understanding of policies related to biodiversity from rural communities in two different regions in Namibia. The selections criteria of the study areas are grouped into two categories:

1. Commonalities
- Rural
- Inland settings with communal land tenure
- High population density
- Dependency on natural resources
- Poverty
- Areas with limited basic facilities

2. Differences
- Language and culture
- Rainfall regimes
- Vegetation
- Land unit

According to Robert and Stimson (1998) biodiversity policies have “distribution effects” and they are important to understand for the following reasons:

- Ignoring the distributive impacts of a policy can have negative impacts that would otherwise be beneficial for the general public.
- Policy makers are under increased pressure to demonstrate that their policies are informed by and comply with criteria emanating from the global policy discourse such as the Millennium Development Goals. These criteria frequently contain explicit distributive components to fit biodiversity policies around them.

Given the distribution effects of policies related to biodiversity as from Robert and Stimson (1998), it is clear that the policies assessed in this study are not exempted from distribution effects. Although the implementation of biodiversity policies is important, the distribution can have implications for both local communities and policy makers and these are some of the reasons why this study has been conducted.

Chapter 2: Background

2.1 Namibia

2.1.1 Geographic location and natural conditions

Namibia lies on the southern part of the African continent. The central geographical coordinates of the country are the 22º Southern Latitude and 17º Eastern Longitude. Namibia straddles the Tropic of Capricorn, roughly dividing the country into two halves. The total land area occupied by the country is approximately 823,680 square kilometres. The country is approximately 350 km in breadth at its narrowest point in the south, while it spans a distance of some 1,440 km where it is widest, between the mouth of Kunene River and Impalila Island. The overall perimeter of the country amounts to about 5,750 km of which some 1,570 km is coastline between the mouth of the Kunene and Orange rivers (Mendelsohn *et al.* 2002).

Namibia is a hot country. The average maximums during the hottest months are usually above 30ºC over much of the country, except for the coastal areas. Areas in the central areas of southern Namibia are the hottest, with average maximums of more than 36ºC during October (Mendelsohn *et al.* 2002). The hottest month in the year is generally early in summer in the northern part of the country and mid summer in the south. In Ondangwa, for example the hottest month is October, compared with December, and January in the central interior, and January or February further south. This is because cloud cover and rainfall increase from October onwards and reduce the radiation reaching the northern and central areas. With regards to the average minimum temperature during the coldest months, July is the coolest month over much of the country with average minimums of less than 10 ºC in most areas (Mendelsohn *et al.* 2002).

Rainfall varies from an annual average of less than 50 mm in the Namib Desert to 600 mm in the northeastern Caprivi Strip (Figure 2). Much of the moisture that finds its way into Namibia does so frequently and unpredictably. Such variability means that the highest total rainfalls in one year are often several times greater than falls in other years. Namibia is thus a dry country in which low and variable rainfalls are normal and droughts are frequent (Mendelsohn *et al.* 2002). Rainfall is highly seasonal, with 90% of the rain falling between October and April in most parts of the country (Mendelsohn *et al.* 2002).

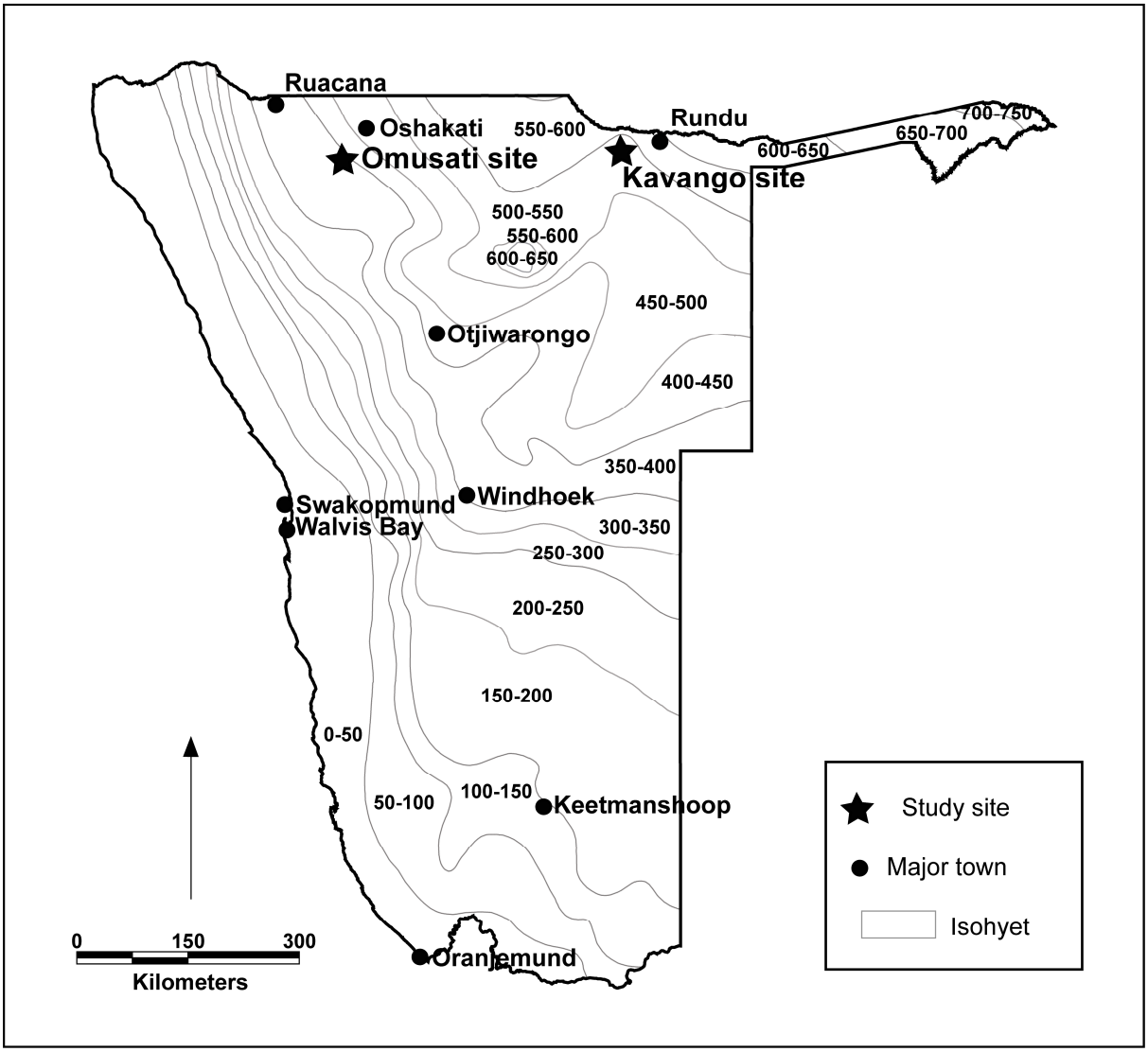

Figure 2: Mean annual rainfall[3] over Namibia

The growth and distribution of the vegetation in Namibia is closely determined by climatic conditions and soils. As a result the vegetation distribution is closely correlated to the precipitation gradient and the variability of rainfall, and to a lesser extent by soil conditions. Vegetation types and patterns in Namibia are highly diverse (Figure 3). Plant life is dominated by tall dry woodland in the northeast; from there the vegetation becomes progressively shorter and sparser to the west and south

[3] Interpolation of isohyets is based on approximately 260 rainfall stations in Namibia (Klintenberg 2007)

(Mendelsohn *et al*. 2002). The vegetation of the Namibian savannah woodland varies in structure, and species composition. This variation reflects diverse topographic factors and related soil and microclimate characteristics (Giess 1971). At a secondary level vegetation is strongly influenced by (destructive) anthropogenic activities like clearing of land, grazing and cultivation (Langanke 2001).

Namibia has a remarkable biological diversity and a high level of endemism (Barnard 1998). A species is classified as endemic to Namibia if all or a major part (+75%) of its range is found in Namibia. The percentage depends on which group the species belong to. In Namibia biologists working on mammals, amphibians and reptiles use 75%, those working on birds use 90%, while for plants, fish, insects and arachnids only species with 100% of their populations and ranges in Namibia are considered to be endemic. The amount of endemic plants, insects, reptiles and frogs is fairly high in Namibia. Endemism in mammals, birds and fish is lower, as these species tend to be mobile and are distributed over wide areas.

The majority of Namibia's endemic species are distributed in a belt along the western edge of the escarpment (Barnard 1998). This area is a transition zone between the desert, Karoo and savannah biomes, which favours high endemism. Another endemism area of succulent plants, reptiles and insects is the succulent Karoo biome in southern Namib, predominantly located in the Sperrgebiet (Barnard 1998).

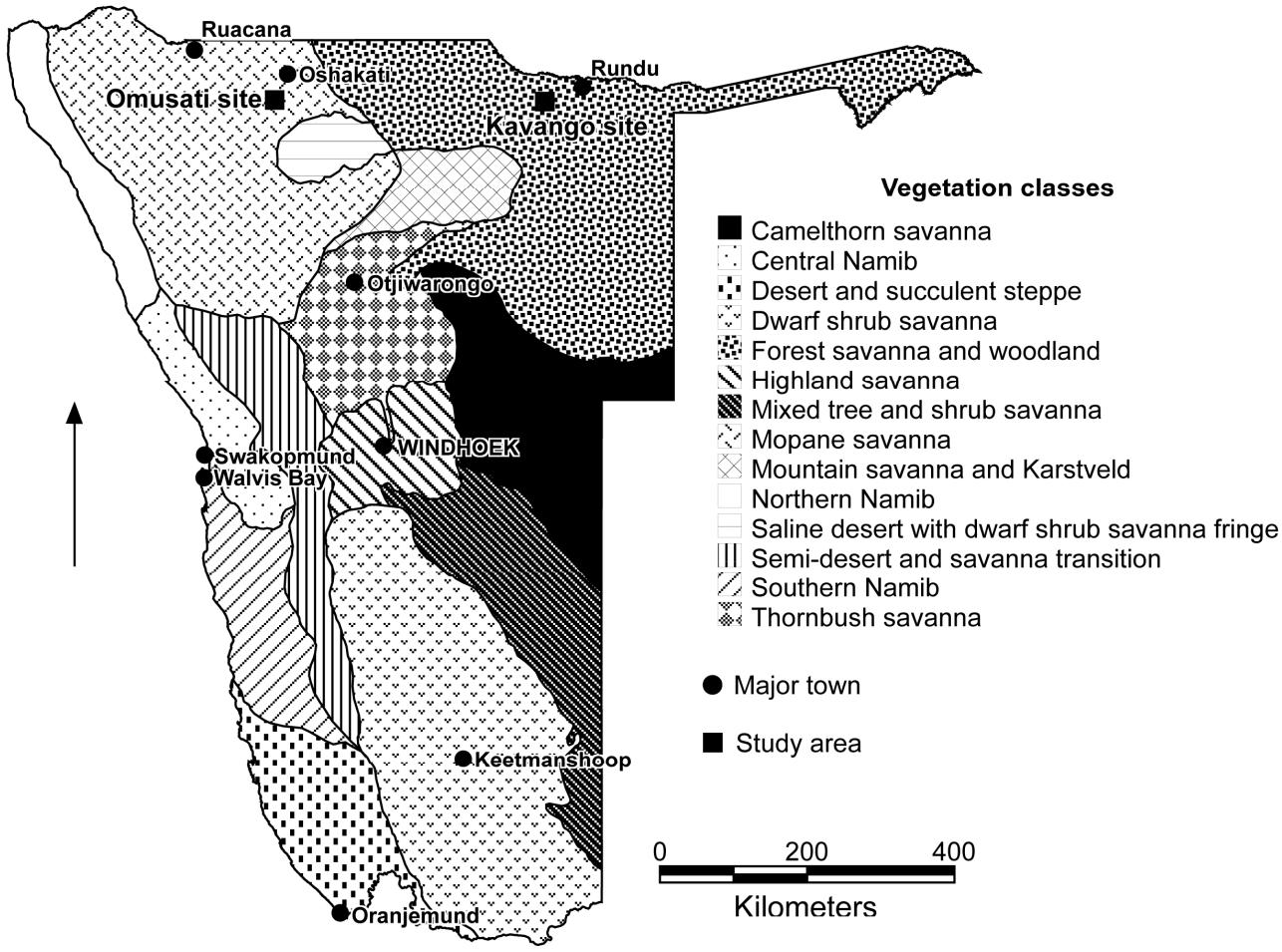

Figure 3 Vegetation map of Namibia (Giess 1971 as adapted)

2.1.2 Land use and farming systems

The predominant use of land in Namibia is agricultural. Freehold land is mostly used for agriculture and tourism while communal land is used for small scale agriculture (Mendelsohn *et al*. 2002: 145). Major areas are also used for tourism and mining while others are not really used for any particular purpose due to the harsh climate. State-protected areas make up 14.1% of the country (Mendelsohn *et al*. 2002). Resettlement farms, which make up 0.8% of the country, consist of both farms purchased since independence for resettlement purpose and farms that were acquired by the state long ago (Mendelsohn *et al*. 2006). A further 0.7% of the land consists of farmlands that are state-owned and used to quarantine animals or for agricultural purpose (Mendelsohn *et al*. 2002).

A large proportion of the Namibian population (some say up to 70%) directly depends on the use of natural resources and ecosystems, in particular through agriculture. However, only 2% of the country's total surface area is regarded as rain-fed arable, whereas about 46% is seen as suitable for permanent pasture, 22% is forested and the rest is arid and semi-arid (Kruger 1997).

Namibia has dual agricultural farming systems referred to as communal and commercial farming. The communal farming sector comprises 41% of agricultural arable land (NRC 2000). The commercial farming sector occupies about 48% of the agriculturally usable land (NRC 2000). The commercial farming sector contributes about 65% of agricultural output of Namibia. With regards to GDP, the agricultural contribution remains limited at around 10%, of which 88% comes from livestock production (NRC 2000). The livestock population of Namibia comprises about 2.5 million cattle, 2.4 million sheep and 1.8 million goats (Mendelsohn *et al*. 2006). Cattle farming is concentrated in central and northern Namibia, while the southern parts of the country are mainly used for sheep and goat farming (NRC 2000). Between 70% and 80% of all livestock, meat and meat products, are exported, mostly to South Africa.

The livestock sub-sector is the single largest contributor from agriculture to the GDP through the export of beef and mutton (Kruger 1997). Fruit production takes place especially in southern Namibia at Aussenkher on the northern banks of the Orange River, primarily for the production of table grapes (Kruger 1997). Grapes from these farms are supplied to the northern-hemisphere markets such as United Kingdom, while some are shipped to the far east (Kruger 1997). The commercial dairy industry operates in accordance with a free-market system. However, the milk industry is hampered by the seasonal availability of fodder and alternative high input costs, mainly import of fodder (Kruger 1997). Consequently, Namibia imports a large percentage of dairy products from South Africa.

White maize is produced mainly under dry-land conditions in the maize triangle situated between Tsumeb, Otavi, and Grootfontein, in the Summerdown area in the Omaheke Region and at some locations in Caprivi Region (NRC 2000). A total of over 7 000 ha of white maize is currently planted in the commercial dry-land production areas. The most important irrigation schemes contributing to domestic white maize production are at Hardap near Mariental, Naute near Keetmanshoop, at Etunda near Ruacana on the flood plains in the Caprivi Region and on some of the irrigation schemes in the Kavango Region (NRC 2000).

About 30% of *mahangu* (pearl millet) production is officially marketed; the rest is consumed at household level or kept for household consumption (NRC 2000). Cotton is produced on a small scale in

southern and northern Namibia. The five major farming systems in Namibia can be summarized as follows (Mendelsohn *et al*. 2006):

- Small-scale cereals and livestock e.g. *mahangu,* sorghum, maize, goats and cattle
- Cattle ranching e.g. cattle
- Small stock e.g. sheep and goats
- Intensive agriculture e.g. fruits and vegetables
- Natural resource production e.g. indigenous fauna and flora and landscape

2.1.3 Demography

In 2001 Namibia had a population of 1.8 million people (NPC 2002a). The population is small in relation to the size of the country. However, people are spread very unevenly across the country. Large areas are completely uninhabited and many other areas are very sparsely populated. The number of people living in urban areas has increased over the past 70 years. In 2001 about 39% of the total population (approximately 700, 000) was settled in urban areas compared with only 10% in 1936 (Mendelsohn *et al*. 2002). Rates of urbanization differ from town to town, but some of the highest include Ondangwa, Ongwediva, Rundu, Katima Mulilo, Walvisbay, Swakopmund and Windhoek. Almost 600 people moved in Windhoek each month between 1991 and 1995 and the city is expected to double every 12 to 13 years (Mendelsohn *et al*. 2002).

These concentrations are due to three factors, the first of which is the availability of suitable natural resources. Most rural people, live in areas where water is available, rain-fed crop production is possible where, soil fertility allows crop production and where there is sufficient pasture for livestock. These are the conditions that have made the Cuvelai drainage system, the Kavango River valley and the floodplains of eastern Caprivi relatively densely populated. A second factor is the availability of employment and business opportunities, which attract people to urban areas. Thirdly, the presence of infrastructure, such as roads, water and other services, attract ribbons of denser population. Certain areas along the main roads in Caprivi and Kavango are more populated for this reason.

The population in 2000 had grown by about eight times from an estimated 229,000 people counted during the first population census in 1921 (Central Bureau of Statistics 2001). Much of this increase was due to improvements in health care, with the result that more people survived childhood and enjoyed longer lives. The rate of population increase was roughly 2% per year in the first half of the 1900s, which then rose to 3% per year during the last few decades (Central Bureau of Statistics 2001). It is

estimated that the population will continue rising to around 2,250,000 people in 2010 and 2, 600,000 by the year 2020 (Central Bureau of Statistic 2001). Statistics in the regions where the study areas[4] are located shows that in Omusati Region about 1,022 people have died as a result of AIDS between 1995 and 1999 (Mendelsohn *et al*. 2002). In Kavango regions for the period of 1995 and 1999 about 905 people have died as a result of AIDS (Mendelsohn *et al*. 2002).

The AIDS epidemic is a very large problem in Namibia. Currently Namibia's infection rate is one of the highest on the continent and the world. Life expectancy in Namibia has dropped as a result of AIDS, life expectancy for women stands at 53 years while men's life expectancy has dropped to 51.8 (NPC 2003). In 2001, there were an estimated 210,000 people living with HIV/AIDS, and the estimated death toll in 2003 was 16,000 (NPC 2003). The annual rate of increase is, however, expected to decline from 3% to about 1.5% between 2010 and 2020, both as a result of HIV/AIDS and falling fertility rates (NPC 2003). It is clear that AIDS is having and will continue to have great impact on Namibia's population if people do not change their behaviours. Much of the change will be due to three effects that AIDS has on the population: increased death rate, reduced fertility, and the absence of children who would otherwise have been born to women that have died.

[4] See Chapter 5 for more demographic properties of the study areas

2.3 Definition of biodiversity

What is the correct definition of biodiversity, short for biological diversity? There is no simple answer to this question and the different answers are often debatable. Biodiversity itself is a complex, perhaps unclear concept, extending from genes to ecosystems and biomes, and to interactions and processes. There are many definitions of the term biodiversity. Most straightforwardly biodiversity is the variety of life and refers to the rationale at all levels of biological organization, collectively. Biodiversity specifically refers to the quality of nature that describes its diversity. A natural area can be described as being biologically diverse as opposed to being biologically homogenous (similar). For example equatorial forest has high biodiversity, while a cultivated plantation typically has much lower biodiversity. For that reason biodiversity emphasizes the presence and importance of diversity. Biodiversity reflects the number, variety and variability of living organisms and how these change from one location to another and over time. Biodiversity includes components like plants, animals, fungi and microbes as well as the processes that sustain those components (IUCN 1990). Five aspects are relevant to be considered:

- The distribution of different kinds of ecosystems;
- The total number of species in a region or area;
- The number of endemic species in an area;
- The genetic diversity; and
- The sub-populations of species, which embrace genetic diversity.

According to the IUCN (1990) biologists have found it convenient to consider biodiversity from three different angles: **Genetic** diversity, **species** diversity and **ecosystem** diversity. "*Genetic diversity* refers to the variety of genes. It is therefore a measure of variability, both within and between species; *species diversity* refers to a total number of species measured in a given area; *ecosystem diversity* relates to the variety of habitats" (IUCN 1990:22). Ecosystems are by definition composed of complex, interdependent groups of species (plus non-biological components) and they contribute to the maintenance of the natural exchanges of water, oxygen, carbon, nitrogen, sulphur and other elements, as well as to the flows of energy upon which life depends (IUCN 1990).

Biodiversity includes the genetic variability within species and their populations, the variety of species and their life forms, the diversity of the complexes of associated species and of their interactions,

and of the ecological processes, which they influence or perform (Huntley 1989). In general researchers and conservationists all employ a definition of biodiversity shaped by their values, interest and goals. Since there exists so much disagreement among human perceptions about what biodiversity is, there exist many different reasons why it is important to conserve biological diversity. Within the UNCBD and also the United Nations Environmental Programme (UNEP) (1993) biodiversity is defined as "the variability among living organisms from all sources including, *inter alia,* terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species and of ecosystems" (UNCBD 2004:19).

The UNCBD definition of biodiversity is adopted in this study because it is recognized internationally and as a result frequently used. This definition is also applicable in Namibia. The convention also reflects recognition by the world community that biodiversity is a major concern worldwide, resulting in humankind also being under threat. Humans depend upon biodiversity in many ways, both to satisfy basic needs like food and medicine, and to enrich human lives culturally or spiritually. Yet in an increasingly modern, technological world, people often forget how fundamental biodiversity is to daily life and, as a result, are largely unaware of the impact of its loss (Pearce and Dominic 1994). The solution to these threats will require effective international cooperation to resolve the underlying causes of biodiversity loss.

2.3.1 The importance of biodiversity

Further than its essential value biodiversity is important because of the ecosystem goods and services that it underpins. These include food, shelter, fuels, medicines, clean water and recreation, as well as resilience to extreme events. In various ways these goods and services contribute to human well-being, whether by providing basic needs, security or health (Alcano 2003). Despite the fact that only some wild plants and animals appear to be directly useful to humans as a source of food, fibre, medicine or tourism, all species are of ecological importance. For example, fungi and moulds play an important role in ecosystem functioning and their potential economic importance is enormous. Similarly, essential processes within savannahs and woodland ecosystems depend largely on healthy insect populations in the soil[5] and snakes and other reptiles play a vital role in controlling the spread of rodent populations (Barnard 1998).

[5] Termites and beetle larvae dominate the soil fauna in arid environments and termites and dung beetles are possibly the most important decomposers in Namibia's savannah ecosystems (Barnard 1998)

The value of ecosystem goods and services has been demonstrated in a number of studies. Balmford *et al.* (2003), for example, show that such systems generate marked economic benefits, which exceed those obtained from continued habitat conversion. Biologically derived products and processes are estimated to account for 40% of the global economy (OECD 2002) and an estimated 30% in Namibia (NPC 2002a).

The importance of biodiversity can be classified in many ways. According to the IUCN (1990) the importance of biodiversity can be grouped into several categories:

1) **Direct use values** - Species providing various goods or products to humans, many of which play important roles in human economies. Examples include food, medicine, timber, fibre, tourism, etc.
2) **Indirect use values** - Species providing services to humans as well as to other species. These include pollination, nutrient cycling, etc.
3) **Ecological value** - Most species are supported by interactions with other species and ecosystems, each providing an ecological value to one another. Loss of species makes ecosystems less resilient and often less productive.
4) **Cultural and spiritual value -** The identity of human cultures around the world is attached to, in varying degrees, wild species. Wild species are often referred to in religious texts. Outside of formal religion, many people feel connected to species for reasons that can be hard to explain. Some may be inspired by a species' intrinsic beauty, revere it for its strength, or admire it for its cleverness (IUCN 1990).

In Namibia biodiversity is important as elsewhere in the world. Namibia is one of the very few countries in Africa with internationally “recognized biodiversity hotspots” (Barnard *et al.* 2002). Sometimes tourists that visit Namibia are attracted to areas that are rich in biodiversity, which is important for economic growth in Namibia as tourism industry contributes about 17% to GDP (MET 2005).

Namibia has made great strides in the growth of the tourism industry as evident from a sustained growth in the number of tourists visiting Namibia since independence.

2.3.2 The causes of biodiversity loss

While the need for economic development is important, the quality and nature of economic development can have different effects on biodiversity. There is no common agreement among contemporary scientists, economists and policy analysts on a theory that explains the process and implications of loss of biodiversity. Even among environmentalists there are disagreements about the details of ecological impacts and the role of biodiversity for maintaining co-evolutionary and resilience functions of the ecosystem (Barbier *et al*. 1995).

The causes of biodiversity loss may vary in their relative importance from place to place, but they are largely the same everywhere. It is widely understood that habitat destruction is the principle threat facing biodiversity worldwide. This can be seen where land is cleared for activities such as agriculture and urbanization (Robert 2007). It is also widely agreed that the second greatest threat to biodiversity is posed by invasive alien species. Species are introduced to new areas for a variety of reasons, and if these species adapt well to the new area, they may spread beyond control and displace or out compete native species. This too is a concern in Namibia.

Climate change is a threat not only directly related to humankind through rising sea levels, but also to species that are adapted to their specific environments and the climate (Robert 2007). Many such species and fragile ecosystems, of which they form part, will not be able to survive even small changes in the world's climate. Other major threats to biodiversity include pollution of the air, water and land that form their habitats, over-exploitation (for example through harvesting too many fish, or too much timber). A wealth of literature suggests that the main driving forces behind the present level of biodiversity loss arise from human activities. This is true in Namibia too.

According to UNEP (1999) the increasing human damage to natural ecosystems and the rate at which species are being lost from the world is estimated to be approximately 1000 times greater than natural rates of extinction. This is because most species appear to have no obvious value to mankind and their loss should not matter. This is far from the truth and it is generally accepted that no environmental crisis will have a more lasting impact on future generations than the widespread loss of biodiversity. It is the interaction of a diverse number of species functioning together that keeps the natural systems stable and productive (UNEP 1999).

In the Namibian context the cause of biodiversity loss is largely the same as in any other place in the world. Currently human population pressure, which results in increasing demand for natural resources, e.g. land, wood and minerals, is one of the key contributing factors that lead to loss of biodiversity in Namibia. Poverty and over-dependence on natural resources in the absence of education, technical aid, credit or employment means poor subsistence communities have no choice but to depend on natural resources for their livelihoods (MET 2005). This commonly leads to increasing rates of soil erosion, deforestation and overexploitation of wild plants and animals.

Namibia has begun to explore the idea of sustainable development and has developed a number of policies related to biodiversity that can be used as guidelines to minimize the loss of biodiversity. In addition sustainable development marks a commitment by Namibians to meet their own needs without compromising the ability of future generations to meet their needs (MET 2006). The existing policies related to biodiversity depend on our knowledge of ecosystems, how well we understand and account for the human, social, cultural and economic forces in them, and how we use this knowledge and understanding to guide human behaviours.

The focus of this study is on policies related to biodiversity. The study particularly investigates policies related to biodiversity within the Namibian legislative framework. The specific objectives of this study were to make an assessment of the appropriateness of these policies in general; to identify the level of understanding of these policies among people in selected local communities; and to get specific opinions and perceptions on these policies from policy makers.

2.4 Definition of policy

In general, the word “policy” is not strongly defined, but is a highly flexible term, used in different ways within the fields of politics and economics. In this study, the definition of “policy” from Sterner (2003:79) is adopted.

“A definite course or method of action selected from among alternatives and in the light of given conditions to guide and usually, to determine present and future decisions”.

The definition of the word “policy” is generic throughout the world. To integrate it in a Namibian context, a "policy" is very much like a decision or a set of decisions, and decision makers "make", "implement" or "carry out" a policy just as people do with decisions. Like a decision a policy is not itself a statement, nor is it only a set of actions. In some other ways a policy is not like a decision. The term

policy usually implies some long-term purpose in a broad subject field (e.g. land tenure). Sometimes, however, people conceive of policy not so much as actively purpose oriented but rather as a fairly cohesive set of responses to a problem that has arisen. In the sphere of the state development activities, the state has policies, plans, programmes and projects, each of these in succession being a little more short-term, more specific in place and timing than the previous and each successively more executive rather than legislative. In the light of these considerations we can provisionally define a policy as a set of decisions that are oriented towards a long-term purpose or to a particular problem. Such decisions by the state are often embodied in legislation and do usually apply to a country as a whole rather than to one part of it.

2.4.1 Policy processes

"Policy formulation" is defined as the process of considering alternative policy options and deciding to implement one or several of them (Sandford 1985). Within policy formulation, we can further distinguish between policy analysis and "policy process". "Policy analysis" is the process of investigating issues and options, and of drawing up and comparing different proposals (Sterner 2003). "Policy-making" on the other hand, is the act of deciding which policy objectives should be met and selecting the instruments by which to do so. Corresponding to these policy processes are people who carry them out, in other words policy makers.

Sometimes policy fails because of ignorance, postponement and political interference. "Policy failure" occurs when a policy designed to achieve one objective has unintended adverse impact on another objective (Dewdney 1996). The nature and extent of policy failures vary from country to country. For example failures in developing countries may be different from those encountered in developed countries. A policy may fail because of poor institutional capacity. Frequently, these conditions lead to poorly formulated economic and regulatory policies with regard to conservation and use of biodiversity (Barbier *et al.* 1995). In most cases a typical failure of a policy in the environmental domain is attributed to lack of relevant information. However, environmental policies that focus on better information can help to overcome this problem. Agreement between the state and particular economic sectors or industry can also contribute to the positive evolution of environmental policy. Involving third parties in the process of setting environmental goals can also increase the effectiveness of policies.

According to OECD (2008), to ensure the efficiency of policies, the policy makers should develop a framework to measure the effectiveness and efficiency of environmental policies. The framework can help to encourage policy makers to ask appropriate questions about environmental policies and institutions, as way of moving toward more effective and efficient outcomes over time.

The framework is therefore intended as a guide to the states in search for effective and efficient policies related to biodiversity, aimed at finding the right balance among environmental, economic and other social policy objectives. In Namibia the two most significant national biodiversity programmes, the country study and NBSAP are some of the most important initiatives influencing biodiversity policy in Namibia, both based on good frameworks. *"The framework is not a series of ready-made prescription; nor is it binding"* (OECD 2008:2). A framework is seen as a tool that the state at any level can use as a "checklist" to pursue sustainable development.

2.4.2. Linking policies with economic

Every now and then, policies that affect the environment are "cross-cutting", i.e. several state departments are responsible for different parts of a specific environmental problem. Policy design and implementation therefore need to be well integrated with key economic and sectoral policies both on international, national, regional and local levels and inter-sectorally. In other words, environmental goals can be reflected in sectoral and economic policies, and vice versa (OECD 2008).

Sometimes environmental policies make important contributions to social welfare, e.g. protecting the natural basis production and by improving health. According to OECD (2008) achieving these objectives should cause the targets of environmental-related policies to alter decisions in ways that reflect environmental realities. However, these policies can also entail significant economic costs. It is therefore important to carefully consider whether the additional benefits of environmental improvements, and additional costs to society of achieving these improvements are well balanced (OECD 2008). This implies that the need to assess, on a regular basis, the cost and benefit that is set for environmental policy. When feasible, this assessment should include monetary valuation of the changes in environmental quality in question.

2.4.3 General discussion of policies

Policies are the cornerstone of local plans. They are intended to serve as clear statements that let local communities, developers and others know the basis and criteria by which planning decisions will

be made by decision makers, the planning authority. Policies are expected to deliver guidelines applicable at the national and regional level, as well as being sensitive to local planning needs. Some policies will relate to the whole of the area covered by a plan, whilst others may be ‘area-based’ and relate to specific sites or areas identified in the plan. Other policies may be specific to certain kinds of land uses or categories of development.

In addition to written policies, local plans also include supporting texts and maps. The supporting text will seek to explain the context for a policy, whilst maps in a local plan may be used to illustrate where particular policies will or will not apply. Maps also provide guidance, for instance on the location of known environmental constraints such as protected archaeological sites. Local plan policies are drawn up by local planning authorities in consultation with local communities when plans are reviewed or replaced (Johnson 1996). According to Johnson (1996), Policies need to serve as clear, reasonable and fair criteria for decision-making about development. They may describe where different kinds of development might be acceptable; the issues which developers need to consider in designing their developments, as well as setting out the steps that developers might reasonably be expected to take in preventing or mitigating the impacts of developments on local communities. Policies are important therefore in:

- Helping guide decisions as to whether any particular development proposal should be granted or refused
- Allowing requirements to be made of the developer (through agreements or conditions attached to planning permission) to do or not do certain things, before, during and after development that is approved.

2.5 Environmental issues and legislative framework in Namibia

Article 144 of the constitution, in conjunction with Article 95 (1) outlines the importance of conserving ecosystems in the country. *"The general rules of public international law and international agreements binding upon Namibia shall form part of the law of Namibia."* (Constitution of Namibia 1990:71). Most of the environmental issues in Namibia are still managed at national level by different directorates in the line ministries. In terms of the Namibian constitution of 1990, the state possesses ownership of all natural resources, including water (Article 100): *"Land, water and natural resources below and above the surface of the land, and in the continental shelf and within the territorial waters and the exclusive economic zone of Namibia belong to the state, if they are not otherwise lawfully owned"* (Constitution of Namibia 1990:53). In Namibia the constitution is the supreme law, and all other laws are subjected to it (LAC 1996). It is also important to note that the constitution commits the state to the adoption of policies aimed at the conservation of the natural environment, as articulated in Article 95:41 *"The State shall actively promote and maintain the welfare of the people by adopting policies aimed at the maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future*".

In Namibia, biodiversity policies received increased attention after independence; in particular after the United Nations Conference on Environment and Development (UNCED), also referred to as the Earth Summit held in Rio de Janeiro in 1992 (see section 2.8). UNCBD (of which Namibia is a signatory) raised particular concern about biodiversity conservation issues, as these issues have been on the increase worldwide. Related to the Earth Summit of 1992 was the revision of several policies in Namibia relevant to biodiversity.

As a result more support was given to integrated land and water management for sustainable development, synergy among the Rio-conventions and the appearance of environmental considerations and development agendas in Namibia (DRFN 2003). This is because the consumption and use of resources, mainly as a result of increased population pressure, increased markedly in Namibia since independence.

Namibia has a strategic planning document, which clearly outlines a plan of action for biodiversity conservation, namely the National Biodiversity Strategy and Action Plan (NBSAP), formally known as *Biodiversity and Development: Namibia's ten-year strategic plan of action for sustainable development*

through biodiversity conservation 2001-2010. Namibia has two important reasons for developing the NBSAP: its constitutional provisions for safeguarding biodiversity (Article 95), and the requirements of the UNCBD, to which Namibia is a party. NBSAP is relevant to this study because it is one of the key policy documents that deal specifically with biodiversity to which the state should subscribe to effectively address biodiversity and related sustainable development concerns.

The NBSAP was prepared on behalf of Namibia by the national biodiversity task force, national biodiversity programme, Ministry of Environment and Tourism and the Directorate of Environmental Affairs. This strategic action plan was developed with the aims to protect ecosystems, biological diversity and ecological processes through conservation and sustainable use thereby supporting the livelihoods, self-reliance and quality of life of Namibians for a long period (Barnard *et al*. 2002). The NBSAP is important to Namibia and to this study because this document is the first of its kind underpinning Namibia's excellent constitutionally based planning and policy framework on the environment, and development with a contemporary strategy and detailed action plans. This document discusses various aspects of environmental change, e.g. monitoring, predicting and coping with environmental change through its prioritised strategic aims (Box 1).

Box 1. *Ten prioritised strategic aims of the third objective of the National Biodiversity Strategy*

- Strengthen national capacity for reliable decision making on the environment and development
- Improve national and local capacity to monitor, detect and predict environmental change
- Develop reliable indicators and monitoring systems of biodiversity and ecosystem function
- Enhance national capacity in biosystematics to support biodiversity conservation management
- Identify and monitor main environmental threats
- Raise awareness and strengthen capacity to adapt to climate change
- Manage and mitigate desertification, land degradation and land conversion
- Reduce the threat to biological diversity from alien invasive species
- Strengthen national and local capacity to manage and reduce pollution

- Develop and apply appropriate rehabilitation and restoration methods to degraded ecosystems

The NBSAP also makes broader reference to sustainable land management, sustainable use of natural resources, capacity building for biodiversity management, economic and social mechanisms for buffering rural people against environmental change while promoting sustainable development and livelihood strategies, at the same time (Barnard *et al*. 2002).

A planning programme called Vision 2030 was compiled in Namibia in 2003, which describes in general terms the overall level of development the country wants to achieve by 2030. Vision 2030 targets education, health, natural resources, food and economics (NPC 2003). Vision 2030 guides plans and policies that specifically address national development, regional development, poverty eradication, natural resources and environmental resources (NPC 2002b).

Apart from Vision 2030, the state has so far completed three national development plans: the first National Development Plan (NDP1) that covered the period of 1995 to 2000; the second National Development Plan (NDP2) for the period of 2001 to 2007 and the third National Development Plan (NDP3) for the period 2008 to 2011.

NDP1, NDP2 and NDP3 were developed to address the issues concerning sustainable development, particularly related to renewable natural resources and management in Namibia. The national development strategy for Namibia consists of long and medium term development perspectives. The Second National Development Plan (NDP2) was prepared soon after completing the execution of NDP1, whose five-year implementation ended during the financial year 1999/2000. The launching of NDP2, during the 2001/2002 financial years, has provided the much needed continuity and consistence in the application of the country's development strategy (NPC 2003). The NDP3 differs from NDP1 and NDP2 in a number of ways: Firstly, it is based directly on the eight broad objectives of Vision 2030. Secondly, ten thematic groups were formulated through team work. Thirdly, NDP3 presents for the first time in Namibia an overall resource envelope to implement the plan by all government and non-governmental stakeholders in order to achieve the targets of the projected plan (NPC 2008).

2.6 Process of law making and policy making in Namibia

The aim of this section is to give a background to how laws are made in Namibia, as policymaking is part of law making. Generally, policies at national, regional and local levels are made for a certain country to meet certain objectives. In this regard policies related to biodiversity cannot be separated from formal law making. In addition, it is important to understand how laws are made in Namibia when dealing with the issues related to policies and legislative frameworks. In this study the process of law making is described and summarized as follows.

Firstly, a bill (a bill is a proposed law before it becomes a law) has to be proposed. A bill can be suggested by the president, by cabinet, by any member of the parliament, by the Law Reform and Development Commission or even by a non-governmental organisation or an interested member of the public (LAC 1996). This means that all people in Namibia have the right to propose a bill, regardless of their social status.

The Attorney General has to make sure that the plan for the new law is in line with the constitution (LAC 1996). Once a minister has consulted the Attorney General's office, the minister will be required to prepare the first draft of the proposed bill. In some instances, the minister can ask for lawyers from outside the government to assist in preparing the draft bill. If it is necessary, the minister who is drafting the bill can make it public in order to get people's opinion. Public consultation is done by circulating the bill to relevant stakeholders for their comments (LAC 1996).

Secondly, the cabinet will be required to approve the bill before it goes to the parliament. Once the draft bill is prepared, the minister has to send it to the Cabinet Committee on Legislation (CCL). The minister will then have to verbally discuss the bill with the CCL along with other ministry officials. The CCL approves the bill and presents it to the entire cabinet; the cabinet approves the main points of the bill but does not consider smaller details. The bill will then be sent to the ministry of justice, which finalises the draft bill and sends it back to cabinet for final approval (LAC 1996).

Thirdly, once the cabinet has approved a bill it goes to the national assembly where the first reading has to take place. The minister who initiated the bill introduces it to the national assembly (this makes the bill a public document and it is open for comments from the public). The second reading is then undertaken and the national assembly discusses the main ideas in the bill. The CCL will then examine the bill in detail, assisted by a committee appointed by the national assembly. A public hearing might also take place before the third reading and final approval.

Once the national assembly has approved the bill it will be sent to the national council for advice. The national council can either approve the bill or make changes and send it back to the national assembly. The national council can reject the bill and send it to the national assembly. If two thirds of the members of the national assembly vote and approve the bill, it can be passed (LAC 1996).

The president must sign all bills in Namibia before they become laws. This is the final step of law making. If the president agrees with the bill it will be signed; if the president disagrees, the national assembly must vote again. If the national assembly obtains a two-thirds majority, the president cannot stop the bill from becoming a law. Sometimes the high court may also become involved if there are disagreements about a proposed bill. If the president refuses to sign because the bill is in conflict with the constitution, the high court will decide upon the matter. If the bill is in line with the constitution, the bill will go forward. If the high court decides against the bill, it cannot become a law. A law comes into force only after it has been published in a government gazette (LAC 1996).

Before a bill becomes a law, it may also be examined by people in all three branches of the government, which are: executive (the president and cabinet), the legislative (the parliament) and the judiciary (the courts) (LAC 1996). All of the three branches share duties among each other (Figure 4). Each branch is responsible for a different function of the government. The legislative branch is responsible for making laws that are implemented by the executive and interpreted by the judiciary branch.

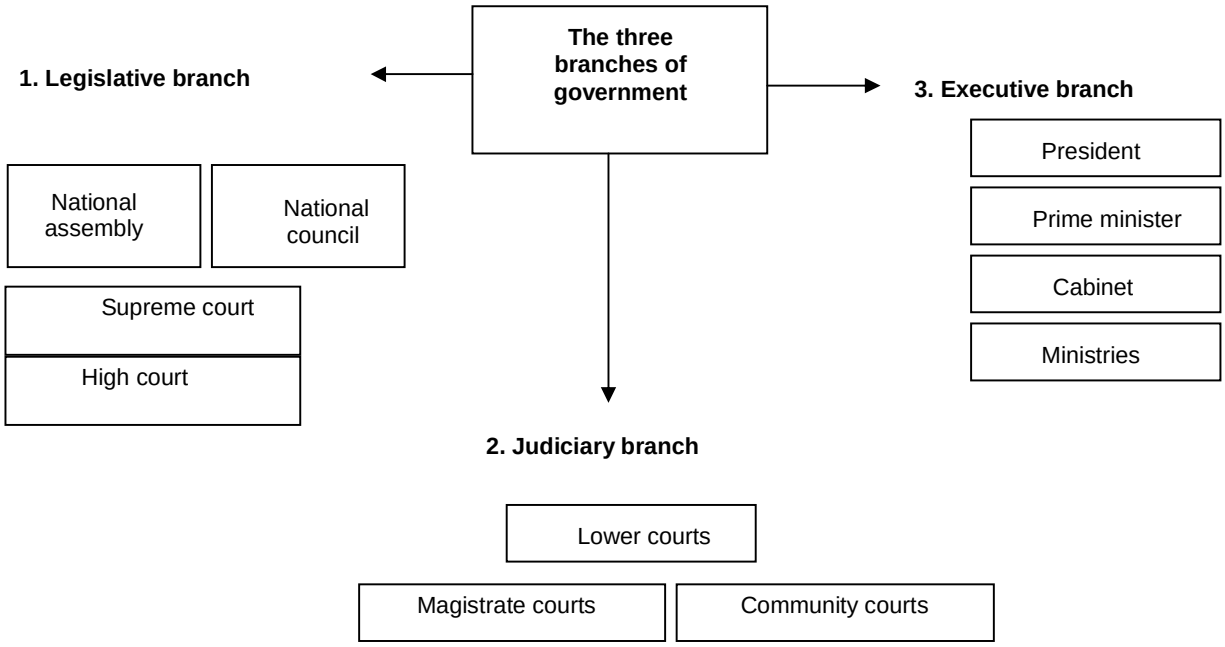

Figure 4: An example of power authority in Namibia (LAC 1996 as adapted)

2.7 The three types of law in Namibia

There are three types of laws in Namibia, in accordance with the constitution namely: Statutes, Common and Customary laws (LAC 1996).

2.7.1 Statutes

Statues are laws passed by parliament. In 1990, Namibia inherited some statutes that were passed by other legislative bodies before independence. Other words for statutes are "legislation and act of parliament" (LAC 1996). The parliament can make changes to statutes, which have already been passed; these changes are called amendments (LAC 1996).

Statues or legislation is usually proposed by a member of the legislature body of the state (e.g. a member of congress or parliament), or by the government executive body, where it is debated upon by members of the legislature committee and is often amended before passage. Most large legislatures enact only a small fraction of the bills proposed in a given session. Whether a given bill will be proposed and enter into force is generally a matter of the legislative priorities of government. Statutes are usually amended from time to time in accordance with the changing circumstances and environment. For

example, if the existing law says that people have no right to drink water from rivers but the law makers want people to have the right to drink water from rivers; then the law makers need to change the common law by passing a statute, which says people have now the right to use water from rivers.

2.7.2 Common law

The common law in Namibia is the Roman Dutch law, which Namibia inherited from South Africa (LAC 1996). The Roman Dutch law originates from the Roman law, but is also influenced by Dutch customary law. The Roman Dutch Law is a system of law that is derived from judges' decisions (which arise from the judicial branch of government), rather than statutes or constitutions (which are derived from the legislative branch of government). Common laws originated and developed in England and are based on court decisions and on the doctrines implicit in those decisions. Common laws can be found in written forms, in textbooks on law and in reported court cases.

Sometimes, common law can be amended because there might be a need for a change in the existing common law. Parliament can change the common law by passing statutes, which say something different to the existing common law. For example, if the existing law says that people have no right to kill wild animals but the law makers want people to have the right to kill wild animals; the law makers need to change the common law by passing a statute, which says people have now the right to kill wild animals.

2.7.3 Customary law

According to Hinz and Jaos (2000) customary law can be regarded as a set of norms which the actors in a social society abstract from practice and which they invest with binding authority. Customary, or “indigenous law” as it is sometimes called, is a source of law that provides a set of legal rules. In Namibia, this is particularly important for the allocation of communal land. It can be distinguished from western or general law in that it is generally unwritten and therefore survives in an oral tradition. Customary law should be seen as the way in which traditional leaders uphold customs within their respective communities. The parliament has the power to change customary law by passing a statute that applies to all communities in Namibia (LAC 1996).

Many places in rural areas of Namibia are still applying customary law. For example, if someone wants to own land for cultivation at a village, he/she needs to contact the traditional leader of that particular village and ask for permission before he/she can occupy the land. Many rural areas in Namibia

have reasonably developed customary rules relating to land, administration, hunting and forests (Hinz 1999). In contrast the rules applicable to the management of other resources, such as water and inland fisheries are less clear.

According to Article 66 (1) of the constitution, *"both the customary law and the common law of Namibia that were in force on the date of independence, shall remain valid to the extent to which such customary or common law does not conflict with the constitution or any other statutory law"* (Constitution of Namibia, 1990:38). Article 66 (2) adds *"subject to the terms of the constitution, any part of such common law or customary law may be repealed or modified by act of parliament and the application thereof may be confined to particular parts of Namibia or to particular periods"*.

According to Hinz (2006), most of the Namibian customary law dominates daily legal life in the rural parts of Namibia, but some of the customary rules are not convenient for the needs of the people anymore. It can be stated that some communities no longer have working customary law systems (Hinz 2006). This can be associated with social changes that may have occurred in recent years, especially after independence. For example many young people leave their villages (where customary law is more relevant) to settle in urban areas where customary law is irrelevant and people have access to lawyers and state courts. All these elements provide the opportunity for customary law to become weak.

Given article 66 (1) of the constitution, customary law has been put, in principle, on an equal footing with all other laws of the country (Hinz and Joas 2000). It has the right and duty to be seen against the constitution and in particular its human rights provisions, as outlined in chapter three of the constitution. Customary law is relevant in the context of biodiversity because many people who are highly dependent on natural resources are living in rural areas where customary law is more applicable and where traditional knowledge is more practiced. Therefore it should be noted that customary law in rural areas should be used as a guideline to direct the rural communities in terms of natural resources use. In general all villages in rural areas in Namibia are under the authority of a headman/headwomen, deriving his/her authority from the traditional authority. Traditionally, leaders are selected by the communities or can inherit the position through family bonds. The roles of traditional leaders are to maintain law and order, to make decisions over land ownership and allocation, to conduct traditional hearings, act in an advisory capacity within policy-making processes through advice-giving and to uphold traditional rights, customs and culture of the people.

2.8 Namibia and international conventions

2.8.1 Environmental background under UN conventions

The United Nations Conference on Environment and Development (UNCED) or "Earth Summit" was held in Rio de Janeiro, Brazil, 3 - 14 June 1992. This global conference was held on the 20th anniversary of the first international Conference on the Human Environment in Stockholm, 1972 and brought together policy-makers, scientists, media and NGO representatives from 179 countries in an effort to reconcile the impact of human socio-economic activities on the environment (Corell 1999).

A major achievement of UNCED was Agenda 21, which is a comprehensive plan of action to be implemented globally, nationally and locally by organizations of the UN system, governments and major groups in every area in which humans impact the environment (Corell 1999). The Earth Summit decisions were followed by several important international events, such as the World Summit on Sustainable Development (WSSD), held in Johannesburg, South Africa in 2002. The WSSD aims were to look into what has been accomplished since the Earth Summit of 1992 and how participating countries have been implementing Agenda 21 and what obstacles have they encountered.

UNCED recommended the integration of conservation and sustainable use of biodiversity into all national and international economic decision-making processes and agreements (Barbier *et al*.1995). As a result, international institutions have begun to design agreements recognizing that biological diversity resources have global significance.

Namibia is a signatory to many international and regional treaties[6] concerning environment and natural resources and has implemented programmes referring to signed conventions e.g. Napcod (UNCCD), NBP (UNCBD) and NBSAP (UNCBD). Regional agreements are signed with neighbouring countries[7], e.g. Angola, Zambia, Botswana, and South Africa on shared watercourses, wildlife management and law enforcement, energy, mining, forestry and fisheries (NPC 2006).

The most important convention for biodiversity is the UNCBD. The United States of America is the only industrialised nation that has not signed the UNCBD. This is because the convention was a threat to

[6] A treaty is an agreement under international law entered into by actors in international law, namely states and international organizations. Treaties are called by several names: treaties, international agreements, protocols, covenants, conventions, exchanges of letters or exchanges of notes

[7] Example: Treaty on shared watercourse systems in the Southern African Development Community region, signed at Johannesburg in June 1995; African convention on the conservation of nature and natural resources etc.

its biotechnology industry, which uses the resources of the third world for its own commercial purposes (Corell 1999). The UNCBD is the first ever initiative to address biodiversity comprehensively through a binding global treaty, which helped many countries to link biodiversity conservation to sustainable development. Namibia is a signatory to several Rio-conventions, of which three biodiversity related conventions are discussed in this study.

- United Nations Convention on Biological Diversity (UNCBD)
- United Nations Conventions to Combat Desertification (UNCCD)
- United Nations Framework Convention on Climate Change (UNFCC)

All three Rio-conventions presented in this study are relevant because they deal with issues of biodiversity conservation and policies implementation on international, regional and local level. Each of the three conventions will be discussed below.

2.8.2 United Nations Convention on Biological Diversity (UNCBD)

The UNCBD is one of the global UN-based instruments in which Namibia is active. Namibia signed the UNCBD in Rio at UNCED in June 1992, and ratified[8] it in March 1997. The following year an initial review of biological diversity was published as the country study.[9] This review in effect reflects government policy on the implementation of the UNCBD. Since then Namibia has actively implemented obligations under the convention. This convention specifies the importance of preserving species at local, regional and international levels and provides some general guiding principles for the achievements of this goal (UNCBD 2004). The three primary objectives of the convention are:

1) The conservation of biological diversity;
2) The sustainable use of biological diversity;
3) The fair and equitable sharing of the benefits arising from the use of genetic resources.

The convention recognises the critical role of local communities in biodiversity conservation through Article 8 (j) while Article 11 recognises the importance of a resource management based approach to encourage local communities to conserve biodiversity. This convention is relevant to this study because

[8] Ratification is a confirmation of a signature to signify that a party intends to be bound by the provisions of a treaty. For example: After signing the UNCCD or the Kyoto Protocol, a country must ratify it, often with the approval of its parliament or other legislature body.

[9] Barnard, P and National Biodiversity Task Force; *Biological diversity of Namibia-a country study;* Ministry of Environment and Tourism, Windhoek (1998).

it laid a foundation for regional, sub-regional and national action plans to avoid the loss of biodiversity. The UNCBD also recognises the importance of addressing land degradation and highlights the role that combating desertification and deforestation can play in conservation and sustainable development goals (UNCBD 2004). Article 10 (d) of this convention emphasises the need to address the problems associated with degraded land by calling all states that are signatory to this convention to support local populations to develop and implement actions in areas where biodiversity should be conserved (UNCBD 2004).

2.8.3 United Nations Convention to Combat Desertification (UNCCD)

Namibia was one of the first African countries to sign the UNCCD in 1994 and it ratified the convention in May 1997. Since then Namibia has been an active member of the African group and presented two reports on national implementation[10]. The Convention focuses more on the plight of Africa, and aims especially to address issues such as food security, environmental conservation and sustainable development (UNCCD 2003). Namibia's programme to combat desertification (Napcod) was launched in the same year (1994) when the UNCCD was signed. Napcod was formed to address socio-economic as well as biophysical aspects related to land degradation (Napcod 1994). Between 1994 and 1999, Napcod worked towards raising awareness about causes and effects of land degradation, both on national and local levels (Klintenberg 2007).

The whole idea behind UNCCD is to improve the lives of people who are vulnerable to land degradation and desertification (UNCCD 2003). UNCCD has more or less similar objectives as UNCBD, although the underlying institutions and mechanisms are different in the UNCCD (UNCCD 2003). The objectives of this convention are summarised in the box below.

Box 2: *The main objectives of UNCCD* (UNCCD 2003)

In summary the UNCCD attempts to address the issues of poverty and desertification in rural areas by:

- Recognising that grassroots resource users are central to identifying and

[10] Bethune S; *Namibia's First National Report on the Implementation of the UN Convention to Combat Desertification,* Presented at the 4th Conference to the UNCCD, held in Bonn, 11-12 December (2000);
Bethune S; Pallet J; *Namibia's Second National Report on the Implementation of the UN Convention to Combat Desertification*; Presented at the first session of CRIC-UNCCD, held in Rome, November (2003).

implementing solutions to desertification;

- Attempting to adopt a bottom-up, participatory approach in all phases of the development process;
- Emphasising the need for an incorporated, partnership based approach to fighting desertification.

2.8.4 United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC is an international environmental treaty produced at the UNCED. Amongst other objectives, the treaty is aimed at reducing emission of greenhouse gas in order to combat global warming (UNDP 2002). The UNFCCC above all recognises the link between, biodiversity loss and climate change as a result of deforestation and emphasizes the role of biodiversity conservation as well as sustainable land and forest management in the mitigation of global warming.

The treaty originally set no mandatory limits on greenhouse gas emissions for individual nations and contained no enforcement provisions; it is therefore considered legally non-binding. Rather, the treaty included provisions for updates (called "protocols") that would set mandatory emission limits (UNDP 2002). In addition the Kyoto Protocol, which has become much better known than the UNFCCC itself, also focuses on the issues of greenhouse gas emissions.

The Kyoto Protocol is an international agreement reached in 1997 in Kyoto, Japan to address the problems of climate change and global warming. The Kyoto Protocol commits 38 industrialized countries to cut their greenhouse gas emissions. The UNFCCC was opened for signature on May 9, 1992 for all countries to sign. It entered into force on March 21, 1994. Namibia ratified the UNFCCC on 16 May 1995. Studies since then have confirmed that Namibia's contribution to greenhouses gases is negligible but as a largely semi-arid country it is highly vulnerable to predicted climate changes, particularly increased temperature, resultant increase in evaporative losses, increasing variable rainfall patterns and an estimated sea level rise of 0.3 to 1.0 meter by 2100[11].

In Namibia the stated objective is "to achieve stabilization of greenhouse gas concentration in the atmosphere at a low enough level to prevent dangerous anthropogenic interference with the climate system" (UNDP 2002). Namibia does not have a national policy yet that specifically addresses climate change, but the state has recognized the need for such a policy. That is why the Namibian Climate

[11] MET; Namibia, Initial National Communication to the United Nations Framework Convention on Climate Change July 2002; Ministry of Environment and Tourism, Windhoek (2002)

Change Committee (NCCC) was established in 2001. Its main functions are to advise and make recommendation on climate change in order to meet Namibian obligations to the UNFCCC. The NCCC is made up of representatives from government, NGOs, parastatals and the private sector.

Although Namibia is not a significant source of greenhouse gases, the country is vulnerable to climate change, since most of its economy is reliant on ecological production and its people depend on agriculture, mining, tourism, and fisheries for their existence. The need exists also to reduce exhaust emissions and seek alternatives to fossil fuels for energy generation such as renewable energy to help minimize the emission of carbon dioxide in the atmosphere. This is being done in Namibia by harnessing solar and other forms of renewable energy.

To promote synergies between the three conventions, joint work programmes are being developed to address issues that pertain to all three environmental convention concerns. These joint programmes aim to achieve multiple global benefits including poverty alleviation, ecosystem stability, watershed protection and climate regulation (Global Environmental Facilities 2003). It is also important to know that there are linkages between the UNCCD, the UNCBD, and the UNFCCC. This is important for people and institutions implementing the three conventions to prevent duplication of efforts and ensure synergies. Close relationships exist between the causes and impacts of desertification, biodiversity loss and climate change and therefore it is not surprising that the three conventions share commonalities regarding goals, legal obligations and institutional arrangements.

All three conventions are of relevance to this study, because they address the aspects of land degradation, climate change and desertification. It is well known that biodiversity is an aspect that is reduced by degradation. UNCBD itself forms part of legislation that has resulted in the implementation of policies related to biodiversity in Namibia. Biodiversity is strongly hypothesized, and it will be affected by global climate change. This convention (UNFCCC) also relates to biodiversity in Namibia.

Chapter 3: Methodology

3.1 Methods and materials

The methods applied in this study include a desktop survey of existing information and knowledge on biodiversity policies in Namibia, supported by the collection of primary data during field trips to the Omusati and Kavango Regions. Three key instruments were used:

1) A qualitative review of existing policies related to biodiversity in Namibia;
2) Interviews with rural community members in two rural areas; and
3) Interviews with those involved in policy formulation, implementation and evaluation (policy makers) in Namibia.

There are several policy instruments that deal with biodiversity issues in Namibia. However, based on the assessment of various policies relevant to biodiversity conservation, six policies were selected for analysis and discussion in this study *(the reasons why these six policies were selected are discussed in Chapter 4)*:

1) Environmental assessment policy (1994)
2) National Agriculture Policy (1995)
3) National Land Policy (1998)
4) National Water Policy White Paper (2000)
5) National Forestry Policy of Namibia (2001)
6) Namibia's Aquaculture Policy (2001)

The following questions were taken into considerations for the assessment of the six policies:

1) A concise history of the policy.
2) Why was this policy developed?
3) What are the main objectives of this policy?
4) How does this policy contribute to the conservation of biodiversity in Namibia?
5) Does this policy influence the conservation of biodiversity in practice?
6) What is the institutional set-up for implementation of the policy?

3.1.1 Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis method

The SWOT analysis method was used to assess all six selected policies in this study. Although this type of assessment does not provide an analytical means to determine the importance of identified factors or the ability to measure decision alternatives (according to these factors), it pinpoints deficiencies and strengths. According to Boone and Kurtz 1999 the SWOT analysis is very effective because it helps identifying strengths and weakness, and examines the opportunities and threats at the same time. Boone and Kurtz (1999) further explained that, the SWOT analysis method can be very subjective and it's not advisable to rely on this method too much. This is because people rarely come up with the same final version of SWOT. Some experts such as Hill and Westbrook (1997) suggest that when using this method for analysis, one should not be concerned about elaborating on the point captured. When using the SWOT analysis method bullet points may be the best way to begin (Hill and Westbrook 1997). In this study the SWOT analysis method was kept simple and short to avoid complexity and over analysis. The decision to use the SWOT method for the analysis of the six policies was based on the following facts: The SWOT analysis is a very flexible method and it can be used in a variety of scenarios. In addition this is a simple method that can be engaged in all sort of analysis and it can offer a powerful insight into the potential and critical issues in different aspects based on individual opinion. The assessment of the six policies related to biodiversity using the SWOT method in this study was done in the following ways:

- By reading and summarizing the most important points in each of the six policy document selected for evaluation
- Capture the SWOT from the summarized points and list them in bullet points in a table at the end of each summarized policy.

The SWOT analysis is a straightforward method that provides direction and serves as a basis for the analysis of policies assessed in this study. It accomplishes this by assessing the policies strengths (what the policy can do) and weakness (what the policy cannot do) in addition to opportunities (potential favourable conditions for the policy) and threats (potential unfavourable conditions for the policy).

3.1.2 Qualitative data collection: Interviews

Two different questionnaires were designed (see Appendix A). One questionnaire was designed for policy makers at the national level and the second one was designed for rural communities at the local level. The two questionnaires posed different questions, with different emphasis and were different in theme and content. The questionnaires were designed in such a way that they started with a general introduction aimed to create a relationship with the respondents.

Interviews with the local communities were based on semi-structured questionnaires aimed at members of individual households. Relevant stakeholders in the study areas, such as traditional leaders as representative of traditional authorities, were also interviewed using the same questionnaire. Semi-structured interviews were also conducted in Windhoek[12] with relevant policy makers in government and the private sector (see chapter 5).

The interviews were built around a set of basic questions, which were followed up with other questions depending on the answers from each respondent (see Appendix A). The main reason for keeping the questions open-ended was to allow the respondents to express what they feel, think, and to allow them to talk freely. In addition, this format was followed to allow the respondents to answer in their own words, free of influence from any specific alternatives suggested by the interviewer.

Each interviewee in Omusati and Kavango Regions was asked 14 key questions, if possible additional questions were asked to gain extra information about the topics raised during the interview. The interviews with the local communities were centred on the following categories:

1) Assess individual knowledge of local community members about policies related to biodiversity
2) Assess whether policies related to biodiversity have influence on the sustainable use of biodiversity in local communities
3) Identify the involvement of local communities in the formulation of policies related to biodiversity
4) Identify the type of action that is taken pro-actively as a result of a policy related to biodiversity

[12] Windhoek was selected because most of the people who are involved in policy development are based in the national capital.

3.1.3. Identification of interviewees

Considering the objectives of the study, representatives from government institutions at national level who are involved in policy development were targeted as potential interviewees (i.e. not all were interviewed). Various members of the community in the study areas at local level were also identified as potential interviewees. Representatives from the following groups were interviewed (Table 1).

Table 1: Targeted interviewees at different levels of governance systems

Local level	**National level**
▪ Traditional leaders (headmen and headwomen) ▪ Members of the communities	▪ Government officials (government officials within MAWF, MET and MFMR)

3.1.4 Statistical analyses

In this study, statistics were calculated using the non-parametric Mann-Whitney U test[13] to assess and determine whether there was a significant difference on answers given by different respondents on their understanding and perceptions on policies related to biodiversity. The software Statistica[14] was used for this purpose. The statistical analysis was selected for this study because it entails a method that can be used to summarize or describe a collection of data, called descriptive statistics. In addition patterns in the data may be modelled in a way that accounts for randomness and uncertainty in the observations and then used to draw conclusion about the process or the area being studied.

The Mann-Whitney U test is calculated by dividing U by its maximum value for the given sample sizes, which is simply $n_1 \times n_2$. ρ is thus a non-parametric measure of the overlap between two distributions. It can take values between 0 and 1, and it is an estimate of, $P(Y>) + 0.5P(Y=X)$, where X and Y are randomly chosen observations from the two distributions (Dythan 2001).

Both extreme values represent complete separation of the distributions, while a P of 0.5 represents complete overlap. P is also known as the area under the receiver operating characteristic curve (Dythan

[13] Mann-Whitney U test is a non-parametric test for assessing whether two samples of observations come from the same distribution.
[14] Statistica is a computer software used when the Mann Whitney U test method is applied.

2001). The test involves the calculation of the statistic, usually called "U", where distribution under the null hypothesis is known. For example, P>0.05 means no significant difference between responses given by interviewees in the two study areas, whereas P<0.05 means that there was a significant difference between the responses given by the interviewees in the two study area. It is a commonly held belief that a Mann-Whitney U test is in fact a test for differences in medians. However, two groups could have the same median and yet have significant Mann-Whitney U test.

3.1.5 Strengths of Mann-Whitney U test

- A very intuitive method to use
- Relatively easy mathematics
- Robust, especially in areas where scale is skewed

3.1.6 Weaknesses of Mann-Whitney U test

- Difficult to obtain level of confidence
- Concentrate on P-values rather than estimation

3.1.5 Study areas

One of the selected study areas is a village called Onkani. Onkani is located in the Omusati Region (Figure 5) south west of the town of Oshakati in central northern Namibia. At the beginning of the study fieldwork Onkani was part of the Uuvudhiya constituency of Oshana Region. However, in 2007 the state reorganized the constituencies in such a way that Onkani became part of the Otamanzi constituency of the Omusati Region (Figure 6). According to the councillors of the Otamanzi and Uuvudhiya constituencies, the new demarcation was made because there were too many villages located in Uuvudhiya constituency that made it difficult for the councillor to effectively provide service to all the people. As a result, the Otamanzi constituency was separated from the Uuvudhiya constituency. Not all maps of Namibia have been updated to show the boundaries of the newly established Otamanzi constituency.

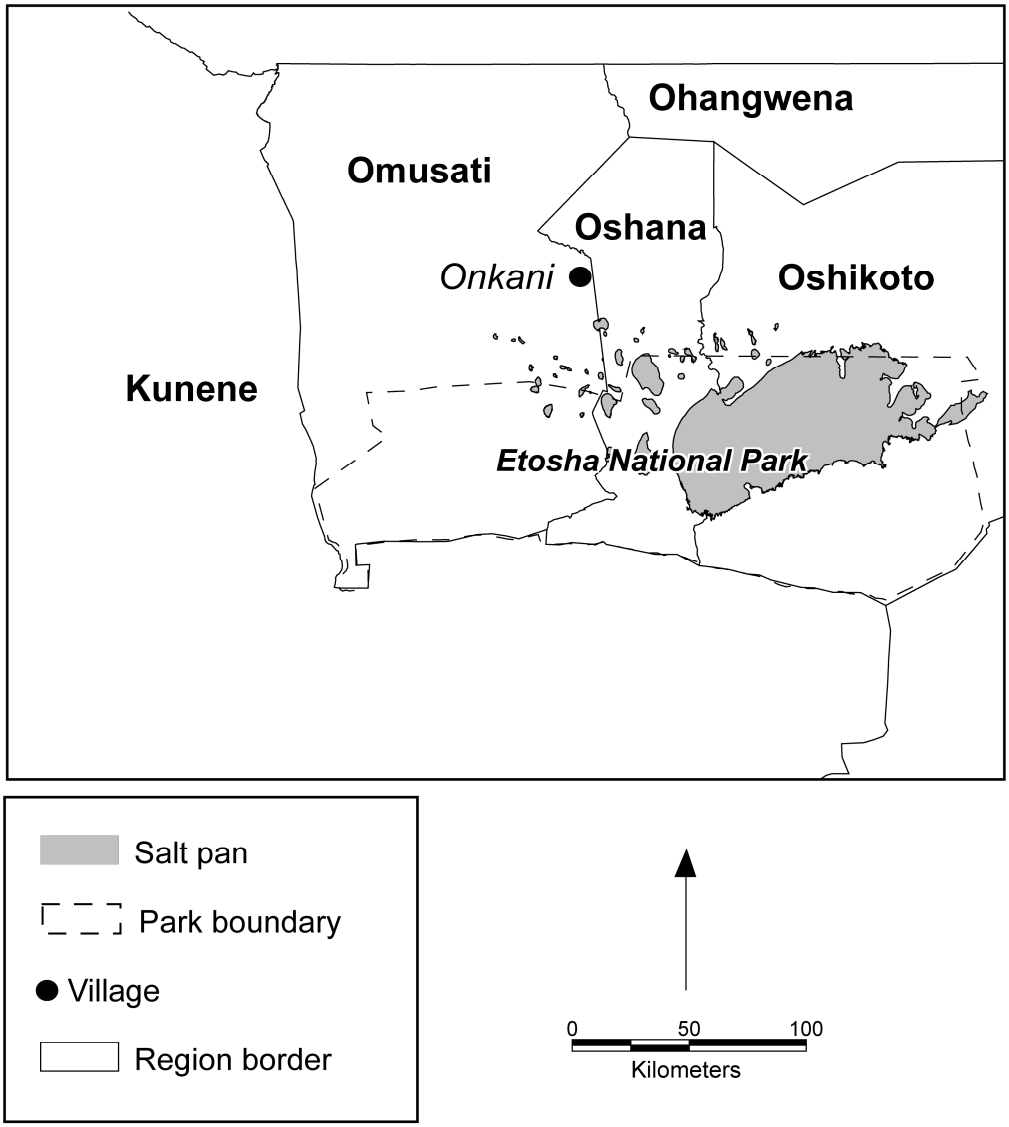

Figure 5: The location of Onkani in Omusati Region and the surrounding regions

The average annual rainfall in the study area is 400 mm, but rainfall is highly variable between years (Mendelsohn *et al.* 2002). The variability increases with increasing rainfall from southwest to north-east (Schneider 1999). Almost all the rain (96%) falls between November and April with a maximum in January, February and March, when two thirds of the yearly precipitation falls (Langanke 2001). With such dependency on rainfall variations, the timing and the quantity of rains has a major effect on the livelihoods of the local community. If not enough rain is received, harvests are poor and people may not even harvest enough for their food supply needs.

The mean annual temperature in Onkani is 23°C (Trippner 1998). The average daily maximum temperature for the hottest month (October) lies between 34ºC and 36ºC and the average daily minimum for the coldest (July) lies between 6ºC and 8ºC (Trippner 1998).

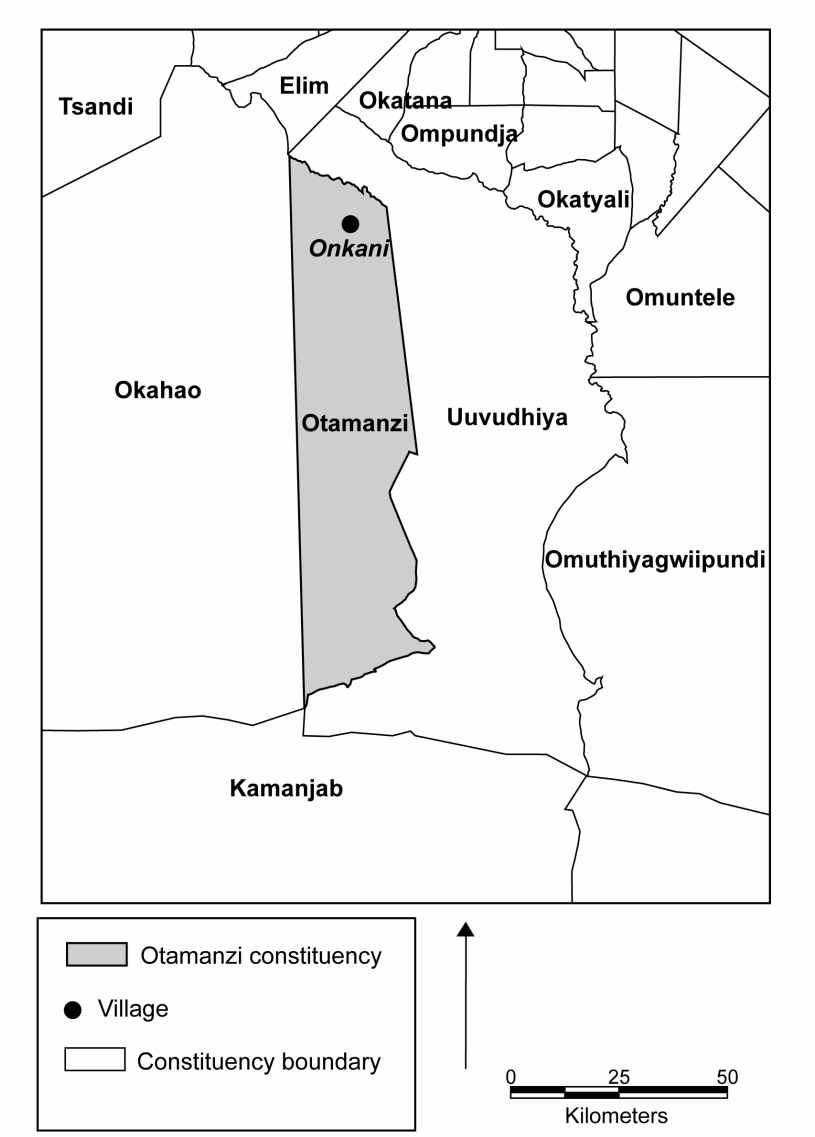

Figure 6: The location of Onkani in Otamanzi constituency and the surrounding constituencies

The entire constituency of Otamanzi is characterised by an extremely flat topography (Selanniemi *et al*. 2000). These flat plains are part of the Cuvelai, which is part of the larger Kalahari basin (Langanke

2001). There are no perennial rivers in this constituency, but numerous watercourses called oshanas[15], form a wide delta, which feeds the Etosha pan (Marsh & Seely 1992). The vegetation in Onkani can be classified as Mopane Savanna, with the dominant tree species *Colosphernum mopane* (Trippner 1998). The majority of people in Onkani depend on livestock farming with support by migratory seasonal grazing and agriculture. The main cereal crop in the region is millet (or *mahangu* in Oshiwambo) (Trippner 1998).

In the past, Onkani was inhabited by nomadic San and Himba people. Because of their small population numbers they lived in harmony with the environment and survived by hunting and collecting fruits (Trippner 1998). During the 1960s additional inhabitants came to the same area, as permanent residents, mainly *Oshiwambo*-speaking. These people came with the purpose of crop farming and livestock rearing (Trippner 1998). The area became gradually denser populated. Currently, there are more than eighty households and the population is still increasing. Consequently, the conditions of the land have changed with clear evidence of land degradation caused by human interference (Klintenberg 2007). At present some people are emigrating with their livestock from the northern part of the area to the south, towards the salt pan where grazing is better. Cutting of trees for wood and other household activities have been increasing significantly and as a result even more pressure on natural resources is likely.

The present local community in the study area still cultivates crops (mainly *mahangu*, beans, and watermelons). In this way subsistence farming activities play a major role in the daily life of the people residing in Onkani. Other forms of income are from cash remittances[16]. A few people have cuca-shops (small convenient shops that sell items for daily needs). Some people have left the area to work in the well-paid formal sector in towns outside the constituency. Currently the local community in the study area is facing several social problems such as high rates of unemployment, lack of adequate education facilities, (e.g. secondary and vocational schools), and poverty.

In Kavango Region data were collected in Epingiro 1 and 2 and Mboya, villages located about 8 km from Rundu in the Kavango Region (Figure 7). The constituency is called Kapako (Figure 8).

[15] Oshana is a word from Oshiwambo language, normally referring to an open space with watercourse that contain seasonal pools of water and grasses during the wet season.
[16] Cash remittance derives from migrant labours and pensioners.

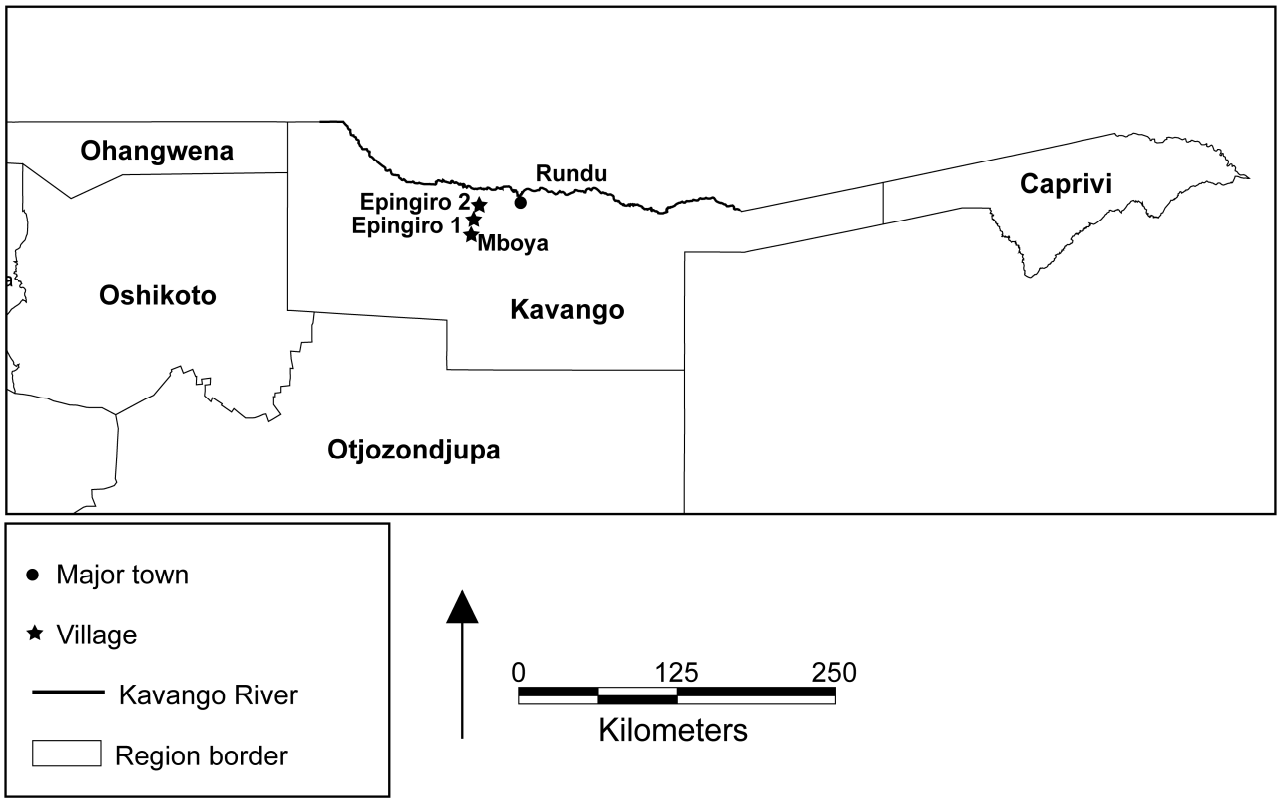

Figure 7: The location of the following three study areas: Epingiro 1 and 2 and Mboya in Kavango Region and the surrounding regions

The most significant geographical feature of the area is the Kavango River, which is also the border between Angola and Namibia. The average annual rainfall in the region is about is 500-600 mm per (Mendelsohn *et al.* 2002). Usually most of the rain falls between November and April. The entire region falls in the Kalahari woodland savanna with major soil types including coarse-grained sand (Mendelsohn *et al.* 2002). Savanna grows largely on deep Kalahari sandveld, plant life is being dominated by several species of tall trees that can form a moderately thick canopy in places (Mendelsohn *et al.* 2002).

The population pressure is high along the Kavango River with up to 100 people per square kilometre (Jones and Cownie 2001). The population densities in the study area range between 10 to 40 people per square kilometre (Jones and Cownie 2001). Due to this density, the land seems to be under pressure. This is determined by aspirations to generate short-term benefits through heavy resource extraction,

increased number of crop fields and shorten uncultivated periods. Grazing as a result also became more intense (Jones and Cownie 2001).

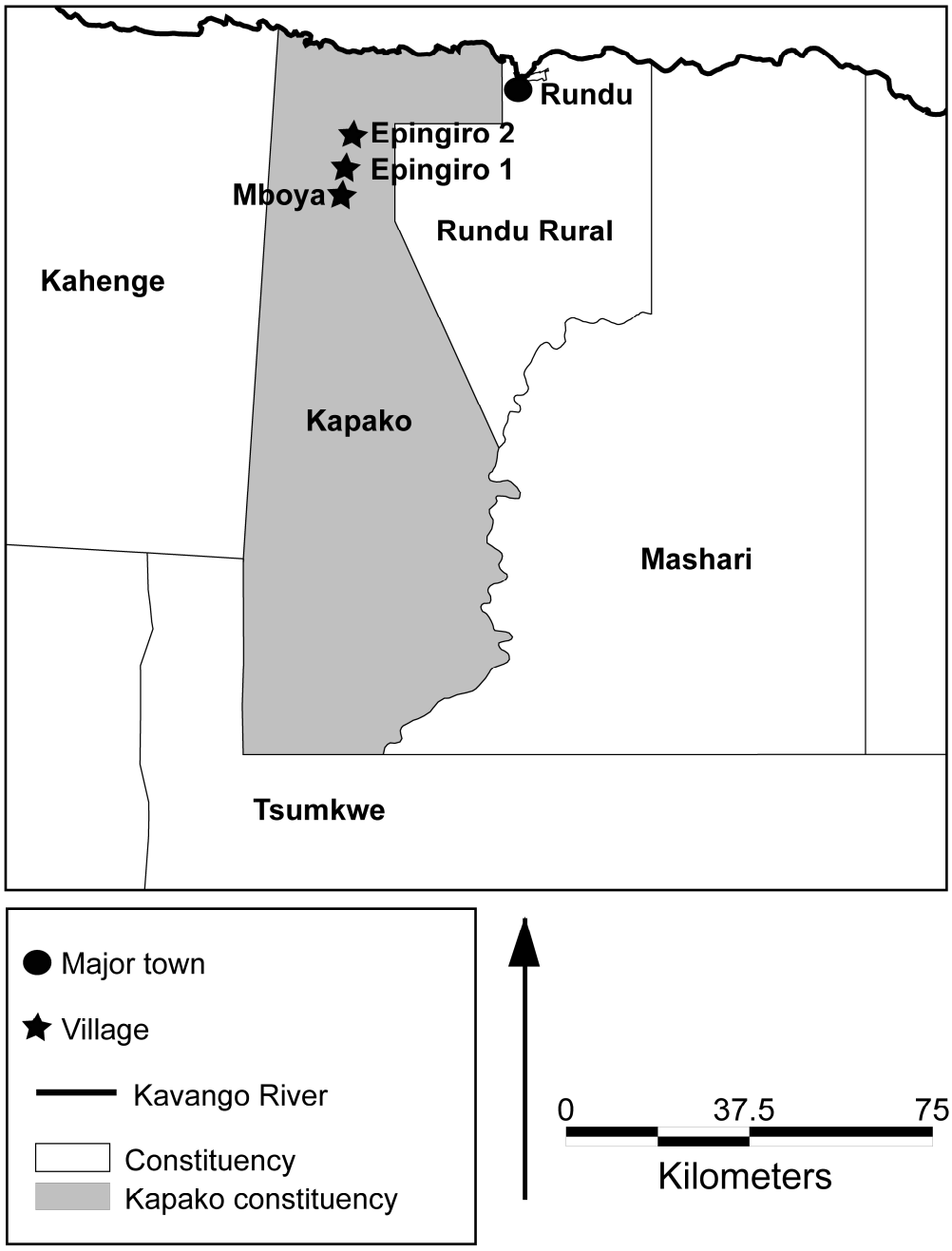

Figure 8: The location of the three villages under investigation in the Kapako constituency and the surrounding constituencies.

All three villages in Kavango Region where interviews were conducted reflect typical characteristics of villages away from the river. Many of the villagers in the research area are not well educated and they have a very strong belief in their traditional leader, known as the *hompa*. The farmers in this area keep livestock, and the major crops cultivated are millet, maize and sorghum, grown together with different sorts of beans, melons and pumpkins (Jones and Cownie 2001).

The three villages are close to one another and it's not easy to differentiate them geographically. For this reason the three villages were handled as one for the interviews. In contrast with Onkani, people in the Kapako constituency live together in dense rural conurbations instead of individual settlements.

The local communities of the selected areas have much in common; they depend on natural resources, and both study areas have a relative high population density (at least in a Namibian context), which means continuous pressure on natural resources.

In terms of gender-based differences in livelihood activities in both study areas, men are responsible for the livestock; women have no role to play in the management of livestock except where they head the household. Sometimes the women may direct activities, but the male children or other men will do the actual work. Men are also responsible for ploughing the fields and preparing them for planting. Ploughing is physically demanding work and considered as unsuitable for women. Women are responsible for planting crops and for weeding the crop field (but sometimes weeding can also be done by men and women together) with hoes. Women are also the ones mainly responsible for harvesting crops.

With regard to building houses, men are responsible for cutting the poles and building the basic structure of the house. They are also responsible for thatching the roof. Women in turn are responsible for cutting the grass for thatching. With regard to household tasks, women are responsible for preparing food while men make the fires. Men collect large quantities of firewood using donkey carts for transportation, while women sometimes collect smaller quantities of firewood closer to the house. Women look after the children, care for the chickens, do the washing, and clean the courtyards. They also do the pounding of *mahangu* and maize for consumption purpose. Both women and men are responsible for fetching water. Men do so in larger containers, using donkey carts as means of transportation, while women and children use smaller containers, which they carry. Fishing is both a responsibility of men and women.

The interviewees from the study areas are in general poor, lacking many basic facilities, living under relatively hard conditions. For example in both study areas there were no sanitation facilities; local communities use the bush. Although it may be more acceptable in dispersed low-density rural villages, sometimes faeces can be dangerous pollutants. According to the 2001 Population Census, only 13.4 per cent of the Namibian population had access to a private flush toilet or a shared one. Eighty-three per cent made use of the bush to answer the call of nature.

In order to generate income a few people in the study areas have cuca-shops, selling a variety of products such as canned fish, salt, bread, sweet, beer, *tombo,* cooking oil, cool drinks, flour, rice, sweet aid, candles and matches. Apart from these shops there is also an open market where meat is sold, but this was only observed in Onkani.

The local communities in both study areas depend primarily on the land on which they live. As subsistence farmers, they depend on access to land for crop production and grazing, rainfall and other natural resources. Their main livelihoods are derived from rearing livestock and growing crops.

Chapter 4: Assessment of Namibian policies related to biodiversity, using the SWOT analysis tool

Namibia has developed a number of policies related to biodiversity that are aimed to contribute to the sustainable use and management of these resources. In this regard the influential role of the constitution cannot be overemphasized. Despite these noble intentions, there is high pressure on land and natural resources that leads to the loss of biodiversity. Most people in Namibia are highly dependant on natural resources for many aspects of their livelihoods. The high population density impacts the environment and affects the quality and availability of natural resources because of the high human pressure on these resources.

Of most relevance to the assessment in this study are those policies related to biodiversity that deal with land, water, forestry, agriculture, aquaculture and the policy that makes provision for assessing the impacts of development on the environment. There is a need to assess these policies in terms of conservation of biodiversity in Namibia in order to determine their efficiency and appropriateness. Assessment of the six policies links the understanding of local communities of policies with the use of natural resources and socio- economic development.

The assessment of these policies will thus help to determine whether these policies make a positive contribution on the maintenance, sustainable use and wise protection of biological diversity and ecological systems, especially in areas where agricultural activities take place and population pressures are high. In this chapter, summarized background information for each policy is provided, followed by the SWOT analysis evaluation of all six policies and finally an overall SWOT of all policies related to biodiversity.

4.1 Environmental Assessment Policy (1994)

4.1.1 Policy background

The Environmental Assessment Policy was approved by cabinet in August 1994 and provides the framework for environmental assessment, including those assessments to be undertaken in respect of water supply schemes and other water consumptive developments (MET 1994). As a guiding principle, this policy states that Namibia shall place a high priority on maintaining ecosystems and related ecological processes and maintaining maximum biological diversity. The policy furthermore recognises that environmental assessments are a key tool towards implementing integrated environmental management. The policy will gain legislative backing once the Environmental Management Act No 7 of 2007 has become a law. In the meantime the policy serves to guide developers who need to conduct environmental assessments. The Ministry of Environment and Tourism has taken the responsibility to inspect Environmental Impact Assessments (EIAs), to conduct environmental contracts to ensure necessary measures, to mitigate environmental impacts and, to monitor new developments, essentially following the steps as set out in Appendix A of the policy.

Environmental objectives rank high among the strategic objectives of the Environmental Assessment Policy as formulated in the overall policy document. Environmental issues are interpreted as cross-sectoral issues that must be addressed in an appropriate manner depending on the nature of the project. The Environmental Assessment Policy promises to ensure that all projects initiated by the government or private sector are subjected to a proper EIA. The process of environmental procedure is described in Figure 9. According to the Directorate of Environmental Affairs of the MET, the state will ensure that the environmental consequences of development policies and development projects are considered and incorporated during the planning process of a project. In general, EIAs are used by planning authorities to provide objective information about the environmental impacts of proposed projects, as a basis for sound decision making. A full EIA typically consist of four phases: Scoping phase; impact assessment phase; reporting phase and decision making phase.

The Environmental Assessment Policy states that (MET 1994):

- The standard of setting and maintaining sustainable development must strengthen all policies, programmes and projects undertaken within Namibia, specifically with regards to the wise use of natural resources;
- The country should follow an active administrative and legislative programme to achieve Integrated Environmental Management;
- Namibia shall put a high priority on maintaining biological diversity by ensuring the survival and promoting the conservation in their natural habitat of all species of fauna and flora, in particular those which are endemic, threatened, endangered, and of high economic, cultural, educational, scientific and conservation interest.

The main objectives of the Environmental Assessment Policy are to (MET 1994):

- Better inform decision makers and promote accountability for decisions taken;
- Consider a broad range of options and alternatives when addressing specific policies, programmes and projects;
- Promote public participation and involvement by all sectors of the Namibian community in the EIA process;
- Take into account the environmental costs and benefits of proposed policies, programmes and projects,
- Incorporate internationally accepted norms and standards where appropriate to Namibia;
- Take into account the secondary and cumulative environmental impacts of policies, programmes and projects;
- Ensure that the EIA procedure is paid for by the proponent;
- Promote sustainable development in Namibia, and especially ensure that a reasonable attempt is made to minimize anticipated negative impacts and maximize the benefits of all developments.

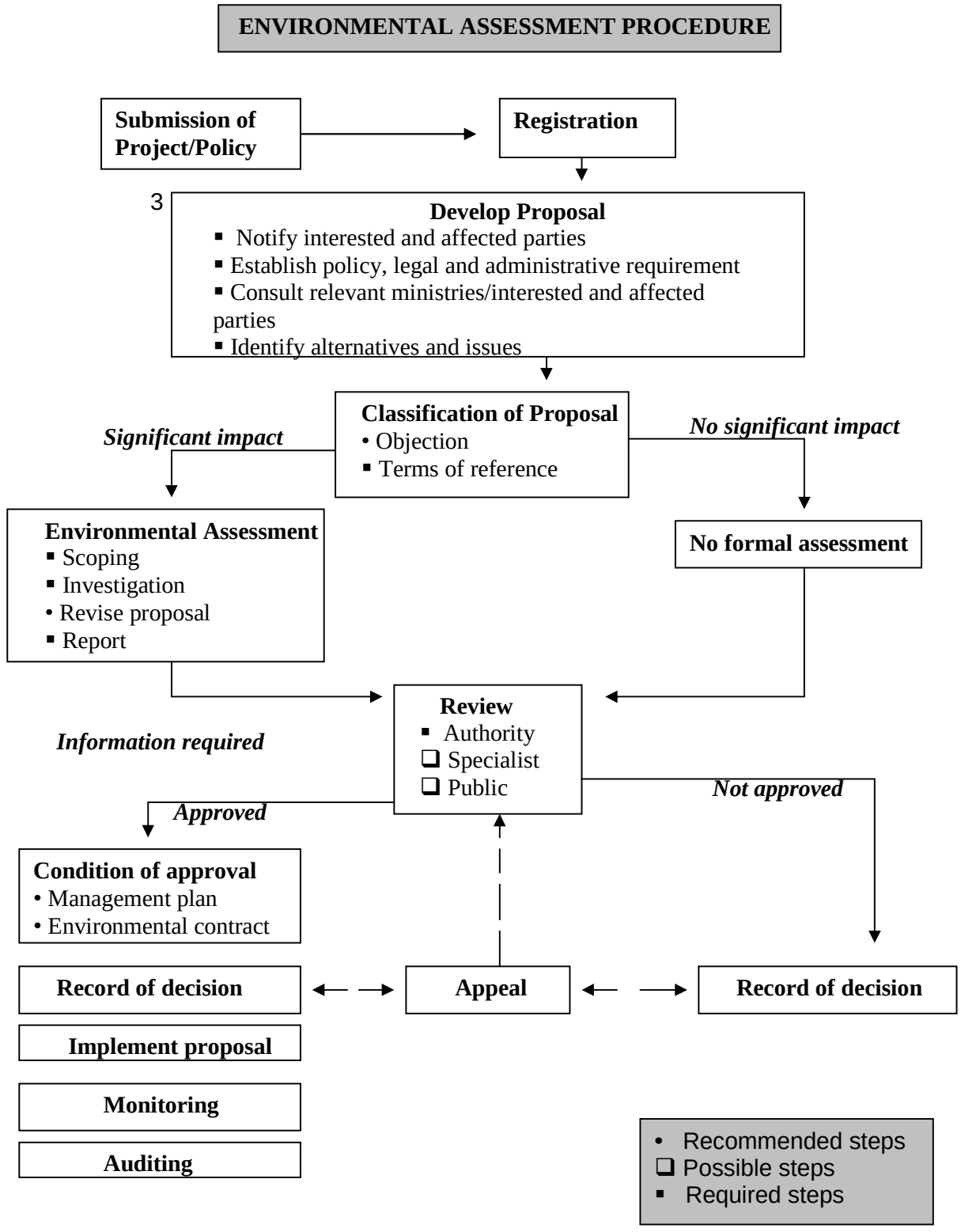

Figure 9: An example of environmental assessment procedures (MET 1994 as adapted)

Table 2: SWOT analysis for Environmental Assessment Policy of 1994

Strengths - Promote public participation and involvement by all sectors in Namibia in the EIA process - Provides the frame work and procedures for environmental assessment - It encourages the maintenance of biological diversity - Supports the sustainable use of natural resources - Provides clear objectives about the environmental impact of proposed projects, as a basis for sound decision making -Raise issues of concern and make suggestions for alternatives and enhanced benefits
Weaknesses - Lack information about the actual effectiveness of how this policy will tackle the issues of biodiversity - A very complex frame work because it is not easy to understand the procedures - Too many ambitious objectives
Opportunities - The policy will gain legislative backing after the promulgation of Environmental Management Act No 7 of 2007 - Provides an opportunity to the public to voice their concerns on issues that faces development in the country - Create an opportunity for the public to influence the course of the investigation and review the findings of independent studies on the impacts of development
Threats - Limited political acceptance of enforcement - Poor governance and political interference are foreseen as threats to EIA in Namibia

In conclusion this legislation provides for the undertaking of Environmental Assessment for activities with a potential impact on the environment. This policy recognizes that environmental assessments are the key tool towards implementing integrated environmental management. The policy is not yet fully implemented but it will soon gain legislative backing once the Environmental Management Act No 7 of 2007 has become a law.

4.2 National Agriculture Policy (1995)

4.2.1 Policy background

The implementation of the National Agricultural Policy started in 1995, following the restructuring of various policies in agricultural sectors. The aims of the National Agriculture Policy are largely economic and focus on increasing agricultural productivity, real farm incomes and to contribute to national and household food security. It recognises the limitations imposed by the Namibian climate and soils and seeks to promote sustainable use of land and other natural resources within the context of a vulnerable ecosystem.

Potential problems such as deforestation, soil erosion, bush encroachment and over-grazing are addressed. The National Agriculture Policy recognises that water resources in Namibia are limited and that growth within the agricultural sector should not be at the expense of the natural environment. Furthermore, it encourages the use of environmental assessments for agriculture projects and proposes a review of legislation related to agrochemical (pesticide and fertilizers) use. This policy also promotes the role of the state as a facilitator of private sector development, by providing a favourable macro-economic environment and by conducting research (MAWRD 1995). The policy aims to achieve the following objectives:

- To achieve growth rates and stability in farm income, agricultural productivity and production levels that are higher than the population growth rates;
- To ensure food security and improve nutritional status;
- To create and sustain viable livelihoods and employment opportunities in rural areas;
- To improve the profitability of agriculture and increase investment in agriculture;
- To improve the standards of agricultural products in Namibia;
- To improve the living standards of farmers and their families as well as farm workers;
- To promote the sustainable use of natural resources; and
- To contribute to balanced food production in rural and regional development.

The fifth chapter of the National Agriculture Policy state the policy's four long-term goals ((MAWRD 1995).

- To revive and sustain economic growth;
- To create employment opportunities;
- To alleviate poverty; and

- To reduce inequalities in incomes.

The National Agriculture Policy overall goal is to increase and sustain the levels of agriculture productivity, real farm incomes and national and household food security within the context of Namibia's fragile ecosystems (MAWRD 1995). The fourth chapter of the National Agriculture Policy, under Sustainable Natural Resource Management, the policy indicates that agricultural activities will not be pursued at the expense of the environment (MAWRD 1995). It added that all Namibians who benefit from the country's natural resources are custodians of these resources and must accept responsibility for their sustainable management (MAWRD 1995). On the other hand, under land use and tenure security, this policy points out that the state will encourage communal and commercial farmers to increase land productivity and to put idle and under-utilised land to more productive use (MAWRD 1995).

Table 3: SWOT analysis for National Agriculture Policy of 1995

Strengths - The policy supports the sustainable use of natural resources through productive agriculture - Emphasis on improving agricultural productivity and increasing national and household food security - Strive to alleviate poverty by means of productive agriculture - An established policy recognized by the state to be used as a guideline to tackle agricultural issues in the country
Weaknesses - Too many ambitious objectives - Lack information about the actual effectiveness of how this policy will tackle the issues of biodiversity
Opportunities - Human capacity development to implement the policy - Might increase the role and responsibility of government, once enforcement mechanisms are put in place
Threats - Lack of coordination within the line ministry can be foreseen as threat - Political interference

The national agricultural policy of 1995 is still in the process of implementation. However this policy important to Namibia because it aims within the limit set by the fragile ecosystem, to maintain or increase level of agricultural productivity. With the guidance of this policy, since 1997 two Acts have been under revision process, Act 36 of 1947 pesticide registrations and Act 3 of 1973 pest Act. This policy hopefully will be implemented soon because it has been long overdue.

4.3 National Land Policy (1998)

4.3.1 Policy background

The Namibian constitution highlights the principle of decentralization. One of the policy landmarks was the introduction of the National Land Policy (NLP). According to this policy all land rights have equal status before the law. This policy was initiated by cabinet in 1997 and the formulation of this policy started in October 1998, following the discussion of land issues in Namibia. The main purpose of the NLP is to "restore the spirit of national reconciliation constitutionality and nation building and the problem of dispossession, discrimination, and inequitable distribution of land of the pre- independence era" (MLRR 1998: iii).

The NLP is based upon the principles articulated in the constitution and on the national commitment to readdress the social and economic injustices (MLRR 1998), e.g. to give for free some of the land to the previously disadvantage people. The fundamental policy principles deal specifically with community livelihoods, desertification and biodiversity loss. In accordance with Article 95 (1) of the constitution, the national land policy requires environmentally sustainable land and natural resource use (MLRR 1998). The NLP accepts that "Land is a renewable natural resource and that tenure rights allocated will include all renewable natural resources on land, subject to sustainable use and subject to details of sectoral policy and legislation" (MLRR 1998:3).

Regarding urban land, the NLP (MLRR 1998) advocates (*inter alia*):

- The decentralisation of land administration to local authorities and the development of the necessary local capacity;
- All future development plans and projects should be examined to determine the impact they might cause to the environment.

Regarding rural land, the NLP advocates (MLRR 1998) (*inter alia*):

- The land administration in communal areas must be under the control of the Directorate of Land Reform.
- The sharing of land and natural resources between neighbours for mutual benefit will be encouraged (while all tenure rights are to be exclusive)
- The state will investigate the possibility of a programme whereby the customary grant holdings of large commercial herd owners are upgraded to leasehold or where these large commercial herd owners are transferred from the communal areas to commercial farms to relieve grazing pressure in the communal areas. Any such programme will specifically exclude dual grazing rights for the commercial farm owners in communal areas.
- A tax on freehold agricultural land to be introduced.
- Regional Land Boards to be empowered to introduce user fees for specific natural resources (in particular grazing land). These user fees are to be collected, managed and spent by Regional Councils (with financial supervision by the Ministry of Finance).
- Restitution of land rights will not form part of National Land Policy, although special support will be given to all landless and previously disadvantaged people.
- The policy aims to establish the Land Board, which promotes environmental protection, coordinated planning and management at national and regional levels.
- Financial and tax incentives are proposed for the protection and rehabilitation of natural environments (e.g. planting of indigenous trees and using alternative energy to reduce rates of deforestation and pollution).
- The enclosure of land to which individuals or groups do not have formal rights is unlawful and will be an offence, NLP declares an immediate end to any new fencing in communal areas and will undertake surveys to determine the extent of the problem.

Table 4: SWOT analysis for National Land Policy

Strengths
- An established policy recognized by the state to be used as a guideline to tackle land issues in the country - Recognizes the importance of sustainable use of natural resources

- Strives to improve human capacity - Encourages the promotion of environmental protection, at national and regional levels - Generally, the information in this policy is well presented
Weaknesses - It is unclear how land is allocated to the individual - The policy is not being fully implemented because it is in the process of becoming an Act - Too many ambitious objectives
Opportunities - Enhance equity of resources access in communal land - Enhance equity of land access nationally - Might increase the role and responsibility of government, once it is implemented
Threats - Political interference is foreseen as a threat - Lack of coordination to ensure smooth running of land use management practices - It may take time before this policy is implemented

In conclusion the National Land Policy of 1998 has been drafted into the Land Reform Bill of 2000, but it is not yet promulgated. The lack of clear policy and precise legislation concerning land tenure is the major drawback in implementing sound management of natural resources.

4.4 National Water Policy (2000)

4.4.1 Policy background

This policy is a product of a review process and arose from the need to address the challenges of Namibia's water resources. It forms part of the state's process to formulate a new water policy as part of a new approach for post-colonial management of water resources and improve access to reliable water supplies and services for the Namibian population (MAWRD 2000). The president launched the Namibian Water Resource Management Review (NWRMR) in March 1998. A task force was established, involving all stakeholders, to guide the work of the review and the technical team appointed. This team comprised Namibian specialists to undertake the detailed research and work of the review

(NWRMR 2000). The permanent secretary of the MAWRD chaired the task force, which comprised representatives from eight ministries; nine other government entities, including the NPC and the Office of the Prime Minister; academics and professional organisations, and major donors to the Review (NWRMR 2000).

The overall objective of the Review was to make recommendations that would enable Namibia "to achieve equitable access to, and the sustainable development of, freshwater resources by all sections of the population especially the rural and urban poor, in order to promote long-term social and economic development" (MAWRD 2000:8). The process towards achieving this objective and drafting the policy included:

- Examination of current water resources management practices,
- Identification of key issues and challenges,
- Extensive technical reviews of thematic areas, and
- Initiation of participatory processes and discussions on possible changes to the current regime water management with stakeholders throughout Namibia, particularly at regional level (MAWRD 2000:8).

The policy builds on groundwork already laid for the sustainable management of Namibia's water resources. The Review identified different themes to focus on and to guide them during preparation of this policy framework. These themes were:

- Strategic water resources assessment
- Shared watercourses
- Water use and conservation
- Economics and financing
- Institutions and community participation
- Human resources development (MAWRD 2000:8).

The basic principles of the Water Policy were derived from these themes and are reflected in the Namibian constitution, in existing national water-related policies, particularly the Water Supply and Sanitation Sector Policy (WASP), on a regional level, particularly SADC, and at international level, particularly in Agenda 21, which is one of the key documents of the 1992 Earth Summit. These principles are ownership, equity, promotion of development, economic values and sustainability,

capacity building, and shared watercourses. “These principles should be seen as over-arching and generic to all water-related policy decision making” (MAWRD 2000:24).

Of the abovementioned themes, priority was given to changes in the existing water resources management regime, institutional reform, and human resources development, because of the urgent need for effective implementation of this policy. The motto of this policy is “a policy towards integrated management of Namibia’s water resources with the participation of all Namibians” (Matros 2003:29) Thus, the notion of integration and participation are keys to the Water Policy.

In this light, the principles based on institutions and community participation are:

- Accountability (including transparency);
- Clarity and separation of roles;
- Stakeholder participation (institution will be designed to facilitate the participation of all stakeholders relating to water, especially rural communities and to facilitate feedback to high levels of government;
- Decentralisation (institutions should be structured so as to devolve decision making to the lowest appropriate administrative level, accompanied by the necessary human and financial resources and training for effective implementation) (MAWRD 2000:29).

To ensure broader stakeholder participation, the policy has divided water resources management and service-related institutions into four groups, namely;

- Management of the resources base, which will be responsible for control of abstraction, water conservation and environmental protection;
- Regulatory regime, which will be responsible for performance of water services, using regulatory controls and economic incentives;
- Delivery of services, which will facilitate and support an enabling environment for planning, design and operation of water services at appropriate administrative levels down to community; and
- Policy unit, which will develop and co-ordinate policy and strategies and monitor their implementation.

The service delivery institution (third bullet point) includes rural water supply services, with the objective that government’s decentralization and community management policies be progressively implemented. The role of the rural water supply service will be to guide the policy and oversee the implementation of primarily the Community Basin Management (CBM) strategy. To achieve this, the

policy outlines specific strategies to provide 'on-demand' or urgent, advice and support to regional councils responsible for managing services above community level. In this sense the policy also highlights institutional capacity building and human resources development, including re-design of training programmes to enable individuals such as extension workers, municipal operatives and Water Point Committee (WPC) members to increase their competence as service providers and users (MAWRD 2000).To further address the rights of stakeholders, the policy makes provision for "basic rights of stakeholders to access government-held information and data on the nation's water resources, to participate in water related decision making and to have access to water resources as provided for in the law" (MAWRD 2000:28).

The policy further recommends that Namibia adopt a "systematic approach to water resources management, using an integrated, multi-sector framework that considers issues such as decentralisation, social equity, ecological protection and economic growth" (MAWRD 2000:29).

The structure of the review and its activities were designed to capture national and local perspectives and build capacity for the implementation of any new policies strategies that emerge (MAWRD 2000). Implementation of this policy will require changes in the laws and manner in which water is utilised. For some, the changes may mean water restrictions, for others, it may mean improved access and greater equity (MAWRD 2000). The dialogue and consultation process is expected to lead to a process of enhancing a new water bill to replace the outdated Water Act, 54 of 1956.

Table 5: SWOT analysis for National Water Policy white paper of 2000

Strengths
- The implementation of some activities are taking place already at the grassroots level .e.g. local communities in many rural areas are now taking care of their own water points - Recognize the importance of natural resources - Address some of the challenges that face Namibia's water resources - Background information to the policy very well presented - Promote equitable access to freshwater resources, especially the rural and urban poor -A very well established policy recognized by the state to be used as a guideline to tackle water issues in the country
Weaknesses
- Unrealistic expectations (e.g. even the very poor people in rural areas are expected to pay for

water)
Opportunities - Human capacity development may be strengthened - Might increase the role and responsibility of the state, once enforcement mechanisms are put in place
Threats - Poor people may go back to hand dug wells to get free water, because they will not afford to pay for water - Political support but limited acceptance of key components e.g. cost recovery principles

To conclude, this policy has already been implemented. It provides the national framework for equitable, efficient and sustainable water resources management and water service. It recognizes water as a fragile national resources, identifies water scarcity as a natural constraint to development options, stresses the rights and obligations inherent in managing internationally shared resources and basin management. The fundamental principles outlined in the policy form the basis for the Water Resource Management Bill. The water Resource Management Act No 24 of 2004 has been developed as a result of this policy. In general this policy is the best that is implemented at the grass roots level. However for some its implementation may mean water restriction, for some it may mean improved access and greater equity.

4.5 National Forestry Policy (2001)

4.5.1 Policy background

The National Forestry Policy of 2001 is a product of the reviewed National Forestry Policy of 1992 and arose from the need to address the challenges that face Namibia's forest resources. This policy was initiated by the Directorate of Forestry under the Ministry of Environment and Tourism in 2001. The mission of the Directorate of Forestry is to "practice and promote the sustainable and participatory management of forest resources and other woody vegetation, to enhance socio economic development and environmental stability" (MET 2001:1). The policy was introduced when the Directorate of Forestry realized that there is a need for a policy that can be used as a guideline to manage forest resources in

Namibia in a sustainable manner. This policy recognizes the importance of natural resources on communal and commercial land and forest resources as state property (MET 2001).

Biodiversity is central to this policy that aims to: “Reconcile rural development with biodiversity conservation by empowering farmers and local communities to manage forest resources on a sustainable basis” (MET 2001:3). The policy identifies; “effective property rights, a supportive regulatory framework, good extension services, community forestry, and forestry and forest research, education and training”(MET 2001), as instruments essential to successful implementation of sustainable forestry management in Namibia. It paves the way for the establishment of community forests and their custodianship by the people most dependent on forestry resources (MET 2001).

Although this study only focuses on the assessment of recent policies related to biodiversity, it is important to recognize the fact that there has been forest legislation in Namibia before independence i.e. Forestry Act of 1968 and the Forest Ordinance of 1952. The National Forestry Policy of 1992 and 2001 then replaced the old legislation on forestry because they were outdated. The National Forestry Policy of 2001 indicates that over the years Namibia’s forests have suffered serious depletion. According to this policy the depletion of the forests is caused by the increasing pressure of human activities on forests as a result of poverty, under-development and high demand for forest resources. The four basic aims of the National Forestry Policy of 2001 are as follows:

- Reconcile rural development with biodiversity conservation by empowering farmers and local communities to manage forest resources on a sustainable basis.
- Increase the yield of benefits of the national woodlands through research and development, application of practices, protection and promotion of requisite economic support projects.
- Create favorable conditions to attract investment in small and medium industry, based on wood and non-wood forest raw materials.
- Implement innovative land-use strategies including multiple uses of conservation areas, agro-forestry and a variety of other approaches designed to yield forestry global benefits.

“The principle aims of the National Forest Policy of 2001 are to ensure environmental stability and maintenance of ecological balance which are important to the sustenance of all forms of life” (MET 2001:1). The policy also states that all uninhabited land covered with forests shall be administered by the Directorate of Forestry (MET 2001). The National Forestry Policy of 2001 is guided by the strategic

objectives derived from the strategic framework, with the sole purpose of defining areas and direction in which forestry development will take place. These objectives are to:

- Implement the forest policy, legislation and to educate the public on this key document
- Institutionalize the culture of strategic and forest management planning in the sector
- Implement the strategy of environmental forestry
- Implement the strategy for community involvement in forestry in the whole country;
- Uphold principles and practices of forest protection or conservation for national and global benefits;
- Promote and implement afforestation and reforestation programs;
- Conduct forest research and provide information for forest management;
- Institute a system for human resources development and organizational effectiveness; and
- Provide baseline data on and promote forest products and forest-based industries.

In a nutshell the National Forestry Policy of 2001 highlights the proposed policy actions that may enhance sustainable use of forests in Namibia. Criteria and indicators for sustainable forest management are recognized in this policy document as the parameters needed to assist in the assessment of the country's trend in forest conditions and forest management. This policy document also highlights the agreed criteria for the action plan that defines the most important components of sustainable forest management. These consist of biodiversity, socio-economic benefits and policy framework (laws, regulations, economic measures) needed to facilitate the achievement of forest sustainability in Namibia.

Table 6: SWOT analysis of the National Forestry Policy of 2001

Strengths
- An established policy recognized by government to be used as a guideline to tackle forest issues in the country
- Generally, the level of information on forest and biodiversity are well presented in the National Forestry Policy of 2001
- Good level of knowledge which may provide good basis for further development of activities in forest management
- It encourages optimization of forest resource use in Namibia
- The policy supports the sustainable use of natural resources

Weaknesses - Too many ambitious objectives -Responsibilities of activities not clearly allocated - Lack of human capacity - Limited coverage on forest issues in the whole country -Lack of finance to implement activities
Opportunities - Might increase the role and responsibility of the state, once enforcement mechanism are put in place - The available information can be used to shape good forestry policy and future feasibility studies - Future policies governing forest sectors might be better than the existing one - Might increase the role and responsibility of the state, once enforcement mechanisms are put in place - Might get technical and professional support from other institutions to make the forestry policy more effective
Threats - Lack of coordination to ensure smooth running of forest management practice -It may take time before the policy is being implemented

In conclusion the Namibian national forestry policy of 2001 is an important development which has a mission to "practice and promote the sustainable and participatory management of forest and other woody vegetation, to enhance socio-economic development and environmental stability" (MET 2001:1). However this policy is not yet being implemented, but the preparations for the implementation are underway. Under the strategic objectives of the policy its implementation will be guided by objectives from the strategic framework, with the sole purpose of findings areas and direction in which forestry development will take place. It is however important to note that these strategic objectives function within Namibia's National Development Planning Framework (NNDPF). The proposed policy actions that may enhance contributions of the forest sector to the nation's welfare will be transmitted through rural integrated poverty strategy.

4.6 Namibia Aquaculture Policy (2001)

4.6.1 Policy background

The preparations of the Namibian Aquaculture Policy started in 2000 and the cabinet approved it in 2001. The Ministry of Fisheries and Marine Resources (MFMR) developed this policy because Namibia has recognises the need for sustainable yield in ecosystems and marine resources (MFMR 2001). It is the responsibility of the state to promote and control responsible and sustainable development and management of aquaculture within national water bodies of all types, both natural and artificial (MFMR 2001).

The Aquaculture Policy deals with the responsible and sustainable development of farming with aquatic plants, fish, molluscs and crustaceans and advocates responsible aquaculture developments. This policy deals also directly with the potential impacts of alien and other invasive species and seeks to minimize their impacts on aquatic ecosystems. Impacts specifically mentioned include the release of introduced species and genetically modified organisms, the mixing of farmed and wild stock (genetic pollution) and the risk of disease transfer. One of the principles on which the policy is based is to ensure the protection of living resources of national and international waters, both marine and freshwater, from possible adverse effects resulting from aquaculture activities, introductions and effluents.

The policy lays the foundation for a National Development Master Plan for aquaculture and promotes support for communal aquaculture. It recognizes the importance of environmental assessment under the authority of the MET, particularly in designing aquaculture zones. It specifically states that the government may take measures such as the establishment of hatcheries, to reduce reliance on wild-caught juvenile indigenous fish and repeated introductions of exotic species in order to protect genetic resources[17].

The policy explicitly deals with maintaining genetic diversity and the integrity of aquatic ecosystem and stresses a precautionary approach[18]. Any proposals for further introductions or translocations of freshwater aquatic organisms, particularly the introductions of exotic organisms and potential transfer of disease organisms will be carefully examined and guided by a strict code of practice. There is a provision made for lists of allowable and prohibited species known to have had harmful environmental consequences when introduced or translocated, to be compiled and regularly reviewed and for

[17] Section 3.1. 11 (d) of the policy
[18] Section 4 of the policy

establishment of a watershed zone beyond which indigenous or exotic organic organisms may be trans-located. The policy also states that preservation of genetic diversity is to be promoted, and care will be taken to limit adverse impacts on internationally shared water.

The general principles within the national aquaculture policy are listed as follows:

- The state is to ensure the protection of the living resources of national and international waters, both marine and fresh water, from possible adverse effects resulting from aquaculture activities, introduction and effluents.
- Preference is to be given to Namibian citizens to benefit from the utilisation of Namibia's natural resources for aquaculture development.
- Women, being the majority in Namibia, should be fully involved in the aquaculture development process because they are marginalized.
- Aquaculture farming is to be promoted.
- There should be broad and balanced participation by Namibians in aquaculture and access to resources available for aquaculture will be equitable.
- Aquaculture ventures should be self-sustainable.
- Namibia is a co-ordinator of marine resources in Southern African Development Community (SADC) and should strive to serve as a model for the development of strategies for coastal aquaculture (MFMR 2001).

The main objective of Namibia's aquaculture policy is to promote sustainable development of aquaculture in order to achieve socio-economic benefits for Namibians and to secure environmental sustainability (MFMR 2001). The Namibian Aquaculture Policy has set four main strategies on how its objectives will be achieved:

- Putting in place appropriate legislative and administrative framework for aquaculture, including establishing systems of tenure and rights for commercial aquaculture;
- Establishing appropriate institutional arrangements for aquaculture;
- Maintaining genetic diversity and the integrity of aquatic ecosystems; and
- Ensuring responsible aquaculture production practices.

The relationship between the aquaculture policy and other water policies is that all policies deal with water use in Namibia but the aquaculture policy is more focused on marine resources and fish farming.

Table 7: SWOT analysis for Aquaculture Policy of 2001

Strengths - A policy already being implemented -An established policy recognized by state to be used as a guideline to tackle aquatic issues in the country - Recognize the importance of all living natural resources, in particular ecosystems of marine resources - Encourage responsible and sustainable development of farming with aquatic plants and animals -Emphasizes the importance of environmental assessment - Comprehensive information, well-presented in the policy
Weaknesses - Unrealistic expectations for freshwater aquaculture - Too many ambitious objectives
Opportunities - Might increase the role and responsibility of government, once enforcement mechanism are put in place
Threats - Limited political support (e.g. if the budget allocated to the ministry of fisheries is little, some of the intended activities from this policy might not take place).

In conclusion, Namibia's initiative to develop the aquaculture policy and legislation has been the most comprehensive and has laid a sound institutional foundation for sector development. Aquaculture is specifically addressed as a development priority in Namibia's Second Development Plan (NDP-2), and in the Vision 2030 document, where in it is envisaged that by the year 2030 aquaculture will have grown to become a thriving industry. An important step in the implementation of Namibia's aquaculture policy was the passing of the Aquaculture Act No. 18 of 2002 which came into force in June 2003. The Act was drafted with technical assistance from the Food and Agriculture Organisation of the United Nations (FAO). Finally the regulations to implement the Aquaculture Act are in the process of being formulated, and an Aquaculture Strategic Plan has been drafted to guide implementation of the policy. These include the establishment of the aquaculture directorate within the Ministry of Fisheries and Marine Resources.

4.6.2 Summary of an overall SWOT analysis of policies related to biodiversity

Overall a variety of strengths, weakness, opportunities and threats were identified from all six policies related to biodiversity that were assessed in this study. Based on the SWOT-analysis, the principles of policies related to biodiversity are generally seen as appropriate. In general Namibia has good policies related to biodiversity on paper. Policies alone, however, could not influence the use of natural resources by local communities at the grassroots level who are highly dependent on these resources. Current literature (Easterly 2003 for instance) argues that good policies alone are not sufficient to stimulate economic growth. Indeed good policies without supporting institutions are similar to a case of attempting to land a plane without a landing strip. In order to further improve policies to protect the environment Namibia needs adequate institutional capacity and implementation strategies. If policies are implemented at the local level they could provide opportunities for the participation of rural dwellers who are the primary managers and beneficiaries of biodiversity.

The time is now ripe for Namibia to make a critical analysis of all policies related to biodiversity in the country. The best way perhaps is to use the SWOT analysis method. Although not a quantitative approach, SWOT definitely helps in assessing the real status of a given situation. It must also be admitted that all points listed under any SWOT analysis may not be comprehensive, but the information provides an opportunity of in depth study of policies related to biodiversity.

The study suggests that there is a need to evaluate policies related to biodiversity on a regular basis in order to assess their impact on the use of natural resources. The policy makers should adopt the participatory approaches used during the process of making policy to involve those who will be directly affected by policies related to biodiversity. However, participatory methods require considerably more time, additional resources and special training for policy makers.

Table 8: An overall SWOT of policies related to biodiversity

Strengths - A policy already being implemented - Well established policies recognized by the state and used as guidelines - The policies recognize the importance of natural resource use
Weaknesses - There is little inclination to implement or enforce all these policies in Namibia - Most of the policies have unrealistic expectation and ambitious ideas - It normally takes time before policies are implemented
Opportunities - If the policies are all to be implemented they could provide opportunities for well-informed decisions and participation by local communities, who are the primary beneficiary of natural resources - There is an opportunity to make a critical analysis of all policies related to biodiversity in the country
Threats - Once the policies are implemented they can cause misunderstanding among the local communities - Participatory methods require considerably more time, additional resources and special training for policy makers - Policy alone cannot influence the use of natural resources by local communities - Limited political acceptance of enforcement

Chapter 5: Results: Analysis of the field work

5.1 Interview results

The results presented in this chapter are based on individual semi-structured interviews that were held with local communities and policy makers during July and September 2006, and during January 2007. In total fifty-one interviews were conducted with key resource persons on their individual perceptions about biodiversity policies in Namibia. Thirty interviewees were male while twenty-one were female. Forty-two interviews were conducted with members from local communities in two different regions, whereas nine interviews were conducted with policy makers in Windhoek (Table 9).

Table 9: Number of respondents interviewed (See Appendix B for list of interviewees).

Policy-makers		**Local communities**	
Category	Number of respondents	Category	Number of respondents
Government officials	6	Traditional leaders	4
NGOs	3	Other respondents	38
Total	**9**	**Total**	**42**

5.1.1 Interview results for Onkani in Omusati Region

Interviews were conducted with twenty members of the local communities in Onkani in Omusati Region. Almost all interviewees stated that they came to the area in search for grazing and land to cultivate. Currently more people have moved to this area and the place is turning increasingly into a cultivated area.

Thirteen of the respondents came to the area during the 1970s (Figure 10). All interviewees in Onkani mentioned that there were plenty of wildlife, such as springbok, hare, elephants and other types of wild animals. The interviewees also mentioned the occurrence of many tall trees, and perennial grasses in Onkani when they first arrived, but now the area almost looks like a desert (Ombuga)[19]. According to the interviewees, this is because many people have moved to Onkani, and the human damage to the natural ecosystem has increased, which results in the loss of natural resources in the area.

[19] Ombuga is Oshiwambo word which means desert

Nineteen from the twenty respondents stated that they have noticed changes in biodiversity in the area e.g. in the past wild animals and plants that used to be present in Onkani which they have now disappeared and this happened shortly after 1970. According to the interviewees some of the wild animals have migrated because the number of people in the area was increasing. Some wildlife were killed with spear and arrows for own consumption.

Apart from overgrazing and less "rainfall these days" interviewees also stated the construction of the pipeline[20], fencing of large parts of the communal area and improved access to the area are the causes of perceived changes in the environment around Onkani. Members of the local communities who arrived before the construction of the pipeline claim that the pipeline has contributed to the observed changes in the environment. Improved access to water has attracted more farmers to bring their livestock to the area to stay in Onkani throughout the year, instead of seasonally, resulting in the observed changes by the interviewees.

Fifty percent of the respondents (n=10) in Onkani stated that environmental changes in the area are a result of more crop fields while 20% said it was caused by cutting down of trees and another 20% of the respondents mentioned hunting (Figure 11). In addition only 10% (n=2) of respondents mentioned that the increase of more crop fields causes the loss of biodiversity in their area. Many houses in Onkani are built in a group of huts surrounded by a fence of large vertical poles. Building this type of house requires a number of trees to be cut down, depending on the size of a house.

Nineteen of the twenty respondents revealed that they are aware of policies[21] related to biodiversity and they have given examples of the policies that they are aware about as indicated in Table 10. Only one of the twenty interviewees in Onkani said that he is not aware of policies related to biodiversity.

In order to assess the influence of policies related to biodiversity with members of the local community in Onkani the following three different categories were formulated: *high influence, little influence,* and *no influence.* This was done in order to discover out from interviewees whether the policies related to biodiversity that they are aware about have any influence on local communities towards the use of natural resources in order minimize the loss of biodiversity in their area.

[20] The pipeline was built to Onkani in 1992 by rural water supply

[21] During the interviews in both study areas the word policy was interpreted in many ways, most of the interwees referred a word policy to "rules" and "regulations" but all this was said in their local spoken languages.

The majority (60%) of the interviewees in Onkani said that the existing policies have no influence on people in order minimize the impact of local communities on the environment. Thirty percent of the respondents in Onkani said that policies have little influence and 10% said that the policies have a high influence on people (Figure 12).

Fifty percent of the interviewees stated that the state is responsible for the implementation of policies related to biodiversity while 25% mentioned that these policies are coming from the headman (Figure 13). Ten percent of the respondents mentioned that the MET is the implementing agency while 15% of the interviewees said they do not know who is responsible for the implementation of policies related to biodiversity.

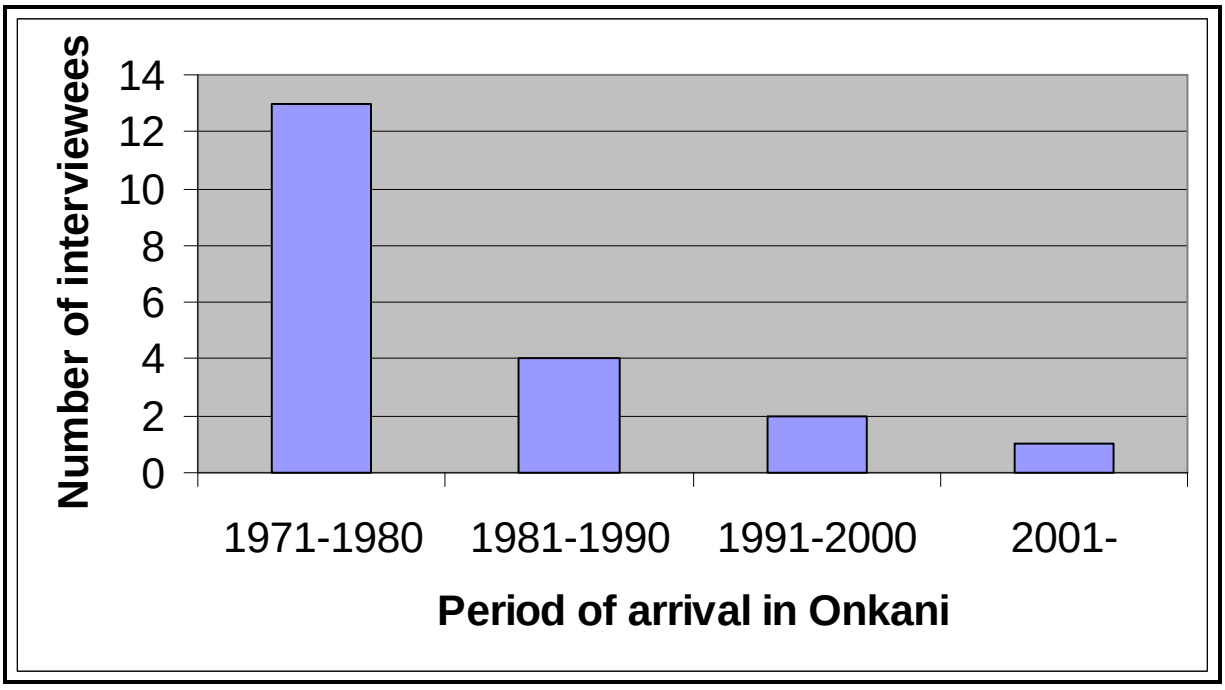

Figure 10: Number of respondents and the time period when interviewees first settled in Onkani.

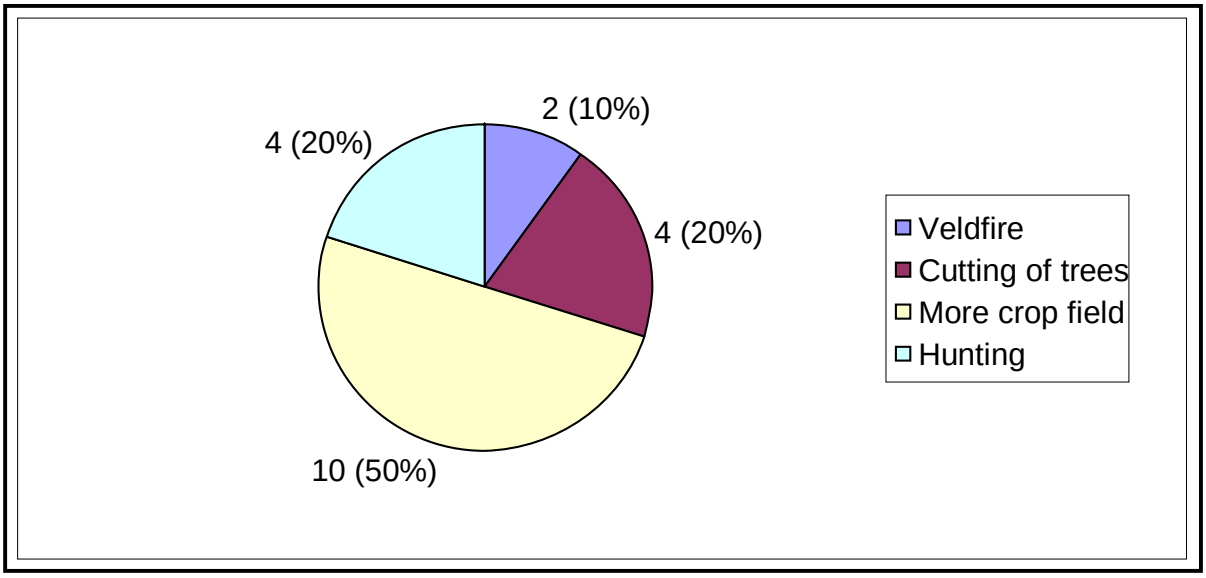

Figure 11: The causes of biodiversity changes, as perceived by respondents in Onkani (n=20).

Table 10: Example of policies related to biodiversity given by interviewees in both study areas (n=42).

Onkani (Omusati Region)	**Epingiro 1and 2 and Mboya (Kavango Region)**
Legislation related to the cutting of trees	Legislation related to the cutting of trees
Legislation related to the prevention of veld fire	Legislation related to the prevention of veld fire
Legislation related to the hunting of wild animals	Legislation related to the hunting of wild animals
Legislation related to illegal fishing	Legislation related to grass harvesting
Legislation related to illegal fencing	

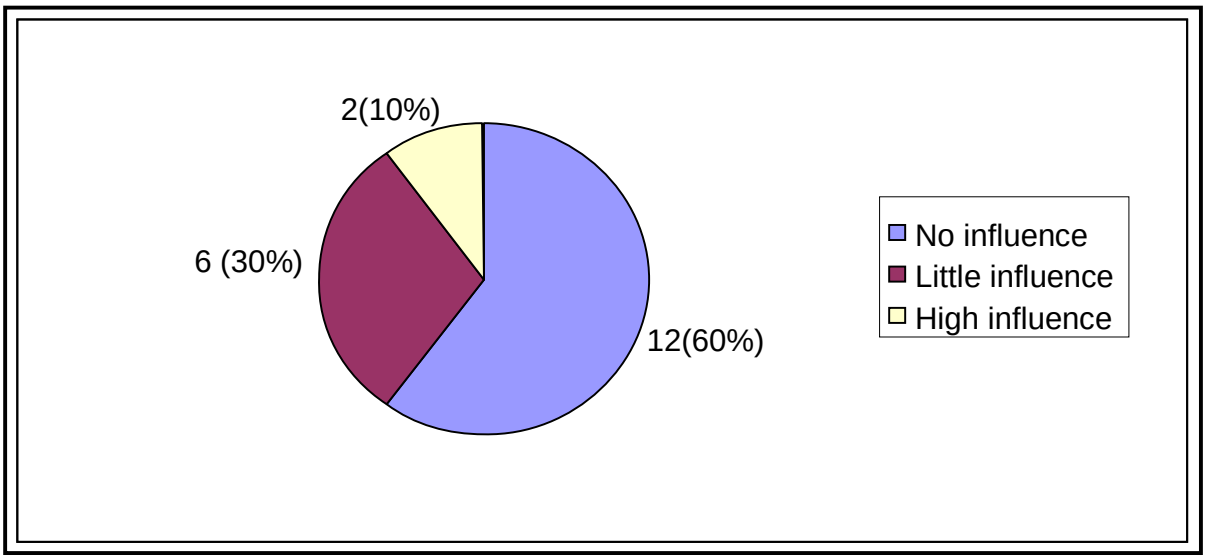

Figure 12: Level of policy influence on environment, as indicated by interviewees in Onkani (n=20).

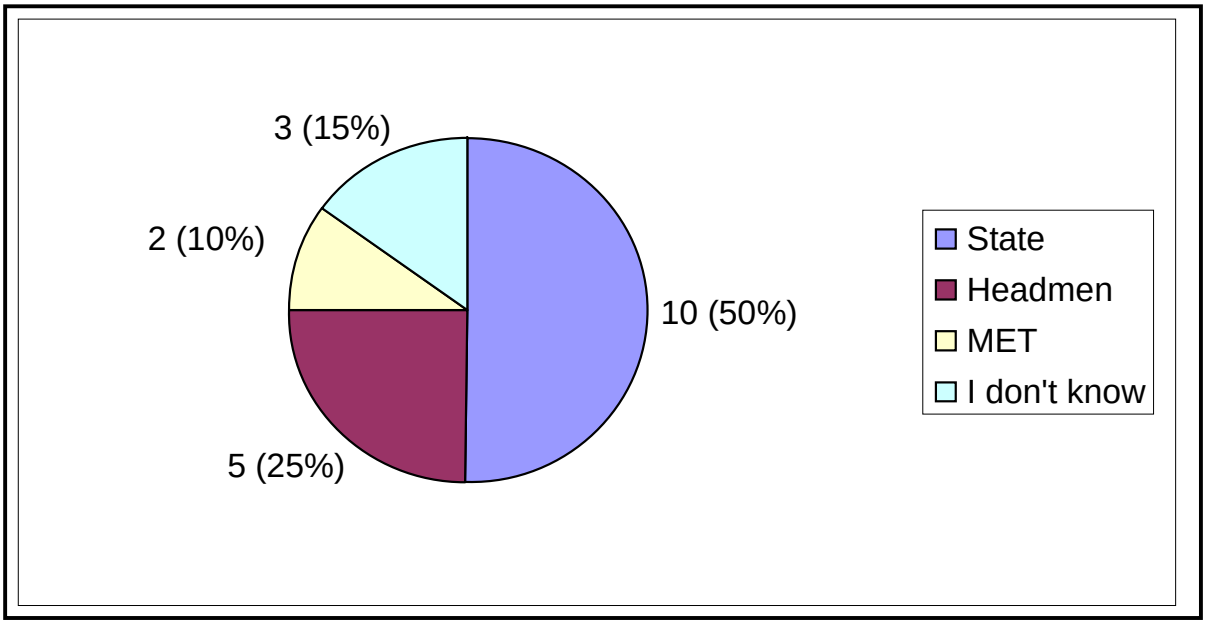

Figure 13: Responses given by interviewees in Onkani to the question on who is responsible for policy implementation (n=20).

5.1.2 Interview results for Epingiro 1 and 2 and Mboya in Kavango Region

Twenty-two interviews were conducted with members of the local communities in Epingiro 1, 2 and Mboya in the Kavango Region. The majority of the interviewees (n=12) came to Kavango between 1991 and 2000, as shown in Figure 14. Twenty one interviewees in Epingiro 1 and 2 and Mboya had an opinion on who is responsible for overseeing the use of biodiversity in their areas (Fig 15). In addition there was only one respondent who was not aware of who is responsible for the implementation of policies related to biodiversity in their area. (Figure 15).About 54% of the respondents said that the MET is the implementing agency of these policies. Twenty seven percent mentioned the headmen while fourteen percent mentioned state. The respondents also gave an example of legislation related to biodiversity that they are aware of as shown in Table 10.

Twenty interviewees in Epingiro 1 and 2 and Mboya mentioned that there have been changes in the environment and as a result, losses of biodiversity have occurred. Population pressure within Epingiro 1 and 2 and Mboya is one of the contributing factors to the changes in the environment and the human impact on natural ecosystems has increased resulting in natural resources to being under pressure. The respondents also mentioned that cutting of trees and veldfire have caused many changes in the environment in their areas. It was also mentioned that hunting of wild animals for human consumption has taken place but this was only done in the 70s when wild animals were available. In Epingiro 1 and 2 and Mboya large parts of the population depend on subsistence use of resources on communal land. Many houses in Epingiro1 and 2 and Mboya are traditional homesteads, which are built in a group of huts surrounded by a fence of large vertical poles. Building a traditional house in Kavango requires roughly 200 poles which means many trees will be cut down for this purpose.

Only two respondents mentioned that they have not observed any changes in the environment in their areas. Sixty-eight percent of the respondents in the Kavango Region revealed that the loss of biodiversity is caused by veldfire, while 18% mentioned cutting trees. In addition only 9% mentioned hunting, while only one person mentioned crop fields (Figure 16). Forty-one percent of the respondents mentioned the policies related to biodiversity that they are aware about have no influence on people towards the use of natural resources in their area. Thirty-two percent of the interviewees felt that biodiversity policies have little influence on local community’s behaviours towards the environment (Figure 17).

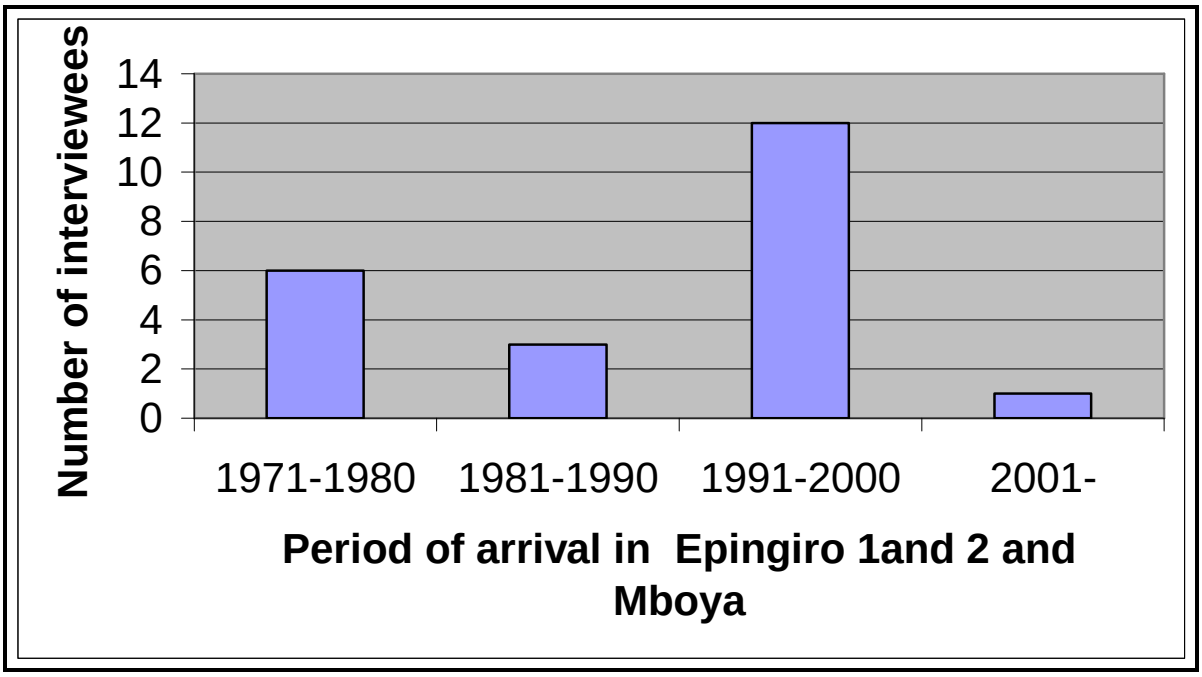

Figure 14: Number of respondents and time period when interviewees first arrived in Kavango.

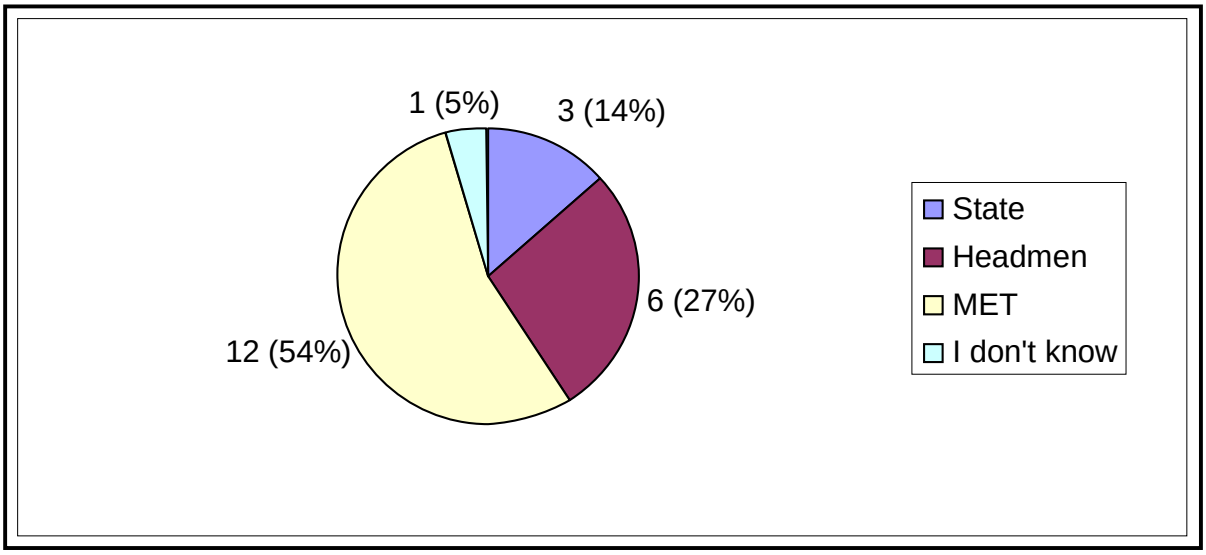

Figure 15: Responses given in Epingiro1and 2 and Mboya to the question on who is responsible for overseeing the use biodiversity (n=22).

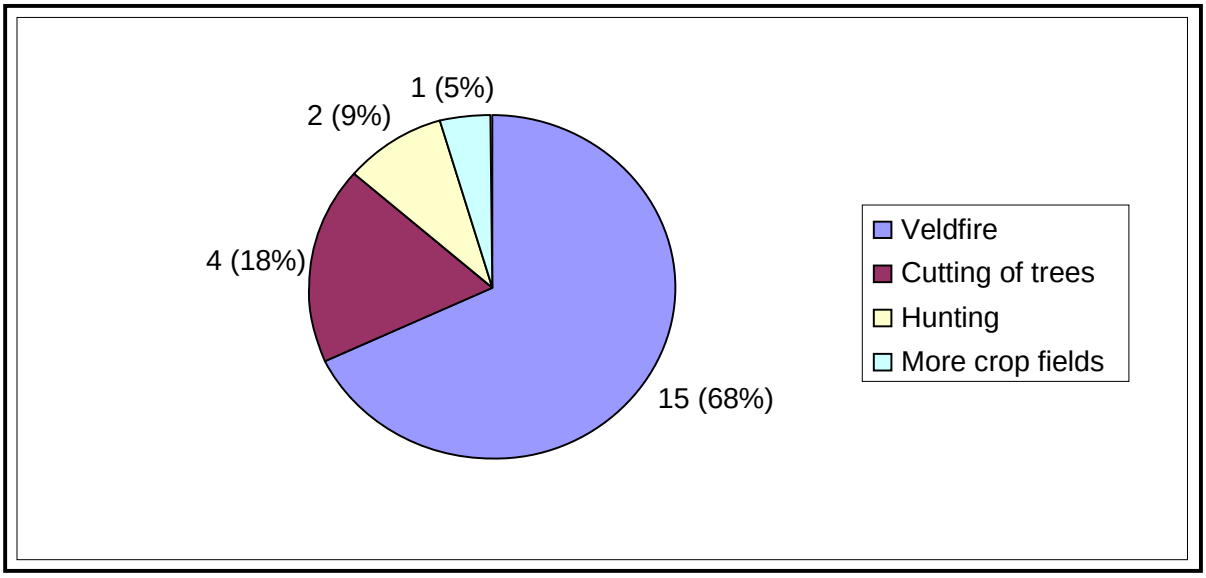

Figure 16: The causes of biodiversity loss according to the interviewees in Epingiro 1 and 2 and Mboya (n=22).

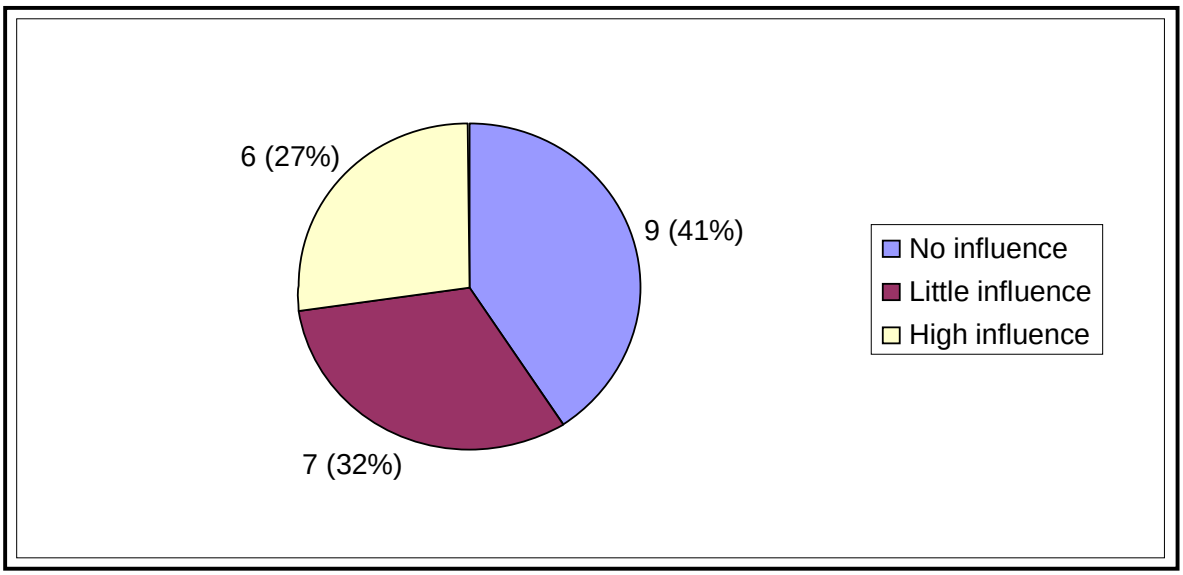

Figure 17: Level of policy influence on environment as perceived by interviewees in Epingiro1 and 2 and Mboya (n=22).

5.3 Comparison of the two study areas, using the Mann-Whitney U test

To compare the responses given by interviewees from the two different study areas, the Mann-Whitney U test was used, (the statistical analysis of the Mann-Whitney U test is explained under Section

3.1) P>0.05 means no significant difference between responses given by interviewees in the two study areas, whereas P<0.05 means that there was a significant difference between the responses given. To compare the study areas in terms of who is responsible for the implementation of policies related to biodiversity, there was a difference in responses given by interviewees P<0.05 (Table 11).

Table 11: Responses given by interviewees in both study areas to the question on who is responsible for the implementation of policies related to biodiversity?

Variable	Epingiro 1and and Mboya Number of respondents	%	Onkani Number of respondents	%	U	P
GRN	3	13.6	10	50	140	<0.05
Traditional leaders	6	27.3	5	25	215	N.S.
MET	12	54.5	2	10	122	P<0.05
I don't know	6	4.5	3	15	197	N.S.

In terms of policy influence there was no significant difference in responses given by interviewees in both study areas (Table 12).

Table 12: Responses given by interviewees in both study areas to the question on whether policies related to biodiversity have influence on biodiversity loss.

Variable	Epingiro 1and 2 and Mboya Number of respondents	%	Onkani Number of respondents	%	U	P
No influence	9	40.9	12	60	178	N.S.
Little influence	7	31.8	6	30	216	N.S.
High influence	6	27.3	2	10	182	N.S.

More people in Onkani said environmental changes occurred as a result of an increase in crop fields in their areas, whereas more interviewees in Epingiro 1 and 2 and Mboya mentioned veldfire as the main cause of environmental changes. To compare these different responses given by the interviewees using the Mann-Whitney U test, the results show that there is a significant difference of P<0.05 as shown in Table 13.

Table 13: Responses given by interviewees in both study areas to the question on what causes the loss of biodiversity.

Variable	Epingiro 1and 2 and Mboya Number of respondents	%	Onkani Number of respondents	%	U	P
Veldfire	15	68.2	2	10	92	P<0.05
Cutting of trees	4	18.2	4	20	216	N.S.
Hunting	2	9.1	4	20	196	N.S.
More crop fields	1	4.5	10	50	120	P<0.05

5.5 Results from interview of policy makers

According to the policy makers that were interviewed in this study (n=9), Namibia has adopted a number of policies related to biodiversity that promote environmental management and sustainable development issues in Namibia. Seven of the nine policy makers stated that all policies related to biodiversity that have been implemented in Namibia have their roots from the Namibian constitution under Article 91 (c) and Article 95 (1). Although the policy makers did not mention specifically how many policies deal directly with sustainable use of biodiversity in Namibia, they nonetheless gave some examples of the existing policies that deal with the sustainability of biodiversity in Namibia.

The examples of some of the policies related to biodiversity that were given by policy makers range between the Environmental Assessment Policy for sustainable development and environmental conservation, the Environmental Management Bill, the draft Access to Genetic resources and Associated Traditional Knowledge Bill, Wildlife Management Bill, the Waste Management and Pollution Control Bill, National Land Policy, Forestry Policy, National Agriculture Policy, National Water Policy and the Inland Fisheries Bill.

5.5.1 Influences of policies on biodiversity

Policy makers indicated that all existing policies related to biodiversity in Namibia are supposed to have positive influence to the sustainable use of biodiversity in the country. The policy makers indicated that some of the policies related to biodiversity are effective in terms of how biodiversity is conserved, especially in conservancy areas where biodiversity is closely monitored. The policy makers (n=9) emphasized that many of the policies related to biodiversity in Namibia do not have any effect on the sustainable use of biodiversity, but it is also important to understand that most of these policies are just guidelines and do not automatically guarantee the sustainable use of biodiversity.

Two of the policy makers interviewed revealed that most of the policies related to biodiversity are enforced at local level. Eight of the nine policy makers said that the major problems of policies related to biodiversity are as follows:

- Inadequate human resources: Some people in different sectors have little capacity to formulate and implement policies in a more effective manner.

- Financial constraints: Because of financial problems that are experienced sometimes, most of the activities related to the implementation of policies related to biodiversity cannot be carried out efficiently.
- The amount of time taken to translate policy text to legislation, regulations and enforcement, can even take up to five years.

In addition, most of the policies related to biodiversity are not implemented because of poor institutional capacity and lack of finance to support the policy enforcement. According to some of the policy makers that were interviewed, the implementation of some of the policies related to biodiversity has helped members of the local communities to be familiar with the importance of biodiversity in their respective areas. In many rural parts people are aware that cutting of trees is not allowed nowadays, for example.

The policy makers further said awareness raising with local community members has been conducted to encourage people, especially in rural areas, to use biodiversity in a more sustainable way. Awareness raising with local communities in rural areas is normally promoted through:

- NBC Radio: Radio reaches more people than any other mass medium and is the most cost-effective, accessible information/communication technology for many people at local communities.
- Posters: Placards with biodiversity information are printed and distributed throughout the country by the agricultural extension offices, conservancies and other line ministries at regional level. The purpose of disseminating these poster is to show local communities the importance of biodiversity

The policy makers further explained that booklets and pamphlets are distributed sometimes to the agricultural extension offices to all thirteen regions as part of awareness raising. Meetings with local communities are also held to promote the sustainable use of biodiversity in Namibia. These meetings are normally organized by MET in collaboration with other line ministries. The policy makers also mentioned that the state has programmes that promote the importance of biodiversity such as the NBSAP and NBP (section 2.5).

One of the nine policy makers further explained that, although there are policies related to biodiversity in Namibia, there is still a need to enforce these policies in order to assess whether they influence the protection of natural resources, especially at local level. The policy makers identified the major problem of local communities' participation in policy making as it is difficult for communities to

comprehend policies due to the legal language in which they are written or conveyed to the communities. According to the policy makers, they have experienced that policy issues should be explained by a person who is trusted by the community, or who communities can relate to, so that people are more open to discuss their opinions, fears and problems.

The policy makers also felt that dealing with policy issues especially at the local level can be very complicated. The information processes sometimes are politically oriented, where politicians make impractical promises to people, which raise people‘s expectations. If communities are not properly consulted or involved in policy making, the people lack ownership of the decision or policy and will be reluctant to implement the policy. One the policy makers further explained that because of political /traditional dominance, people hesitate to express themselves properly. This is especially the case with women, because they are marginalized in local rural communities. Often people are too self-centered and only certain influential people, who are not representative of the communities, attend meetings that discuss issues that are facing rural people. Policy makers noted that because there was no history of discussing policy issues with people at the grass roots level, the entire participatory policy making processes is a new one in Namibia. In addition policy makers and local communities have different perception and understating of policies related to biodiversity.

Chapter 6: Discussion of results

6.1 Do the selected policies have an influence on local communities and biodiversity in Namibia?

The policies that are investigated in this study strive to promote sustainable use and management of natural resources in the country. The biggest challenge encountered with the policies related to biodiversity, when making use of the SWOT analysis tool, is the lack of information on the actual effectiveness of these policies to tackle the issues of loss of biodiversity in the country.

Often the lack of adequate information is the underlying problem with the implementation plan and frame work of policies. These policies are created without fully considering their impact on the economy as a whole and their impact on people who are fully dependent on the use of natural resources. In addition communication among the sectors within the state sector, the public and decision makers should be improved to tackle all issues with these policies and find the best way they can be implemented. The underlying fact is that it is difficult to measure the effectiveness of the policies performance in the short run. There are no simple generalizations at this stage possible to determine whether these policies have any influence on biodiversity and people who are highly dependant on natural resources in rural local communities.

6.2 Discussion of results of interviews held with local communities

The general perceptions given by local communities during the interviews could be related to local experiences and the period of arrival in the study areas. This is because respondents who have been living in the areas for a longer period had more time to observe the environmental changes that have taken place. The ability to detect environmental changes can also be attributed to the level of education and understanding of individual respondents.

The majority of the interviewees in Onkani area in Omusati Region said that the state is seen as a responsible agency that implements policies related to biodiversity (Figure.13). Although respondents in Onkani mentioned state they did not specify any kinds of institution that are directly involved in the implementation of policies related to biodiversity (e.g. MET), unlike the majority of the interviewees in Epingiro 1 and 2 and Mboya in the Kavango Region (Figure 15).

In Epingiro 1 and 2 and Mboya in the Kavango Region the majority of respondents indicated that the MET is responsible for the implementation of policies related to biodiversity in their area (Figure 15).

The reason for this is because the ministry is very active in these villages. As a result members of the local communities are familiar with the workers of MET operating in the area. Additionally, only 20% of the respondents in the two study areas said that they do not know at all who is responsible for the implementation of policies related to biodiversity (Figure 13 and 15) and this could be attributed to a lack of available information. Although there are a number of policies related to biodiversity available (as policy makers indicated) these types of documents are not easily available to the public.

When members of the local community were asked whether they were aware of policies related to biodiversity in their areas, they referred to general rules and regulations that they are aware of in their areas (e.g. legislation relate to the cutting of trees, hunting etc). (Table 10).

The results in this study show that some members of the local communities think that the state has the responsibility to implement policies related to biodiversity and they also think this kind of arrangement is done through the headman of the village. The headman has the responsibility to provide all kinds of information to the communities about all rules and regulations that need to be followed, and in this way many people view the headman as a person who should be consulted by government at all times. The majority of the interviewees in both study areas stated that the policies related to biodiversity, that they are aware of, have no influence on the environment in terms of the sustainable use of biodiversity (Figure 12 and 17).

Some of the interviewees felt that policies related to biodiversity have no influence on people on the way natural resources are used. This is because some people in local communities do not necessarily obey the existing guidelines with regards to the use of natural resources in their respective areas. It was stated that some people are still cutting some of the small remaining trees without permission from the headman. The interviewees, especially in Onkani, stated that most of the times they cannot afford to buy a permit for cutting trees, as the majority are unemployed and have no source of income.

Furthermore, the respondents felt that ignorance by some members of local communities in both study areas is one of the biggest problems, as some of them believe that natural resources cannot be depleted. These types of attitudes were observable in both study areas. According to some of the interviewees especially in Epingiro 1 and 2 and Mboya, the occurrence of veldfire is prominent. They said fire breakout occurs frequently between the months of August and October. According to the interviewees, in the Kavango Region, they do not know exactly what causes veldfires but some suspect that the fire is normally caused by human beings in the area.

In both study areas the interviewee's perceptions were different from each other with regard to the general understanding of policies related to biodiversity and the role of traditional leaders. Some of the respondents indicated that the power of traditional leaders was generally sufficient, although some mentioned that there are individuals in the community who do not acknowledge the power of traditional leaders. The interviewees in both study areas said that traditional leaders are involved in policy-making through consultation with government and local communities. The interviewees in both study areas felt that the village headwomen/ and men are aware of policies related to biodiversity in their respective areas, because leaders are the ones who are consulted whenever certain decisions have to be taken. All four traditional leaders interviewed mentioned that, in general, new policies are sometimes seen as a threat to people in their communities. This is because some people think policies restrict their rights especially on the utilisation of natural resources. According to three of the traditional leaders that were interviewed in both study areas, they said that members of the local communities still have respect for customary law.

6.2.1 Community perceptions on influence of policies on biodiversity

The interviewees (n=38) in both study areas felt that in general all new policies, including policies related to biodiversity, have both positive and negative influences on the way people live. Apparently, new policies are commonly seen as threats, because they tend to place restrictions on their daily life activities in relation to the use of natural resources. The interviewees pointed out that some of the rules (e.g. restriction on cutting trees and hunting) that are in place to protect the environment are in fact good, because people will not be able to destroy the environment as much as it was done in the past.

Respondents in both study areas believe that policies related to biodiversity would help people to change their attitudes toward the environment and the use of natural resources. They emphasised that these policies will also help them to learn about sustainable management practices of biodiversity.

The general lesson for policies related to biodiversity is the fact that policies have to influence people before they can impact the sustainable use of biodiversity. Only as people change their behaviour toward the use of natural resources will improve sustainable management of biodiversity. However, the capacity of local communities can still be strengthened to empower local communities with skills on how to manage their own natural resources and understand the importance of policies related to biodiversity.

Chapter 7: Conclusions

7.1. Namibian policies related to biodiversity

Since the Rio earth summit in 1992, Namibia has developed a number of policies related to biodiversity. A great number of environmental management programmes, some of them addressing biodiversity conservation goals, were put in place. Several of these are being developed in response to the National Biodiversity Strategy and Action Plan (NBSAP). Policies related to biodiversity are important to provide guidelines to the sustainable management and protection of natural resources and the conservation of biodiversity. This is important to the sustainable development of Namibia and is required of the country as a signatory to the Rio-Conventions. Although Namibia is a signatory to a number of international conventions and agreements, the country's commitment to undertake activities to conserve biodiversity and to implement policies at local level require wide ranging inputs and coordination from everyone. Biodiversity can only be conserved effectively if all groups of society in a country are convinced that biodiversity plays a fundamental role in the quality of human life.

In order to further improve policies related to biodiversity to protect the environment, Namibia needs adequate institutional capacity and implementation strategies and plans. If policies are implemented at the local level they could provide opportunities for the participation of local communities who are the primary managers and beneficiaries of biodiversity.

All six policies related to biodiversity assessed in this study recognize the importance of biodiversity conservation. Based on the SWOT analysis, the principles of policies related to biodiversity are generally seen as appropriate but there is little inclination that these policies are implemented or enforced at the grassroots level. If the policies related to biodiversity are implemented correctly and adjusted according to the needs of people who are dependent on natural resources they would make a sizeable contribution to the management of biodiversity at the grass roots level.

7.2. Perceptions about policies related to biodiversity among rural communities and decision makers

The respondents interviewed in the local communities visited have very limited knowledge and understating of policies related to biodiversity. The majority of interviewees at local level are aware of the existence of policies related to biodiversity, or at least their associated legislation and regulations, but have very little knowledge and understanding of policies themselves. However, this study has emphasized that the local communities' understanding of policies related to biodiversity is indispensable. This is important because, local communities at the grassroots level are central for the implementation of policies related to biodiversity and, with high dependence on natural resources only; they are the main recipients of biodiversity.

On the other hand, the policy makers interviewed have a general knowledge of policies related to biodiversity. This is most likely an effect of policy makers being the ones who have the responsibility to develop all policies, including these related to biodiversity.

7.3. Opinion and recommendation

Literature reviewed in this study reveals that the impact of humans on the natural environment is significant and growing; changes and loss of biodiversity have been more rapid in recent years compared to the past. The loss of biodiversity is an irreversible process. The process and its effects take place now and have been proved to be predominantly man-made. Increasing human activities on the environment is the main cause of biodiversity loss. People need access to different natural resources to satisfy their needs in terms of food and energy. Failure to mitigate biodiversity loss will most severely affect the poor at local level because they are highly and directly dependant on natural resources. The fight against biodiversity loss requires heavy commitments, including reorganization of economic and social practices and priorities. While the vision of prevention of biodiversity loss may seem unattainable, it is not. Through cooperation and the contribution of all, the task will be lessened and hopes for the future made real. A well formulated policy framework that is appropriately implemented can support this vision.

In this regard, policy makers must ensure that all policies related to biodiversity are implemented and do not merely remain as good ideas on paper. Local communities need to be involved in biodiversity policy implementation that encourage local communities to understand and act for themselves, and

integrate these into broader local initiatives, to empower local communities and to manage their own natural resource use.

Chapter 8: References

Alcano, B. (2003). Ecosystems and human being: Millennium assessment London, United Kingdom

Balmford, A., Bruner, A., Cooper, P. (2003). Economic reasons for conserving wild nature. New York, United States of America.

Barbier, E.B., Burgess, J.C., Folke, C. (1995). Paradise lost? The ecological economics of biodiversity. London, United Kingdom.

Barnard, P (Ed) (1998). Biological diversity in Namibia. Namibia National Biodiversity Task Force, Windhoek, Namibia.

Barnard, P., Shikongo, S., Zeidler, J. (Ed) (2002). Biodiversity and development in Namibia: Namibia's ten-year strategic plan of action for sustainable development through biodiversity conservation 2001-2010. Windhoek, Namibia.

Boone, L. and Kurtz, D. (1992). Contemporary marketing. Texas, United State of America.

Brown, C.J. (Ed) (1991). Namibia's green plan. Windhoek, Namibia.

Central Bureau of Statistics, (2001). Namibia population and housing census. [Online]. Available: http://www.npc.gov.na/census/index.htm [2003, October 15].

Corell, E. (1999). The negotiable desert: Expert knowledge in the negotiations of the Convention to Combat Desertification, Linkoping University, Linkoping, Sweden.

Desert Research Foundation of Namibia (DRFN), (2002). The forum for integrated resources management: A case study in the establishment of FIRM - based approach on Napcod experience. Windhoek, Namibia.

Dewdney, R. (1996). Policy factors and desertification analysis and proposal: Namibia programme to combat desertification. Windhoek, Namibia.

Dythan, C. (2001). Choosing and using statistics: A biologist guide. United Kingdom.

Giess, W. (1971). A preliminary vegetation map of South West Africa: Dinteria, Windhoek, Namibia.

Global Environmental Facilities (GEF), (2003). Operational programme for sustainable development New York, United States of America.

Government Republic of Namibia, (1990). Constitution of Namibia. Windhoek, Namibia.

Gowdy, J.M. (1997). The value of biodiversity: Market society and ecosystem. London, United Kingdom.

Easterly, W, (2003). National policies and economic growth: Centre for global development. Working paper 27. London, United Kingdom.

Hinz, M.O. (1999). Profession poacher: New strategies to accommodate indigenous rights over natural resources. Windhoek, Namibia.

Hinz, M.O. (Ed) (2006). The shade of new leaves: Governance in traditional authority, a southern African perspective. Windhoek, Namibia.

Hinz, M.O. and Jaos, S. (2000). Customary law in Namibia: Development and perspective, Windhoek, Namibia.

Hill, T. and Westbrook, R. (1997). SWOT Analysis: It's time for a product recall, long range planning. Washington, United States of America.

Huntley, B.J. (Ed) (1989). Biotic diversity in southern Africa: Concept and conservation. Cape Town, South Africa.

Jaos, S. (1998). Customary law in Namibia: Development and perspective, fourth edition. Centre for Applied Social Sciences (CASS), University of Namibia, Windhoek, Namibia.

Jones, B. and Cownie, D. (2001). Socio-ecological survey report for the Kavango Region: Every river has its people project. Windhoek, Namibia.

Klintenberg, P. (2007). More water, less grass? An assessment of resource degradation and stakeholder's perceptions of environmental change in Ombuga grassland, northern Namibia, PhD thesis. Stockholm University. Stockholm, Sweden.

Kolberg, H. (1995). Country report to the Food and Agriculture Organization of the United Nations: International technical conference on plant genetic resources. Windhoek, Namibia.

Kruger, A.S. (1997). Pastoral and agro-pastoral resources: Comprehensive assessment of environmental problems and opportunities for United State agency intervention for development intervention in Namibia. Windhoek, Namibia.

Langanke, T. (2001). Indicators for national level monitoring of desertification - towards linking local level and national level monitoring: An example from north-central Namibia. Mainz Johannes Gutenberg-University Mainz, Germany.

Legal Assistance Centre (LAC), (1996). How laws are made: Windhoek, Namibia.

Marsh, A. and Seely, M.K. (1992). Oshanas: Sustaining people, environment and development in central Owambo.Windhoek, Namibia.

Mathew, C. (2001). Namibia's biomass energy management programme: Results of a baseline survey in

northern Namibia. Windhoek, Namibia.

Mathieu, G. and Meline, V. (2005). Natural resource management rules and practices in a context of legislative changes in north central Namibia. Master thesis, University of France. Paris, France.

Matros, A. (2003). Linking policies with people: An analysis of community participation in policy formulation in Namibia, Master thesis, Linkoping University, Sweden.

Mendelsohn, J., Jarvis, A., Robert, C. (2000). Atlas of Namibia: A portrait of the land and its people. Cape Town, South Africa.

Mendelsohn, J., Nico, D., Piers, V., El Obied, S. (2006). Farming system in Namibia: Windhoek, Namibia.

Michael, D.H. (1998). Environmental policy analysis instrument for biodiversity conservation: A review of recent economic literature. Clemson University, Atlanta, United States of America.

Ministry of Agriculture Water and Rural Development (MAWRD), (1995). National Agriculture Policy, Windhoek, Namibia.

Ministry of Agriculture Water and Rural Development (MAWRD), (2000). National Water Policy White Paper Windhoek, Namibia.

Ministry of Environment and Tourism (MET), (2001). National Forestry Policy of Namibia. Windhoek, Namibia.

Ministry of Environment and Tourism (MET), (1994). Namibia Environmental Assessment Policy. Windhoek, Namibia.

Ministry of Environment and Tourism (MET), (2002). Namibia initial communication to the United Nation Convention on Climate Change. Windhoek, Namibia.

Ministry of Environment and Tourism (MET), (2005). Namibia National Capacity Self Assessment for Global Environmental Management: Final report. Windhoek, Namibia.

Ministry of Environment and Tourism (MET), (2005). Policy review. Windhoek, Namibia.

Ministry of Environment and Tourism (MET), (2005). Biodiversity and development: A Contribution to sustainable development management in Namibia-a decade of interventions, Windhoek Namibia.

Ministry of Fisheries and Marine Resources (MFMR), (2001). Namibia Aquaculture Policy. Windhoek, Namibia.

Ministry of Land Resettlement and Rehabilitation (MLRR) (1998). National Land Policy. Windhoek, Namibia.

Namibia Programme to Combat Desertification (NAPCOD), (1994). First national report on the

implementation of the United Nations convention to combat desertification. Ministry of environment and tourism. Windhoek, Namibia.

Namibia Programme to Combat Desertification (NAPCOD), (1997). Fighting desertification together. Desert Research Foundation of Namibia. Windhoek, Namibia.

Namibia Red Cross (NRC), Namibia's Economic Policy and Research Unit (NEPRU) and the Secretariat of the Pacific Commission, (2000). State of environment report on agriculture and land resources. Final report, Windhoek, Namibia.

Namibia Water Resource Management Review (NWRMR), (2000). Legislative and Regulatory Framework: Theme Report. Ministry of Agriculture, Water and Rural development Windhoek, Namibia.

National Planning Commission (NPC), (2002a). Population and housing census: preliminary report. Windhoek, Namibia.

National Planning Commission (NPC), (2002b). Natural resource sector (theme 6): A contribution to Vision 2030. Windhoek, Namibia

National Planning Commission (NPC), (2003). Namibia Vision 2030: Policy framework long term national development *(main document-volume 1)*. Windhoek, Namibia

National Planning Commission, (2006). Country environmental profile of Namibia. Windhoek, Namibia.

National Planning Commission (NPC), (2008). Third National Development Plan (NDP3) *(volume 1)* Windhoek, Namibia.

Pearce, A. and Dominic, G. (1994). World species diversity and conservation University of France. Paris, France.

Organisation for Economic Cooperation and Development (OECD), (2002). Sustainable development strategies: A resource book. Paris, France.

Organisation for Economic Development (OECD), (2008).An OECD framework for effective and for effective and efficient environmental policies: A discussion paper. Paris, France.

Reid, W.V. and Miller, K.R. (1989). Keeping options alive: the scientific basic for conserving biological diversity. World resources institute. Washington, United States of America.

Robert, D. (2007). Local action for biodiversity initiative. Durban, South Africa.

Robert, B and Stimson, R. (1998) Multi-sectoral qualitative analysis: A tool for assessing the competitiveness of regions and formulating strategies for economic development. London, United

Kingdom.

Sandford, S. (1985). Better livestock policies for Africa. African livestock policy analysis paper 1. Addis Ababa, Ethiopia.

Schneider, S. (1999). Towards a working strategy in Omusati region. Stockholm, Sweden.

Selanniemi, T., Chakanga, M., Simon. A. (2000). Report on wood resources in Oshana region. Directorate of forestry of the Ministry of Agriculture Water and Rural Development. Windhoek, Namibia.

Sterner, T. (2003). Policy instruments for environmental and natural resource management Washington, United Sates of America

The World Conservation Union (IUCN), (1990). Biodiversity in sub-Saharan Africa and its land: conservation, management and sustainable use. Bern, Switzerland.

Trippner, C. (1998). Landscape-ecological risk information system: Pilot area north, Uuvudhiya constituency. Windhoek, Namibia.

United Nations Convention on Biodiversity Diversity (UNCBD), (2004). Opportunities for synergy in implementing the three conventions, regional workshop for African on synergy among the Rio conventions and other biodiversity programmes of work on dry and sub-humid lands and agricultural biodiversity. Gaborone, Botswana.

United Nations Conventions on Combating Desertification (UNCCD), (2003). Report of the committee on its first session, committee for the review of the implementation of the convention. Rome, Italy.

United Nations Development Programme (UNDP), (2002). Namibia's initial national communication to the United Nations framework convention on climate change. Windhoek, Namibia.

United Nations Development Programme (UNDP), (2002). Namibia's initial national communication to the United Nations Framework Convention on Climate Changes. Windhoek, Namibia.

Appendices

Appendix A: questionnaires used during interviews

POLICY RELATED TO BIODIVERSITY:
An Assessment of the Namibian Situation

Particulars of interviewees (Questionnaire that was used to interview policy makers)

Name:

Position:

Institution:

Date of interview:

Introduction

The introduction included:

- My name, details about my studies
- Why I am doing this research (aims of the study)
- Reassure certainty of facts before publication of thesis

(a) General questions for policy makers

1) Are you aware of any policy related to biodiversity in Namibia?
2) Have these existing policies had any specific impacts on biodiversity conservation in Namibia?
3) Which policy is relevant to your work and how does it have a desired impact?
4) Are the policies in your relevant sector achieving what they are supposed to achieve?
5) What are the major difficulties being encountered in their implementation?
6) What results have arose from implementation of these policies relevant to your sector?
7) Have there been any publications produced or practices documented in Namibia that show how policies/legislation related to biodiversity perform?
8) Have any steps been taken to make people at all levels understand about policies /legislation related to biodiversity conservation in Namibia?
9) Please elaborate on the steps you know about.

10) Does the government have any programmes that create awareness on policies and legislation?
11) Are people /groups working together to prevent biodiversity loss?
12) Describe of any plans or proposal that you know about, in Namibia on biodiversity programmes.
13) Are the national biodiversity policies in line with the international conventions?
14) Namibia is a signatory to UN Conventions (such as CBD, UNFCCC, Ramsar and CITES). Do any have formal management plans? (E.g. *is there a department of climate change).* Please describe.
15) How important are these conventions in Namibia in terms of biodiversity conservation?
16) How do stakeholders contribute to the formulation of environmental policies strategies and implementations in Namibia?
17) Are Namibian's national policies related to biodiversity adopted from other countries or were they developed here in Namibia?
18) How best can environmental policies and legislation encourage greater participation and shared decision-making responsibilities with respect to biodiversity conservation?
19) Please summarize or make any additional conclusion currently where Namibia stands in terms of policies /legislation related to biodiversity

Particulars of interviewees (Questionnaire use to interview the local communities)

Date of interview:

Name:

Position:

Region:

Village:

Introduction

The introduction included:

- My name, details about my studies
- Why I am doing this research (aims of my thesis)
- Reassure certainty of facts before publication of thesis

(b)General questions for members of the community

1) For how long have you been staying in this area?
2) Have you noticed some changes on biodiversity in your respective area?
3) When and what has caused these changes?
4) Are these changes positive or negative for you?
5) Is there any policy or regulations in place to protect the environment in this area?
6) If yes, what are they?
7) How do these policies influence your daily life?
8) Who is responsible for the implementation of these policies?
9) Is the environment fully protected by the existing policies in your area? If 'No' why not?
10) Are the members of the communities in this area adhering to these policies?
11) If not, which policy is not followed and why?
12) Have any steps been taken against individuals amongst the community who breaks environmental policies?
13) Does the community undertake any activities to protect the environment in this area? (e.g. to prevent the cutting down of trees)

14) Has any mechanism of communication been established to ensure the easy flow of information between different levels of communities?

(c) Specific guiding questions for policies selected for analysis related to biodiversity in this study

1) When was the policy compiled?
2) Why was this policy compiled?
3) What are the main objectives of this policy?
4) How does this policy contribute to the conservation of biodiversity in Namibia?
5) Does this policy influence the conservation of biodiversity?
6) Where has the policy been implemented?

Appendix B: List of interviewees

a) Policy makers

Name	Organisation	Types of organisation	Place of Interviews	Date of Interviews
Joseph Amunime	MRLGHRD	GRN	Windhoek	
M Swart	MWF	GRN	Windhoek	
Emma Boys	MFMR	GRN	Windhoek	
David Amupolo	MAWF	GRN	Kavango region	
Maryn Prinsloo	MAWF/Water and environment	GRN	Windhoek	
Sem Shikongo	DEA/MET	GRN	Windhoek	
Moses Nekwaya	BICON Namibia	NGO	Windhoek	
Vilho Mtuleni	BIOTA	NGO	Windhoek	
Kevin Robert	MWAF/Water and environment	GRN	Windhoek	

b) Rural community members

Interviewees' names from Omusati Region

1) Meme Otty Aamambo
2) Tate Kakula Silasa
3) Epaphulasa Jesaya
4. Andreas Thomas
5) Tate Kamati
6) Shaanika Iitembu
7) Rebbeka Shiimi
8) Simon Pandeni
9) Shavuka Naakande
10) Tate Thomas
11) Kalenga Lahja
12) Aina Erastus
13) Monika Philipus
14) Lakker Shiimi
15) Gabriel Gabriel
16) Isaack Nashumba
17) Simon Shilongo
18) Tate Ashipala (Headman)

19) Saara Shaanika
20) Nikodemus Philemon

Interviewees' names from Kavango Region

1) Heinrich Alerilwe
2) Jafet Negonga
3) Mr Karipa
4) Hileni Munasigo
5) Veronica Sipemba
6) Samuel Sigopi
7) Emilia Eruvero
8) Priscilla Hausiku
9) Daniel Empuso
10) Sitendu Simon
11) Moses Herinekera
12) Pandu Hausiku
13) Eglasius Kasiku Kasera
14) Simon Sipora
15) The headman- Epingiro 2
16) Ernesto Ndjau
17) Kamwanya Fabiana
18) Elina Ndjamba
19) Lydia Guido
20) Teresia Guido (Headwoman) Epingiro 2
21) Donatius Sidimba
22) Raulasia Liinda (former Headwoman)