

HUMBOLDT-UNIVERSITÄT ZU BERLIN

Faculty of Life Sciences

**“Evaluating socio-ecological aspects of land use conflicts
and edge effects: a case study of the
NamibRand Nature Reserve in Namibia”**

Master thesis in the study program:

Integrated Natural Resource Management (M.Sc.)

Submitted by: Haberl, Stephanie

First Supervisor: Prof. Dr. Zeller, Ulrich, Albrecht Daniel Thaer-Institute
Division of Systematic Zoology

Second Supervisor: Dr. Schleyer, Christian, Albrecht Daniel Thaer-Institute
Division of Resource Economics

*This thesis was funded by the
“Stiftung für Tropische Agrarforschung”
& the “Zwillenberg-Tietz Stiftung”.*

Berlin, 17. 7. 2014

Abstract

This study investigates the socio-ecological aspects of land use conflicts and edge effects (other effects occurring at the border of a protected area with impacts on either side) at the border of the NamibRand Nature Reserve (NRNR) which is situated in the southern part of Namibia. Being surrounded by farmers that continue to make a living with livestock farming, it is not easy for the NRNR to reach acceptance in the area. The review of studies made in the field of land use conflicts led to the assumption that communication issues play an important role as source of conflict which were therefore also examined in the case of the NRNR. The core empirical method used to evaluate the current situation of the NRNR and its neighbours are problem-centred interviews, conducted with adjacent landowners, employees of the NRNR and other stakeholders. The goal of these interviews was to find out if land use conflicts exist at the borders of the reserve and possible reasons behind it. Results show that various types of conflicts are present. Fences are one of the main negative issues around the reserve: they act as deadly traps and hinder free movement for many animals. Furthermore livestock depredation and the shooting of predators were reported. Interestingly, half of the farmers think that the former is the way nature works and do not blame the reserve. Moreover, the majority of neighbours speak positively about the NRNR and appreciate the close involvement by the NRNR in issues regarding the protected area. Another positive aspect is the helpfulness and support of the NRNR management in dealing with veld fires. The good reputation of the NRNR also reflects back to neighbouring tourism operators. Notably, the concept of protecting nature is accepted by most of the interviewed people.

One noteworthy result of this study is that some neighbours state that the NRNR helped change their mind about nature and biodiversity. Looking at the development of the area since the establishment of the reserve, one can see there has been a shift from land uses such as livestock farming to farming with wildlife, ecotourism or pure nature protection. Other landowners suggest that in order to fasten the area's development away from still existing pure livestock farming towards more sustainable land uses, one should think about connecting nature protection with low-impact agriculture such as shepherding. Concluding, the future of the NRNR looks promising with most of the neighbours on their side. In addition, some adjacent landowners consider joining the reserve which would strengthen the NRNR's status as one of the largest private nature reserves in Southern Africa.

Acknowledgements

First of all I would like to thank Prof. Dr. Zeller who provided the initial ideas for this thesis and the contact to the NamibRand Nature Reserve in Namibia. Furthermore he accompanied the preparations for the travel to Namibia and could always give the right professional advice before, during and after the research period in the foreign country. I am also very thankful to Dr. Schleyer who supported me with his professional guidance during the last months and who always tried to motivate me in times of doubt.

Additionally, Nils Odendaal, Quintin and Vanessa Hartung and Peter Woolfe merit sincere appreciation for their support, organisation, advice, knowledge and humour during the time in the NamibRand Nature Reserve. Likewise I would like to thank all the people who were willing to participate in the interviews and to share their knowledge and opinions with me, which build the core of this work. Finally, I am very grateful to the “Stiftung für Tropische Agrarforschung” and the “Zwillenberg-Tietz Stiftung” who supported this work financially. Without these funds, the research in Namibia, thus this thesis, would not have been feasible.

Stephanie Haberl



Photo 1 – Oryx in the NamibRand Nature Reserve (Photo: Stephanie Haberl)

Table of Contents

Abstract	II
Acknowledgements	III
Table of Contents.....	IV
List of Figures	V
List of Photos	V
List of Tables.....	V
List of Appendices.....	V
List of Abbreviations	VI
1. Introduction.....	1
1.1. General Introduction	1
1.2. Structure of Thesis.....	3
1.3. Literature Review	4
1.3.1. Background on land use conflicts.....	4
1.3.2. Possible solutions to land use conflicts	7
1.4. Problem Statement.....	11
1.5. Research Question	12
2. Empirical Methods.....	14
2.1. Research Area.....	14
2.1.1. Introduction to Namibia.....	14
2.1.2. Conservation in Namibia.....	16
2.1.3. NamibRand Nature Reserve	18
2.2. Data Collection	24
3. Results.....	29
4. Discussion.....	47
5. Limitations to the study	54
6. Conclusion	55
Bibliography	VII
Appendix.....	XIII

List of Figures

FIGURE 1 - CONCEPTUAL FRAMEWORK OF THE THESIS.....	13
FIGURE 2 - LOCATION OF NAMIBIA AND BORDERING COUNTRIES.....	14
FIGURE 3 - LAND TENURE AND USAGES IN NAMIBIA.....	16
FIGURE 4 - OVERVIEW OF PROTECTED AREA NETWORK IN NAMIBIA.....	18
FIGURE 5 - OVERVIEW OF THE NAMIBRAND NATURE RESERVE.....	20
FIGURE 6 - LAND USES AROUND THE NRNR.....	23
FIGURE 7 - LAND USES AROUND THE NRNR AND RESEARCH COVERAGE.....	27

List of Photos

PHOTO 1 - ORYX IN THE NAMIBRAND NATURE RESERVE.....	III
PHOTO 2 - IMPRESSIONS OF DIFFERENT LANDSCAPES OF THE NRNR.....	21
PHOTO 3 - CATTLE FARMING NEXT TO THE NRNR.....	22
PHOTO 4 - TYPICAL FENCE LINE BETWEEN THE NRNR AND A NEIGHBOUR.....	33
PHOTO 5 - DEAD SPRINGBOK IN ONE OF THE FENCES AROUND THE RESERVE.....	33
PHOTO 6 - SPRINGBOK GATHERING ALONG THE FENCES.....	34
PHOTO 7 - EXAMPLE OF ANIMALS MOVING ALONG THE FENCES.....	34
PHOTO 8 - CHEETAH SIGHTING DURING RESEARCH ON THE RESERVE.....	36
PHOTO 9 - GOATS AND SHEEP WITH GUARD DOG.....	38
PHOTO 10 - CATTLE BEHIND A FENCE NEXT TO THE NRNR.....	41

List of Tables

TABLE 1 - INTERVIEW GUIDELINE.....	26
TABLE 2 - SUMMARY OF RESULTS FROM INTERVIEWS - PART 1.....	30
TABLE 3 - SUMMARY OF RESULTS FROM INTERVIEWS - PART 2.....	31

List of Appendices

APPENDIX 1 – MORE DETAILED INFORMATION ON THE INTERVIEWS.....	XIII
---	------

List of Abbreviations

CAPE – CAPE ACTION PLAN FOR THE ENVIRONMENT

CCF – CHEETAH CONSERVATION FUND

FAO – FOOD AND AGRICULTURAL ORGANISATION

GDP – GROSS NATIONAL PRODUCT

GSN-LCA – GREATER SOUSSVLEI-NAMIB-LANDSCAPE CONSERVATION AREA

HWC – HUMAN WILDLIFE CONFLICT

MET – MINISTRY OF ENVIRONMENT AND TOURISM

NRNR – NAMIBRAND NATURE RESERVE

SPAN - STRENGTHENING THE PROTECTED AREA NETWORK PROJECT

UN – UNITED NATIONS

WCPA – WORLD COMMISSION ON PROTECTED AREAS

WDPA – WORLD DATABASE ON PROTECTED AREAS

WWF – WORLD WIDE FUND

1. Introduction

1.1. General Introduction

The protection of the world's biodiversity has developed into a demanding issue of our time. A growing world population and the resulting expansion of living space, extraction of resources and change of natural to agricultural land has put immense pressure on functioning ecosystems and their valuable biodiversity (FAO 2003: 1; KRUG 2002: 7). Concurrently the number of areas protected (marine and terrestrial) has quadrupled since the end of last century (WDPA 2012). Around 12.7% of the earth's land mass and 1.6% of ocean areas are currently dedicated to nature protection, private initiatives not included (BERTZKY et al. 2012: 6). These protected areas not only guard biodiversity but also deliver various benefits to the people such as clean water provision, food security and important ecological processes such as climate regulation (ibid.: 1).

Most of the world's biodiversity can be found in less developed countries where the growing population calls for the need of land conversions for food production (KRUG 2002: 7). Consequently, protected areas are often surrounded by land that is used for other purposes than nature protection. At the borders, these different land uses collide which can lead to so called land use conflicts (also named conservation conflicts) and/or other edge effects (other effects, positive and negative, occurring at the border of a protected area with impacts on either side) between the different stakeholders involved (LEWIS 1996; KRUG 2002: 7). Nevertheless, conflicts between conservation and other land uses are common in all parts of the world and cannot be connected only to less developed areas (FAO 2003: 8; STOLL-KLEEMANN 2001 cited from MCNEELY 1995). VILLAR et al. (2012) for instance, describe conflicts over land use between protected areas and the rural population in the Sierra Madre de Chiapas in Mexico, whereas STOLL-KLEEMANN (2001) concentrates on the opposition to protected areas in Germany and MARSHALL et al. (2007) describe conservation conflicts arising through predators' impact on commercial land throughout Scotland.

What all these conflicts have in common is that they could have negative impacts on the biodiversity and its efficient conservation in the protected area (WITTEMYER et al. 2008: 125). Therefore it is necessary to try to expand the conservation efforts to

neighbouring areas through efficient management and conflict solution initiatives (STOLL-KLEEMANN 2001).

Nevertheless, living adjacent to a protected area can not only create conflicts, but also have positive effects on the local population. WITTEMYER et al. (2008: 123) state that protected areas can be beneficial for rural development, creating job opportunities, infrastructure and the provision of ecosystem services.

A selection of case studies by the FAO (2003) regarding conservation conflicts shows that many African countries (e.g. Uganda, Ethiopia, Namibia) are affected by conflicts between nature protection and other land uses.

Namibia has devoted immense efforts to nature conservation, being one of the leading countries in regards to setting aside land area to nature protection (17% of total area) (MET 2010: 16). Nevertheless, people here also have to deal with different types of land use conflicts (see GÖTTERT & ZELLER 2008; WWF 2003; DISTEFANO 2005). Farms in the area around the Namib-Naukluft Park, for example, have to deal with competition for grazing by the high populations of mountain zebras while livestock predation is very common around Etosha and eastern Caprivi Parks (BIGALKE 2000: 173).

This paper focuses on a private protected area in the southern part of Namibia. The NamibRand Nature Reserve is one of the largest private reserves in southern Africa (NRNR 2014) conserving the vulnerable biodiversity of the Namib Desert. Farms with different land uses, from agriculture to trophy hunting and game farming, surround the reserve. Hence, the aim of this study is to examine the circumstances around the reserve and to find out if land use conflicts or other edge effects occur.

1.2. Structure of Thesis

The *Literature Review* (1.3.) provides the required background knowledge concerning land use conflicts, types and sources (1.3.1.) and possible solutions to it (1.3.2.). The chapter ends with the *Problem Statement* (1.4.) and the *Research Question* with its key questions (1.5.). Hereafter the applied methods are introduced in the *Empirical Methods* chapter: Starting with an *Introduction to the research area*, with a short overview of Namibia (2.1.1.), *Conservation in Namibia* (2.1.2.) and the specific research area, the *NamibRand Nature Reserve* (2.1.3.). *Data Collection* describes the empirical methods used in detail (2.2.). Consequently, *Results* are presented (3.) and examined in the *Discussion* (4.). Further *Limitations to this study* are presented (5.) and this thesis ends with a *Conclusion* summarizing all important aspects and giving recommendations for the future (6.).

1.3. Literature Review

This chapter is based on literature review of empirical studies done in the field of land use conflicts and gives the theoretical overview of conservation conflicts occurring in all parts of the world. Firstly, possible reasons and sources of conflicts are presented in chapter 1.3.1. followed by a summary of potential solutions and prevention measures in chapter 1.3.2.

1.3.1. Background on land use conflicts

Generally, land use conflicts or conservation conflicts develop out of differing interests of various stakeholders over the use of resources (HAUSSER et al. 2009: 2685). It is important to distinguish between types of conflicts, sources of conflict, and consequences of conflict, however, in some cases those categories may overlap.

HAUSSER et al. (2009) identified different types of conflicts while examining conservation conflicts in and around protected areas in Western Tanzania, an area sparsely inhabited, but where local people rely heavily on agriculture; in times of droughts people make use of natural resources such as wild plants and animals. The results of the study summarize several types of conflicts of which one or more can be found as part of almost every conflict where conservation issues are involved. Amongst those results are issues with the non-acceptance of boundaries which leads to illegal resource use such as poaching and encroachment. Additionally, land use rights are sometimes not clear and indigenous populations claim access to their land based on historical issues. Further, the existence of predators and other wild animals results in human-wildlife conflict (HWC) which can lead to the destruction of crops, livestock or fatalities for humans or animals (HAUSSER et al. 2009: 2686).

INSKIP & ZIMMERMANN (2009: 18) describe the HWC in detail and define it as the direct threat to the livelihood or safety of a person or community through a wild animal species. Due to large home ranges of some carnivores and the limited size of some protected areas, animals regularly exceed reserve borders and conflicts with humans automatically arise (ibid.: 19-21). These conflicts often consist of livestock depredation, attacks on people and retaliation against felids (ibid.: 21). Therefore, people's attitudes towards carnivores are often of a negative nature (LAGENDIJK & GUSSET 2008: 971). Also HERZOG (2013: 295) expresses that wildlife is often a catalyst for those conflicts

and emphasizes the importance of the good interaction between wildlife and humans in order to be successful on a long-term basis. Furthermore, WOODROFFE & GINSBERG (1998) state that those conflicts with people at reserve borders act as population sinks for species with large home ranges.

WELADJI & TCHAMBA (2003) did research around the Bénoué Wildlife Conservation Area in Cameroon. The problem in this case is the fact that rural people were relocated when the park was created for conservation, tourism and trophy hunting. Results show that the local population has to deal with great losses of crops and livestock due to wildlife. One important aspect that arose during the study is the issue of encroaching and poaching as edge effect. Local people stated that in order to satisfy their needs and to survive, poaching is done regularly. This shows that there are not only severe impacts on the livelihoods of local people, but also that their actions can have adverse effects on protected areas (WELADJI & TCHAMBA 2003: 77).

STOLL (2000: 10) classifies two important sources of conservation conflicts: deficits of participation and disturbances of social interaction and communication. The feeling of being impeded in behaviour and land use because of restrictions established by nature conservation authorities often creates disapproval amongst neighbours or habitants of conservation areas (STOLL 2000: 10). Furthermore people are often negatively influenced only due to the fact that they were not involved during the planning and establishment process of the protected area (ibid.: 11). Additionally, the relationships between different social groups and the allegiance within groups play an important role in the field of conservation conflicts. STOLL (2000: 12; cited from TAJFEL 1978 & TAJFEL & TURNER 1986) further explains that the *Social Identity Theory* by Tajfel is a useful tool to understand problems of acceptance around national parks. Individuals of a group divide their environment into different groups or categories. The distinction between the in- and the out-group facilitates the orientation of the individual in a social reality. The association with a social group leads to a positive social identity, which results in degrading the out-group. The distinction between the own, the in-group and the other, the out-groups can often be enough to discriminate out-groups, for example in the case of nature conservation, the farmer and nature conservationist groups (STOLL 2000: 13). One consequence resulting from these social identity processes is the issue of stereotyping which leads to "...prejudicial attitudes that people hold about social

groups” (STOLL-KLEEMANN 2001: 12). Additionally, these stereotypes make communication unproductive and sometimes have negative effects before even getting to know the other person (ibid.: 12).

Furthermore, STOLL-KLEEMANN (2001: 7) describes how emotional and cultural drivers play a big role in the perception of people and in their communication with each other. Emotional drivers, such as the fear of losing rights, have the ability to create negative attitudes towards nature protection. Cultural drivers, such as some farmers’ opinions that it is wrong to “not cultivate” land and to leave it to nature, generate negative perceptions about nature conservation. Hence, the concept of “tradition” and the “old way of doing things”, prevent changes to a more sustainable land use (STOLL-KLEEMANN 2001: 10).

Further, STOLL-KLEEMANN & O’RIORDAN (2002) describe the problem of miscommunication, due to various reasons, as driver of biodiversity conflicts. For example the top-down approach which was habitually applied in conservation history, was often regarded as arrogant by local people and lead to communication barriers (ibid.: 173). Similarly, RUSCHKOWSKI (2009: 243) highlights the importance of good communication, as many aspects leading to conservation conflicts, such as positive or negative perceptions, are rooted in communication processes. He points out that negative attitudes towards protected areas can arise through lack of information (ibid.: 243). Furthermore, RUSCHKOWSKI (2009: 242) again states lack of participation or involvement during the establishment process as driver for negative attitudes as already mentioned by STOLL (2000).

One main source of conflict that is described several times is the issue of communication. It can either be not enough communication, miscommunication, or non-communication. Thus, it can be assumed that communication is a significant part in the creation or prevention of conservation conflicts.

To summarize the theories and research status behind conservation conflicts, conflicts of conservation or land use conflicts can be found in all parts of the world and often arise through differing interests of stakeholders over natural resources and their use. Differentiation is generally made between types, sources and consequences of conflict. However, comparing all the studies reviewed, categories might overlap. For example,

misuse of natural resources by local people can be categorised as a type of conflict, but it could also be seen as a consequence of conflict.

1.3.2. Possible solutions to land use conflicts

Because land use conflicts contribute much to the significant decrease in global biodiversity, it is necessary to find and implement valid solution or prevention tools for those conflicts (YOUNG et al. 2005: 1642). Generally, people have different ways of solving and managing conflicts which can range from “violent or peaceful, formal or informal, participatory or restrictive and equitable or not” (FAO 2003: 9). However, sometimes the cause of the conflict, its real root, is anchored deeply in cultural background and is difficult to solve. In this case effective conflict management is necessary (ibid.: 9). Certainly, the reviewed literature also provides many suggestions for solutions of conservation conflicts.

In order to prevent conservation conflicts, measures should not be taken only after the national park already exists, but already during planning and implementation processes. STOLL-KLEEMANN & O’RIORDAN (2002: 162) mention that the “top-down” approach automatically caused many problems with local populations, often along with displacements which generated negative feelings towards nature conservation authorities. This often leads to conflicts such as border encroachments, illegal natural resource use and poaching. Besides, it results in the inability of valuable communication with each other (ibid.: 173). The opposite to the “top-down” approach would be a participatory one which includes the perspective of the local people and puts focus on sustainable livelihoods (ibid.: 163). This cooperative approach is favourable in many ways, as it tries to receive the understanding and support of the people and includes them from the beginning of the process (ibid.: 163). Likewise, HAUSSER et al. (2009: 2701) state “big top-down” approaches have proven less efficient in comparison to small participatory concepts where the interests and values of all involved parties are taken into consideration when planning and implementing protected areas.

STOLL-KLEEMANN & O’RIORDAN (2002: 167) further describe the importance of leadership of the protected areas, meaning that the character of leadership, e.g. the director of a national park, plays an important role in successful communication with adjacent neighbours. This example shows the importance of good communications

skills of the manager, and respectively park employees in order to earn trust and respect which then make it easier to avoid conflicts at the borders or for transferring suggestions for solutions.

Moreover, STOLL-KLEEMANN & O'RIORDAN (2002: 167) cite a park employee that was interviewed during research, who stated that *“you really have to work through the people who live in the area. It is only via the process of acting together that full understanding is achieved. You must treat their proposals seriously, we must act on them and we must respond quickly. This is the way to establish respect.”* This statement shows how important it is to really get to know the people that live in the surroundings of the protected area and to establish respectful relationships.

Also MARSHALL et al. (2007: 3144) point out that good relationships, meaningful communication and the understanding of social factors between the involved parties are fundamental for conflict prevention and solution. Likewise, RUSCHKOWSKI (2009: 243) strengthens the theory of good communication on a personal level as a tool to prevent conservation conflicts. Furthermore, he again states that participation and involvement of the people is an important tool to avoid problems from the beginning (ibid: 243).

INSKIP & ZIMMERMANN (2009: 29) name solutions for HWCs and describe that historically, “lethal control” was the only tool to get rid of animals threatening human livelihoods and is still used in some parts of the world. However, this deadly method can have fatal impacts on the population of species, sometimes even putting its existence in danger. Another approach developed more recently is the use of compensation schemes, providing financial equivalent value to the loss of livestock or crop by wild animals (ibid.: 29). Nevertheless, herding or guard dogs are one of the most successful techniques that can be used by farmers to decrease livestock losses, as a long-term study conducted on Namibian farmlands shows (MARKER et al. 2005). Nevertheless, MARKER et al. (2005: 336) also mention that guard dogs cannot fully diminish livestock losses and should be implemented together with other livestock management methods. Another important issue in the battle against the loss of livestock to wildlife is monitoring (HERZOG 2013). Some Namibian cat protection organisations, such as Cheetah Conservation Fund (CCF) or N'an Ku'sê Foundation have implemented monitoring schemes, such as the collaring of cheetah. With this measure, conservationists are able to track the movements of the cats and to warn farmers once an

animal is near to their property (CCF 2014; N/A'AN KU'SÈ 2014). Also keeping livestock in protective shelters during the night can prevent livestock loss caused by predators and should be considered by farmers (LAGENDIJK & GUSSET 2008: 974).

PECHACEK et al. (2013) discuss the efficiency of compensation payments for adverse effects for local people created by protected areas. According to the authors, there are three different compensation schemes with varying costs attached: 1) Resettlement, 2) Reimbursement and 3) Provision of incentives (ibid.: 93). Concerning the first aspect, the resettlement of people can only be prosperous when happening on a truly voluntary basis and is the most controversial compensation scheme, being subject to international treaties, for example Article 10 of the Declaration of rights of indigenous people (ibid. cited from UN 2007). The second example of compensation payments is reimbursement which is the direct payment to compensate for the adverse impact on the neighbouring land (e.g. loss of livestock to predators or grazing of crops). If adapted generously, reimbursement has the possibility to work well, however, monetary valuation and misuse are potential complications of this compensation scheme (PECHACEK et al. 2013: 93). To counteract the abuse and to convert non-market values of the environment into financial incentives for local people, performance-based compensation payments, e.g. payments for ecosystem services, have been introduced (ibid.: 93). Farmers receive incentives to conserve habitat and, at the same time, accept efforts to reduce damages to their land. To conclude, effective compensation schemes have the power to promote tolerance and environmental awareness amongst neighbouring communities and thus, have the ability to prevent conflicts between protected areas and their surroundings. Nevertheless, the verification of losses and damages is often not easy to prove and can create additional transaction costs (ibid.: 96).

STOLL-KLEEMANN (2001: 13) also states that one element to get people of different groups to work together and see themselves as "one" is the concept of cooperation and one common goal for all. An example of the implementation of cooperative partnerships given by STOLL-KLEEMANN & O'RIORDAN (2002: 169) is the Cape Action Plan for the Environment (CAPE), to cooperatively prevent conservation conflicts and assure that biodiversity adjacent to protected areas is less at risk. CAPE is a cooperative partnership of the government, the private sector and civil society, with the goal of protecting and

restoring the valuable biodiversity in the Cape Floral Kingdom, South Africa, while bringing benefits to the local people (CAPEACTION 2014).

Therefore, development of common interests and the establishment of informal meetings between conservationists and the opposite site is an important tool to decrease communication barriers (STOLL-KLEEMANN 2001: 14). These cooperative approaches are thus a valid instrument to bring different groups, such as nature conservationists, farmers, communities and the government, together and allow them to act on a common basis with shared goals and benefits for all sides (ibid.: 14).

In the prevention of conservation conflicts, one should not forget the importance of communication abilities of the park staff (STOLL-KLEEMANN 2001: 14). Not only the charisma of the manager or director is important, but also the behaviour and social skills of the park staff, as they are often the ones in contact with landowners and neighbours on a regular basis. Thus, training options to improve communication and social skills for park employees should be provided in order to successfully communicate to farmers or adjacent community members.

Furthermore, several authors state that the model of separating people and nature is obsolete and that there is a need to find valid concepts of combining sustainable human existence within nature and the protection of its biodiversity, as is already the case in many protected areas in Asia, South America and Central Africa (MOMBESHORA & LEBEL 2009: 2620).

WELADJI & TCHAMBA (2003: 79) point out the importance of site-specific conflict solutions taking into account all the individual factors that influence the conflict in a specific area.

YOUNG et al. (2005: 1656) communicate that conflict should not automatically be considered negatively as it provides a chance to productively handle problems and find solutions. If conflicts are managed in the right way, they prove to be a constructive instrument in finding consensus amongst stakeholders (HAUSSER et al. 2009: 2701).

1.4. Problem Statement

MARSHALL et al. (2007: 3130; cited from PACKER & BIRKS 1999; REDPATH et al. 2004; THIRGOOD et al. 2000) summarize that several studies that have been made in the field of conflicts in and around protected areas, concentrate on ecological reasons as cause of conflicts. Other studies focus on economic reasons as source of conflicts, such as the financial loss due to damage to livestock and crops through wildlife (e.g. WELADJI & TCHAMBA 2003). Not denying that these issues are important factors in the research of conflict solution, MARSHALL et al. (2007: 3130) further express that conservation biologists have realized in the past years that they deal with more complex systems, and including social and psychological factors in the research is necessary to view the whole picture of land use conflicts. Results show that, amongst others, trust, communication and information play vital roles for the success of conflict solutions as also mentioned by STOLL-KLEEMANN (2010) and RUSCHKOWSKI (2010). Furthermore, the importance of an interdisciplinary research approach from a social-science perspective is highlighted, in order to efficiently tackle the issue of land use conflicts (ibid.: 3145). STOLL (2000: 18) also underlines the significance of including social-science aspects in the implementation process of nature protection projects in order to meet conservation goals successfully.

Therefore, this study focuses on the socio-ecological aspects of land use conflicts and edge effects at the example of the NamibRand Nature Reserve. This privately managed protected area is in the southern part of Namibia and tries to protect the unique ecology of the Namib Desert. Farms with differing land uses ranging from agriculture to trophy hunting, game farming and nature conservation surround the reserve.

As explored in chapter 1.3., when protected areas and other land uses meet, there is a huge probability that conflicts arise due to various reasons. Thus, the hypothesis is: Land use conflicts and other edge effects occur at the border of the NamibRand Nature Reserve.

Considering chapter 1.3. it can be assumed that conflicts are present probably based on the existence of wildlife, different attitudes towards nature conservation and communication issues.

1.5. Research Question

In order to proof the hypothesis expressed in chapter 1.4., the main aim of this study is to find out, first of all, if conflicts occur between the NamibRand Nature Reserve and its neighbours. If this is the case, then what type of conflicts exist, and what are the drivers and reasons behind them. Furthermore, it is examined if there are any other edge effects that arise at the borders and if there are positive aspects that benefit the neighbours.

The following key questions were looked at:

- What are the main factors and consequences of edge effects and land use conflicts at the border of the reserve?
- How is the communication and relationship between the park management and employees with their neighbours?
- What attitudes do the farmers and other neighbours have towards the reserve, tourism and the protection of nature and biodiversity and what are the perceptions from the other side (park staff/management)?
- In case of conflicts, which solutions to decrease them already exist and how efficient are they?
- Is there a shift in attitudes towards conservation (perhaps also due to a generation change?)

Figure 1 is a diagram describing the conceptual framework of this study. Starting from the theoretical knowledge derived from chapter 1.3., when different land uses collide, conflicts are very probable. Literature review builds the basis and presents the current research status on the topic of land use or conservation conflicts. The research question stands in the centre of the thesis and the empirical methods used form the instrument with which the answer to the research question can be found. The results then are discussed and re-evaluated with regards to the theoretical concepts presented throughout the literature review in chapter 1.3.

CONCEPTUAL FRAMEWORK

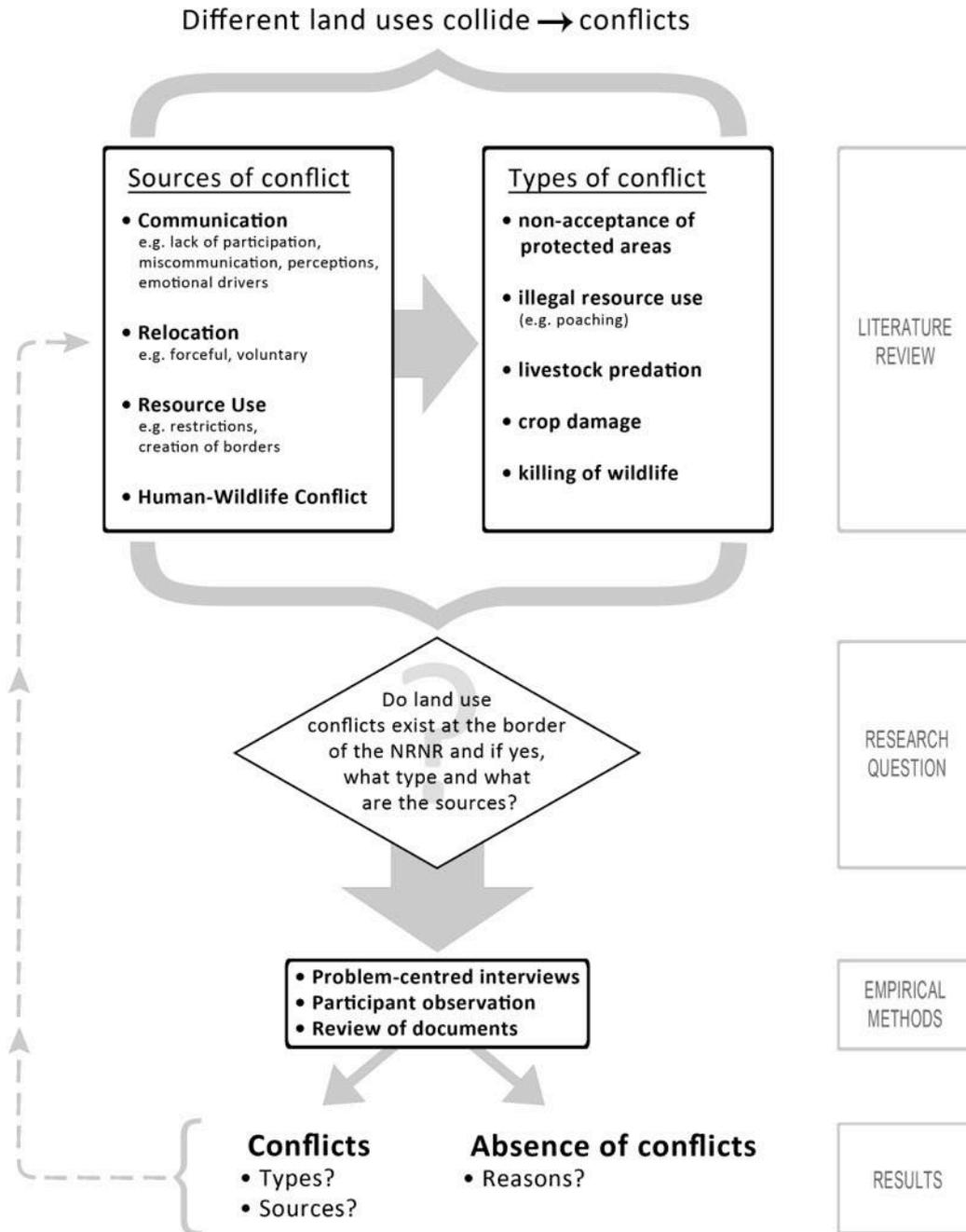


Figure 1 - Conceptual framework of the thesis

2. Empirical Methods

Chapter 2 describes the empirical methods used in order to find answers to the research questions raised in 1.5. Chapter 2.1.1. provides a short introduction to Namibia, followed by a short overview of conservation in Namibia in 2.1.2. Chapter 2.1.3. portrays the research area in detail, and chapter 2.2. is used to describe empirical methods used.

2.1. Research Area

2.1.1. Introduction to Namibia

Namibia is located in the south-western part of Africa bordering Angola, Zambia, Zimbabwe, Botswana and South Africa (see figure 2). The western part of the country is bordering the Atlantic Ocean.



Figure 2 - Location of Namibia and bordering countries (Adapted from WIKIMEDIA 2014)

Namibia is covering an area of 824 290 km² with a population of 2.346 million which makes the country one of the least densely populated countries in the world, with some areas populated by less than 1 person per km² (FAO 2012).

The country consists of three topographical regions: the coastal desert region which includes the Namib Desert, one of the oldest deserts in the world with its high sand

dunes, gravel and sandy plains; the inland plateau region, a continuation of the South African plateau, spreading from the south to the north of the country including mountains (e.g. Tsaris, Erongo), highlands and the Great Western Escarpments; and the Kalahari Desert in the eastern part of the country (FAO 2005).

Namibia's climate can be characterized as hot and dry with sporadic rainfall (FAO 2005). The rainfall, mainly in the summer months between November and March, can range from less than 20 mm in the western Namib and the coastal region up to 700 mm in the most eastern part of the Caprivi Strip, with most of the regions not receiving more than 500 mm (FAO 2006: 5). 92% of land area is defined as hyper-arid, semi-arid or arid (ibid.).

Agriculture is the second most important economic sector of Namibia (LOOSE 2013: 189). While it only contributes around 8% to national GDP, 70% of the population are directly or indirectly dependent on it (ibid.). 12.56 million hectares of total 83.3 million hectares are not usable for agriculture and are mostly dedicated to nature protection or are inhospitable areas (ibid.). The main issue for agriculture is the dry climate of the country. Estimations suggest that only four out of ten years receive enough rain (ibid.).

Land distribution is still affected by Namibia's history, as the population has been allocated land areas reserved for different ethnic groups (MENDELSON 2006: 13).

Thus, the country is divided into two types of production systems: the freehold/commercial sector and the communal/traditional sector (SWEET & BURKE 2006: 6). Most of the commercial landowners are white and most of the communal landowners are black, representing the inequality of land distribution prevailing in Namibia (LAC 2005: 4). Figure 3 shows land tenure and land usages in Namibia including state protected areas.

The commercial freehold sector is well developed and covers 52% of all farming land with cattle being the main contributor to commercial farming outputs (SWEET & BURKE 2006: 6). Due to the low annual rainfall in most of the commercial land areas, the soil is only suitable for extensive stock raising (ADAMS & DEVITT 1996: 5). Typical characteristics are the large fenced ranches divided into smaller paddocks where rotational grazing is practised, as is also the case in the research area of this study (SWEET & BURKE 2006: 6).

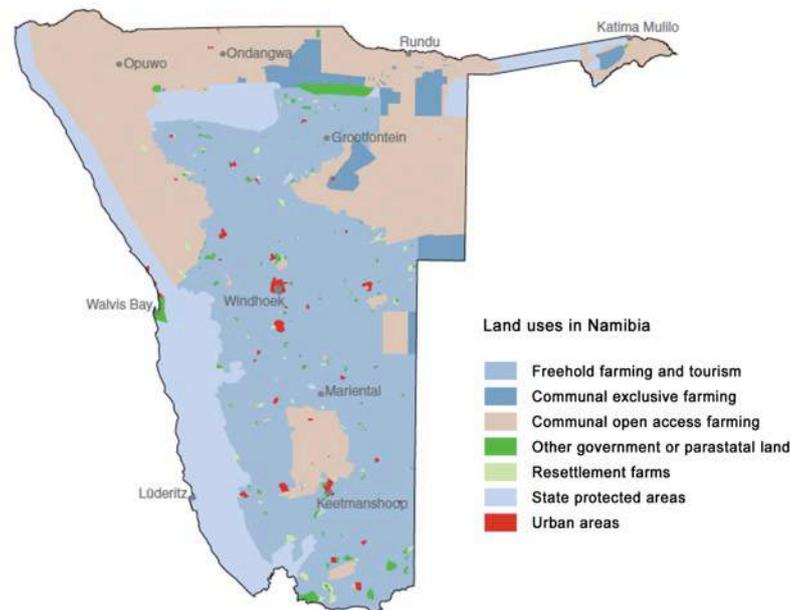


Figure 3 - Land tenure and usages in Namibia (Adapted from MENDELSON 2006: 15)

The karakul sheep, originating from central Asia, was one of the most important animals in Namibia in the 1970s and 80s, especially in the specific research area, the NamibRand Nature Reserve. It was famous for its pelts which were obtained by killing lambs almost immediately after birth. Production declined heavily due to lower demand of pelts after Greenpeace initiatives (ibid.). Sheep, cattle and goats are now the dominant livestock produced in Namibia with relatively stable numbers over the last decades, only fluctuating according to amount of rainfall (MENDELSON 2006: 11).

2.1.2. Conservation in Namibia

Namibia's outstanding biodiversity and the need to conserve it has been recognized already more than 100 years ago. The country is home to many species such as huge populations of plains game and predators in Etosha National Park, and incredibly well-adapted animals and vegetation that survive the harsh climate in the Namib Desert and can be found nowhere else in the world (MET 2010: 7). Its species diversity and high level of endemism is outstanding: around 4350 species and subspecies of which 17% are endemic (MET 2010: 32). For example 217 species of mammals can be found in Namibia of which 26 are endemic such as the Hartmann's mountain zebra (*Equus zebra hartmannae*) or the well-adapted desert elephant (*Loxodonta Africana*). Furthermore,

the country is home to the world's largest population of cheetah (*Acinonyx jubatus*) of which many roam in the research area (ibid.). Records indicate 644 avian species of which 90 are endemic to South Africa and 13 to Namibia, while 24% of insect species and 28% of the 256 reptiles can only be found here. Thus, conserving Namibia's biodiversity is not only of national but international interest (ibid.).

However, more than 80% of Namibia's wildlife is found outside protected areas and new ways had to be found to give incentives to the local people to conserve biodiversity (MET n.y.). This led to legislation in 1967, which made commercial farmers (not communal) owners of wildlife on their land (BARNARD et al. 1998: 533). Communal farmers however continued to be cut off from their rights to use natural resources (ibid.). They were only given the right to benefit from, use and manage wildlife on their land when 'Namibia's Communal Area Conservancy Act' was introduced by the parliament in 1996 (ODENDAAL & SHAW 2010: 30).

After the establishment of independence from South Africa in 1990, Namibia continuously extended its protected area network encompassing 20 state-run protected areas covering an area of 135 906.29 km² or 17% of land area (MET 2010: 16). If communal areas, freehold conservancies and private protected areas are included in the protected area network, a land area of around 40% is currently under nature conservation status (ODENDAAL & SHAW 2010: 30 cited from SPAN 2009).

Figure 4 shows the location of protected areas in Namibia including private reserves, such as the NamibRand Nature Reserve, the focus area of this study which will be described in more detail in the chapter 2.1.3. The Ministry of Environment and Tourism (MET) of Namibia states that conservationists have realized the important role that private and community conserved areas play in the protection of biodiversity and suggests that those should also be integrated in the national protected area network (MET 2010: 16).

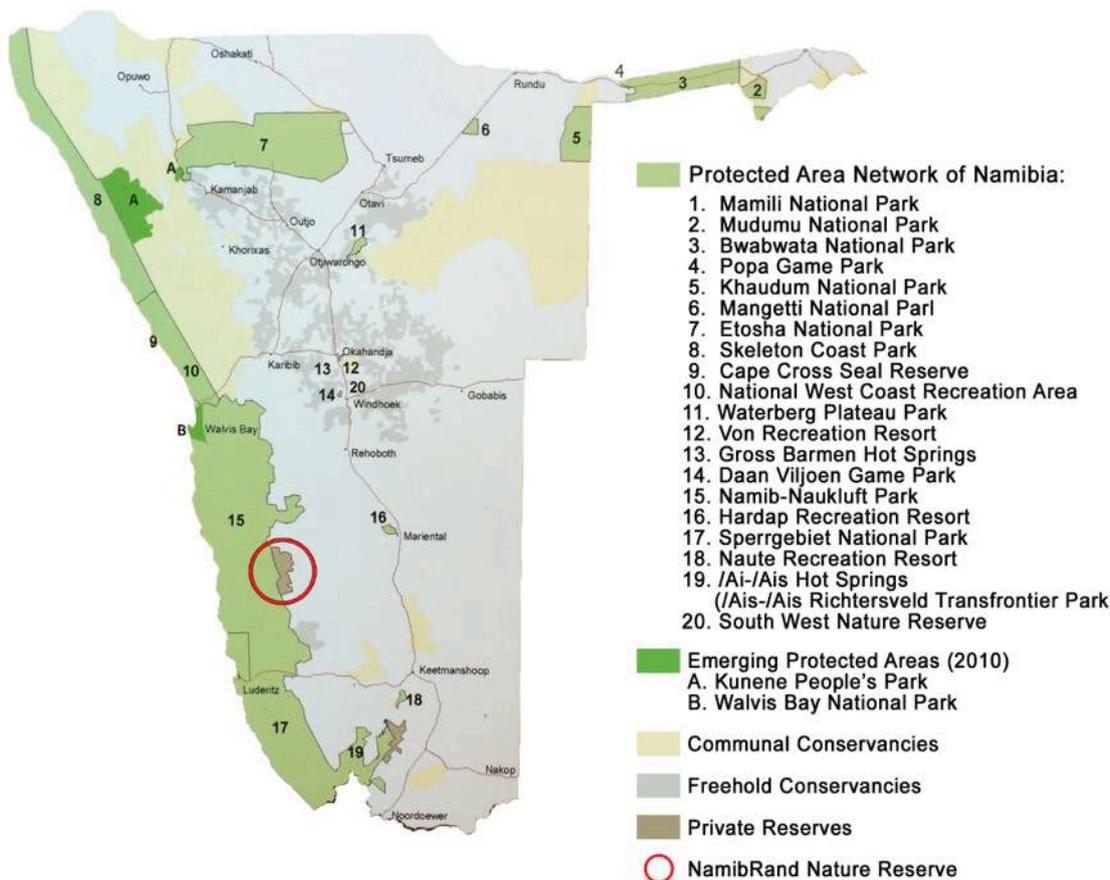


Figure 4 - Overview of Protected Area Network in Namibia (Adapted from MET 2010: 17)

2.1.3. NamibRand Nature Reserve

The research area of this study is the NamibRand Nature Reserve (from now: NRNR) in south western Namibia and its surroundings. The broader location of the reserve in Namibia can be seen on figure 4 and figure 5 gives a more detailed overview of the reserve in terms of points of interests, location of lodges and waterholes, infrastructure and the location of the research basis marked with a red arrow.

The NRNR is considered to be one of the largest private nature reserves in southern Africa, covering an area over 200,202 hectares (NRNR 2014). As can be seen on figure 4, the NRNR shares a border of about 100km with the Namib-Naukluft Park in the west and is bordered by the Nubib Mountains in the east. It is a private not-for-profit reserve and its aims are “1) to conserve and protect, for the benefit of future generations, the sensitive and fragile environment and its rich biodiversity; 2) to create a nature reserve

with a healthy and functioning ecosystem, providing a sanctuary for flora and fauna and to facilitate seasonal migratory routes in partnership with neighbours; 3) to promote sustainable utilization through ecologically sustainable and high-quality tourism products and other projects; and 4) to achieve a commercially viable operation to ensure continuance and financial independence” (ODENDAAL & SHAW 2010: 30).

The history of NRNR starts back in 1984, when the founder of the reserve, Albi Brückner, bought farmland in the area. He soon found out that indigenous livestock farming was impossible in the hyper-arid climate. The existence of the Namib-Naukluft Park in the east of Brückner’s farm initiated the idea of turning the land into a nature conservation area in order to serve as a buffer zone to the national park and fight heavy poaching that occurred at the borders at the time. Also during the 1980s the predominant land use in the area was karacul farming (nowadays called swakara) and prices had dropped immensely after the decreased demand of pelts.

Additionally, it was a period of drought, many farmers were not doing well and heavy hunting of wildlife was occurring in order to make more money. All these factors favoured the creation of a nature conservation reserve. The first land use of the game reserve, established in 1993, was trophy hunting. The hunting stopped in favour of ecotourism in the late 1990s and the purchase of more farms, to date 13 (formerly used mainly for sheep farming) making it possible to extend the conservation area (ODENDAAL & SHAW 2010). Currently there are six tourism concessions, five of them offering overnight stays to tourists (NRNR 2013).

The resource management of the reserve includes the restoration of biological diversity and the rehabilitation of degraded land to its natural state with minimal interference policy (NRNR 2008).

This also includes the implementation of environmental management plans and an effective monitoring system including population census, maintenance and improvement of infrastructure, focusing on water provision, and outreach efforts focusing on predator-livestock management on neighbouring properties (ODENDAAL 2005). Further, the NRNR has successfully reintroduced animals such as giraffe (*Giraffa camelopardalis*), red hartebeest (*Alcelaphus caama*) and cheetah (*Acinonyx jubatus*) that have historically lived in the area and had been absent due to heavy livestock farming that prevailed in the past (ODENDAAL & SHAW 2010: 33).

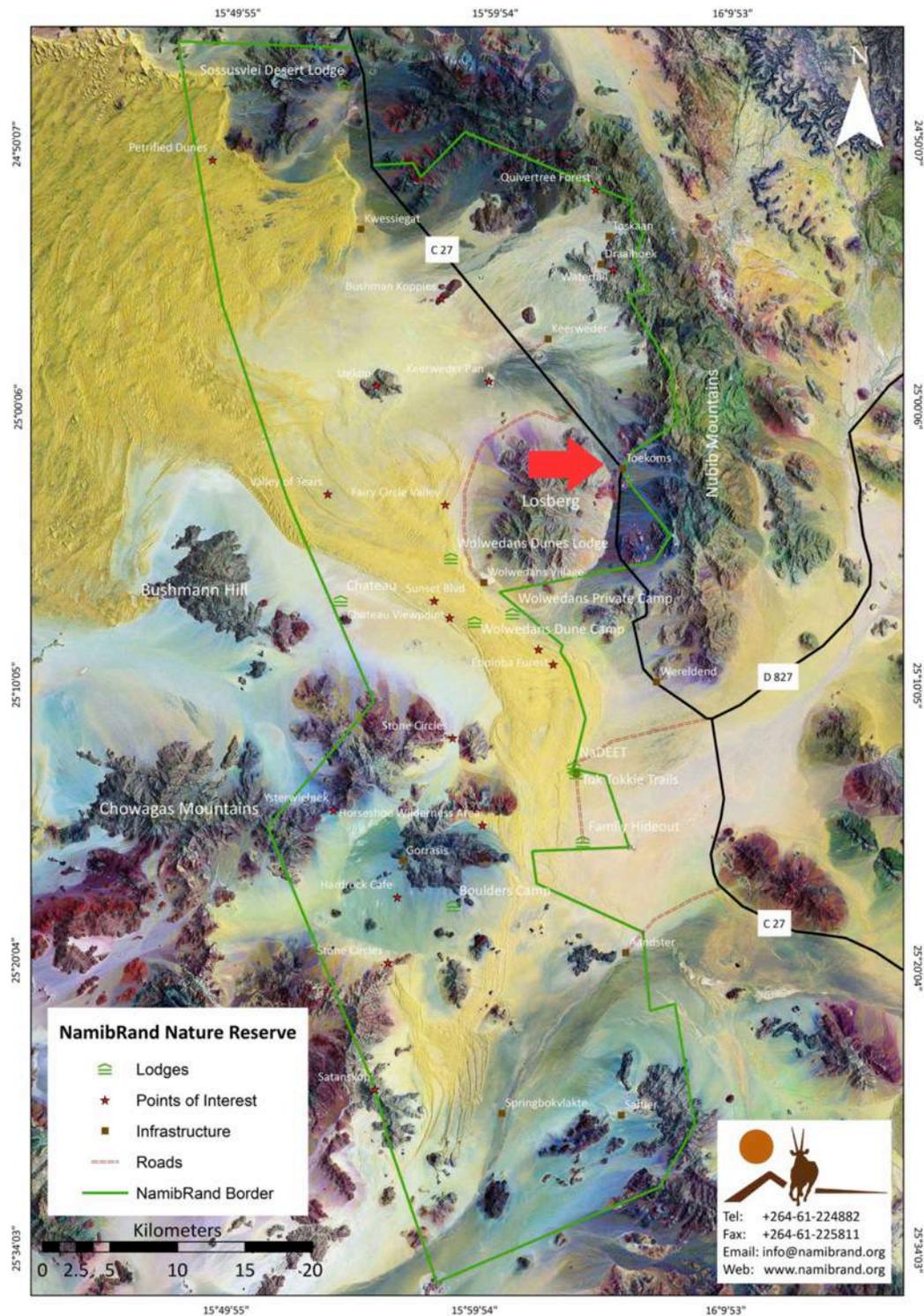


Figure 5 - Overview of the NamibRand Nature Reserve (NRNR 2013a)

The predominant large mammals on the reserve are gemsbok (*Oryx gazelle*) and springbok (*Antidorcas marsupialis*). The 2013 game census shows that there were 10,087 oryx and 5,191 springbok on the reserve (NRNR 2013b). Compared to 1,250 oryx and 840 springbok in 1984, these numbers show that conservation efforts are

successful and population numbers have recovered (ODENDAAL & SHAW 2010: 33). Other large mammals include kudu (*Tragelaphus strepsiceros*), Hartman's (*Equus zebra*) and Burchell's (*Equus quagga*) zebra, giraffe (*Giraffa camelopardalis*), klipspringer (*Oreotragus oreotragus*), steenbok (*Raphicerus campestris*), hartebeest (*Alcelaphus buselaphus*) and baboon (*Papio*). Predators include leopard (*Panthera pardus*), cheetah (*Acinonyx jubatus*), spotted (*Crocuta crocuta*) and brown hyena (*Parahyaena brunnea*), black-backed jackal (*Canis mesomelas*), aardwolf (*Proteles cristata*), bat-eared fox (*Otocyon megalotis*), Cape fox (*Vulpes chama*) and African wildcat (*Felis silvestris lybica*) (NRNR 2012).

The NRNR lies in the biomes of the Nama Karoo bordering the Namib Desert including vegetation zones of desert transition and dwarf-shrub savannah. Four distinct habitats are found on the reserve: dunes and sandy plains, inselbergs and mountains, gravel plains, and sand and gravel plains interface. Photo 2 shows impressions of different landscapes throughout the reserve.



Photo 2 - Impressions of different landscapes of the NRNR (Photo: Stephanie Haberl)

The climate in the NRNR is hyper-arid with mean annual rainfalls varying from less than 70mm in bad years such as 2004/05 up to 300mm in a very good year such as in the season of 2010/11, but generally being around 150mm (NRNR 2012). Thus, growth cycle, veld productivity and wildlife biomass carrying capacity depend heavily on rainfall patterns (ibid.). Due to low carrying capacity in the area, livestock farming is extensive and soil degradation often a result.



Photo 3 – Cattle farming next to the NRNR (Photo: Stephanie Haberl)

As the study focuses on socio-ecological aspects of land use conflicts that occur at the border of the NRNR, it is important to also describe the surroundings of the reserve. Figure 6 gives a detailed overview of the NRNR and the land uses of neighbouring farms. The reserve shares a border of more than 100km with the Namib-Naukluft Park under the administration of the MET, covering approximately the whole western border of the reserve. The east of the reserve is naturally bordered through the Nubib Mountains, however there is neighbouring land on the other side of the mountains. Direct borders, mostly through fences, can be found mainly in the southeast and in the north of the reserve. Many of the neighbouring farms are no longer livestock farming and have changed to nature conservation, tourism, game farming and/or trophy hunting. Other neighbours, especially in the southeast, are still farmers (mainly cattle or sheep) and the farms have been in their families for several generations. Photo 3 shows the typical picture of a cattle farm next to the NRNR.

The reserve is still surrounded by fences, especially at those borders with neighbours with competing land uses.

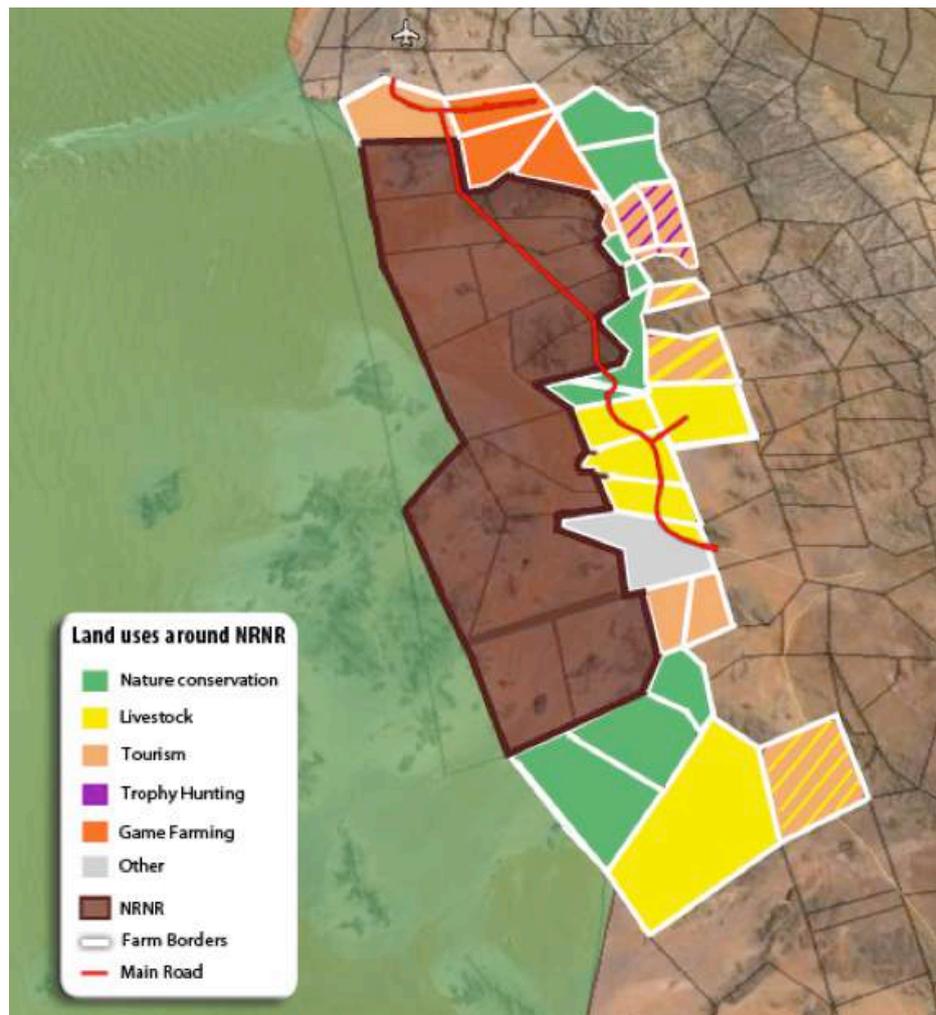


Figure 6 – Land uses around the NRNR (Adapted from Google Earth and NRNR data)

Lastly, one important aspect to mention is that the NRNR is involved in a project called Greater Sossusvlei-Namib Landscape Conservation Area (GSN-LCA or also called NamPlace). This project brings different landowners (public and private) of the area together to cooperatively manage the landscape. The participants of this concept of land management, amongst them farmers, tourism concessionaires and nature conservationists share common visions for long-term sustainable management and development of the area in order to promote the conservation of the ecosystem, to preserve its biodiversity and to improve the socio-economic value of the area for mutual benefit of the stakeholders involved (GSN-LCA 2013). NRNR states that the establishment of partnerships with neighbouring landowners, tourism operators and conservation organizations will enhance the ecological unification of the greater area and add to the scenic and biological diversity, as well as to the economic viability of the NRNR (NRNR 2008).

2.2. Data Collection

The research was conducted from September to December 2013 in cooperation with the management of the NRNR which generously provided the researcher with accommodation at Toekoms, the research centre of the NRNR (see its location on figure 5). The central location of the research base and the possession of a rental car made it possible to gain access to the whole research area. The researcher was accompanied by a fellow student working on a different topic, but due to safety reasons, drives to interview partners were organized together.

A qualitative research approach has been chosen for several reasons. The existence of land use conflicts is only assumed and not a certainty. Therefore, the purpose of this study is to assess and evaluate the general situation of the NRNR and its neighbours from various perspectives and to receive an initial view of the circumstances from which further research can evolve. Also the low population density in the research area and correspondence with the management of the NRNR prior to departure to Namibia led to the conclusion that the number of stakeholders involved is very low. Consequently, the method of problem-centred interviews was chosen for this study (WITZEL & REITER 2012).

One aspect of problem-centred interviews is that they are based on a certain guideline of open-ended questions; however, the order can be shaped freely by the interviewer and is adapted to the responses of each interviewee (KÜHN & WITZEL 2000: 3). The guideline only serves to thematically organise the researchers background knowledge and interest and to follow a controlled interview approach to create certain comparability of all interviews (WITZEL & REITER 2012: 51). The interviewee is able to answer questions freely, however, the interviewer has the option to 'guide' the respondent 'back on track' if answers tend to be off-topic. However, there is no fixed procedure with standard questions, moreover, focus should be put on the creation of a natural conversation atmosphere. That is, dependent on the interviewee, more narrative or dialogic and oriented on the guideline of the interviewer (KÜHN & WITZEL 2000: 3). This method is also useful in the exploration of new topics that were not considered or known by the researcher before (WITZEL & REITER 2012: 52). WITZEL & REITER (2012: 53) suggest that the guide should only consist of 'directions of questions' to reduce the artificial conversation atmosphere that often develops with pre-formulated questions.

The problem-centred interview usually consists of a warming up followed by the opening question, succeeded by a follow-up part and finalized with a short questionnaire in order to receive social data, such as age, farm size or education (WITZEL & REITER 2012: 65-94). The collected data in the short questionnaire can be useful for in-depth analysis, further research or to ease the end of the interview (ibid.). The interview guide of this study can be seen in table 1. The main directions of the questions were the following: the relationship with the NRNR or the neighbours; communication matters, in order to explore if the theory of communication issues, as often suggested in previous studies (see chapter 1.3.) is the source of the conflict; further conflicts or other edge effects, of positive and negative nature, are discussed leading to attitudes towards nature conservation and wildlife. The guideline finishes with questions about the development of the area and the future plans of the respondent. As suggested by WITZEL & REITER (2012: 53), this guide served the researcher only as a direction for questions. Questions were not asked in any specific order and were adjusted to the interview flow dependent on the respondent. Furthermore, questions were slightly adapted depending on the characteristic of the interviewee: neighbour, NRNR intern or other stakeholders.

Interview partners were selected with the characteristic of being a neighbour to the NRNR. Contacts to those adjacent landowners were either established through the reserve management and reserve wardens or through direct contact of the researcher with names and telephone numbers provided by the management. Further, following a snowball approach, interviewees were asked if they could think of other stakeholders that could be interesting for the purpose of the research. In order to receive different perspectives regarding the situation around the reserve, not only neighbours but also tourism concessionaires and the management and employees of the NRNR were interviewed to state their opinions on the research matter.

After a first contact with the interviewees mainly through telephone or email, meetings were set up to get to know each other, build some kind of trust and to explain research intentions. Very often, this first meeting was directly used to conduct the interview, as the approached individuals were very open and interested in the research and thus willing to directly speak with the researcher.

I. Interview Guide	
Warming Up Question	Tell me about your land and the area
Relation to NRNR	Can you remember the establishment process? Involvement?
	Changes for you since then?
	Advantages or disadvantages?
	Problems?
Communication	How is the communication between you and the park staff/the neighbours?
	Who do you usually talk to?
	Communication channels?
	Feeling of involvement? Involvement of neighbours?
	Perception of relationship to NRNR/the neighbours?
Edge Effects	Do conflicts exist? If yes what kind?
	Positive/negative aspects of being a neighbour?
	What solution/prevention measures already exist?
Attitudes towards:	
Nature conservation/conservationists	Importance of nature conservation for you?
Wildlife/Predators	Do you have wildlife/predators on your land?
	Problems with predators?
	Stock loss through predators?
	How do you deal with predators?
Plans for the future	Joining NRNR?/Expanding NRNR?
	Hopes and fears?
II. Short Questionnaire	Age, Origin, Education
	Farm Size
	Land use

Table 1 – Interview Guideline

Most of the interviews were held in the respondents' home, to provide a sense of comfort and to establish a natural atmosphere for the interviewees. Further, interviewees were promised anonymity to allow them to speak more freely. Interviews were held in English or German, dependent on the preference of the interviewee. Due to work and living arrangements of some of the stakeholders, five interviews were done in Windhoek and one interview was received through email.

Figure 7 shows the adjacent land uses of the NRNR on the left side and the coverage of the interviews conducted on the right side; almost all the neighbours were interviewed as the figure shows. Some of them could not be interviewed due to time issues (from the side of the landowners) making it impossible to meet. Additionally in some cases contact between researcher and neighbour could not be established due to the absence of communication tools, such as telephone or Internet access.

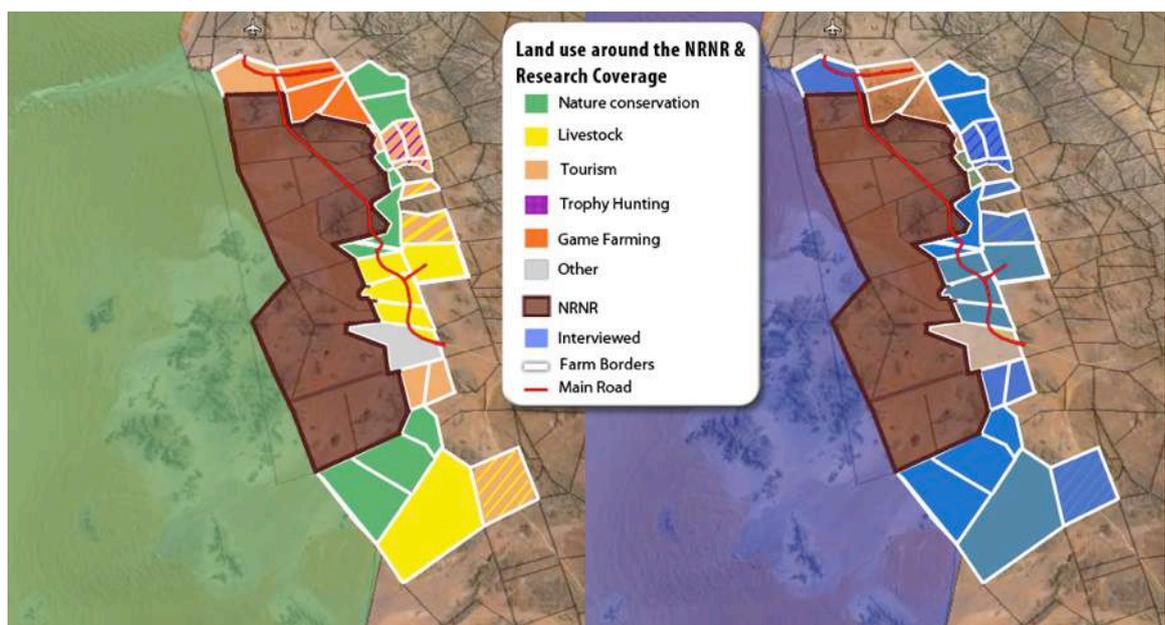


Figure 7 - Land uses around the NRNR and Research Coverage (Adapted from Google Earth and NRNR data)

Subsequently, 16 interviews were conducted consisting of:

- Three farmers,
- Five adjacent landowners that dedicate their land to nature protection (one of them being the public national park in the west),
- Two tourism operators,
- Three stakeholders within the NRNR,
- Two neighbours with mixed land use systems and
- One close landowner that adapts the concept of a biosphere reserve

One of the interviews with a neighbour with mixed land use systems turned spontaneously into a group discussion as three other farmers from the area were coincidentally present at the property and were immediately interested in joining the interview. This increases the number of farmers interviewed to six in total, however, three of them belong to the same interview process.

The interviews were recorded after obtaining consensus of the person in focus. Additionally, protocols were hand-written during and directly after each interview and elaborated after listening to the audio files. Most important, topic-related statements were transcribed and analysed. Statements were put into categories, that were either developed from the interview guideline or adapted to the statements received. From these categories, codes were created which help to assemble similar or related statements, and subcodes describe the statements in short more detailed forms.

For more detailed information on the interviews conducted please refer to Appendix 1.

Furthermore, participant observation was also involved in the research process through living in the research area for more than two months and taking part in daily events such as going on field trips with the resource warden or park rangers. The researcher was also given the opportunity to take part in a farmer's meeting held quarterly (NRNR being a member) for the area, and a meeting of the GSN-LCA project.

Lastly, review of documents provided by the management of the NRNR and the MET, additional research in the library of the MET and publicly-accessible documents all contributed to the findings of this study which are presented in chapter 3.

3. Results

This chapter solely presents the results of this research. For a discussion of the results please refer to chapter 4.

Table 2 and 3 show the results gained through the analysis of the material collected with 16 problem-centred interviews. In order to understand these two tables, the approach of finding these results is described in more detail:

As previously mentioned, a problem-centred interview consists of directions of questions or themes that are approached, and leaves the respondent to answer openly and in a narrative form compared to a standardized question-answer approach. The classification of various themes throughout the interview guide provides certain comparability of the different interviews. Thus, in order to analyse the interviews and to compare them, categories were created consisting of the topics discussed throughout each interview and the transcribed statements of each interviewee were sorted accordingly. Once statements were classified in categories, codes were developed. These codes arose automatically, as certain statements of different stakeholders within a category were related to the same issue. Hence, codes were defined by dividing categories into different issues (=codes). Subsequently, those codes were further divided into subcodes as interviewees referred to different issues in various ways. In some cases, those subcodes were further divided if necessary. The numbers in brackets show the amount of people stating the particular matter. Interviewees in some cases made more than one statement for specific codes and in other cases made no statement for specific codes. Thus, numbers per code do not necessarily add up to 16.

Hence, table 2 and 3 give an overview of the categories, codes and subcodes and number of people per statement.

The first category is land use conflicts and other edge effects, the second category comprises relationships to the NRNR and communication matters, the third includes attitudes towards farmers, conservationists, nature protection and wildlife and the fourth category deals with the development of the area in the past and the future.

Category	Code	Subcode
Nr. 1 Edge Effects	Negative	fences:
		fences must go (6)
		animals get stuck and die in fences (5)
		non-maintenance of fences by neighbour (1)
		non-maintenance of fences by NRNR (1)
		killing and/or poisoning of wildlife by farmers (6)
		killing of livestock:
		as problem (2)
		as part of nature (3)
		increase of predators since reintroduction on NRNR (3)
		too many zebras (grazing) (2)
	lighting of some neighbours (Dark Sky Initiative) (1)	
	Positive	act as buffer zone (either neighbour or NRNR) (4)
		neighbour benefits from NRNR's international recognition (1)
		great help for neighbour in case of veld fires (1)
		intentional non maintenance and/or removal of fences helps wildlife move freely (1)
Neutral	no impact (2)	
Solution/prevention measures	livestock management techniques (4)	
	reimbursement (in the past) (2)	
	constant communication to prevent conflicts (3)	
Nr. 2 Relations to the NRNR	Communication between NRNR and neighbours	good and/or close relationships (7)
		close involvement of adjacent neighbours (4)
		friends (3)
		not much communication (3)
	Potential to join NRNR	no:
		strict constitution (5)
		loss of authority rights (3)
		competitive reasons (2)
		other land uses (3)
		historical issues (1)
		yes:
	changes in constitution (2)	

Table 2 - Summary of results from interviews - Part 1

Category	Code	Subcode
Nr. 3 Attitudes	Towards farmers/farming	old-school mentality/stuck mind-sets (3)
		farming as income /livelihood (2)
		understanding of farmer's behaviour (1)
	Towards conservationists	nature conservation as enemy (1)
		Greenpeace as destroyer of karacul business (1)
	Towards nature protection and wildlife	need to produce food (4)
		wants more predators in the area (3)
		conservation and other land uses need to be in balance (3)
		own private nature reserve (3)
		balance of nature is important (2)
		shoots predators (2)
		need to save nature for children & grandchildren (2)
	predator as threat to livelihood (1)	
Nr. 4 Development of the area (past and future)	Mind-sets	change towards more conservation-minded landowners (6)
	Mix of land-uses	conservation and other land uses (tourism and agriculture) must work together (3)
	Political issues	more black empowerment in the area (1)
		resettlement issues (1)
		responsibility of government to dedicate some areas to nature conservation only and other to agriculture only (1)
	Economic issues	farming as income /livelihood (2)
		no income if only nature protection (1)
		open space will become very valuable (1)
		increase of income diversification (non-dependent on agriculture) (1)
		income from tourism vs. income from farming will decide (1)
Ecological issues	nature will arrange future of the area (2)	

Table 3 - Summary of results from interviews - Part 2

Category 1: Land use conflicts and edge effects

The main negative issue stated during the problem-centred interviews is ‘the fences’ which was mentioned many times in various ways (see table 2). Photo 4 shows a typical fence line that can be found around the reserve. Opinions on the fences differ immensely. One interviewee states:

“Our main issue is those fences, the more fences go, the better.”

(Interviewee Nr. 8)

It becomes clear that one of the main problems is that animals get stuck in the fences and die, as one respondent explains:

“There is still a part of the fence that stands to mark the boundary, but it will come down, because animals still get stuck in the fence and it’s just a senseless waste (...). It’s just unnecessary when we are all here doing the same thing.”

(Interviewee Nr. 1)

The amount of animals that were seen dead in the fences during the time in the research area was immense, showing that the fences really are a problem for many of the animals (see photo 5). Also, many times it was observed that animals, e.g. springbok gathered along the fences, not being able to cross them and animals were seen wandering along fences looking for ways to pass through (see photos 6 & 7). This shows that there are many people in the area that would favour the removal of the fences to facilitate the free movement of wildlife and reduce the loss of animals at the borders.

On the opposing side, some people favour the fences and want them to stay up and well maintained. A farmer claims that the NRNR does not correctly maintain the fences:

“Good fences make good neighbours, NamibRand does not understand fences, they are there to be kept up, if you don’t do it, somebody has a problem with the fence.” (Interviewee Nr. 11)

Interestingly, the NRNR regards this topic from a different point of view:

“Mr. X never maintains fences – legally the fences are a 50-50 story, if it is a border fence – it belongs to you and the other side, so maintenance should be on both sides.” (Interviewee Nr. 2)

Obviously two opposing opinions collide making it difficult to find agreements between the NRNR and this neighbour.



**Photo 4 - Typical fence line between the NRNR (left) and a neighbour (right)
(Photo: Stephanie Haberl)**



Photo 5 - Dead springbok in one of the fences around the reserve (Photo: Stephanie Haberl)



Photo 6 - Springbok gathering along the fences between the reserve (right side) and a neighbour (left side) (Photo: Judith Schulze)



Photo 7 - Example of animals moving along the fences, not able to cross (Photos: Stephanie Haberl)

Another important negative factor around the borders of the reserve is the killing and poisoning of predators and other animals in order to protect livestock. One interviewee explains the importance of this issue:

“The vultures are important, so it is important with the farmers on either side, that poison must be totally prohibited, to have the good will of the farmers around, because that can change the set up in the desert, because it is so sensitive, it can change in half an hour and you will not get it back in many years, the impact on the area is much bigger here than in the north.”
(Interviewee Nr. 9)

The respondent is explaining the issue that once predators or other animals are poisoned, the vultures eat their carcasses and will be poisoned as well. Their resulting absence would cause a big problem for the health of the fragile ecosystem.

Another interviewee expresses that major efforts are being made to increase populations of predators but this can be difficult when farmers shoot the animals:

“We are trying to get the population higher here and then the farmers are shooting it, it does conflict and I can understand if it interferes with their business, but they should take advantage of it and instead of shooting show it to the tourists.” (Interviewee Nr. 3)

However, several farmers stated directly that they shoot predators as soon as they see one and then report to the MET within seven days, as is the law in Namibia. Interviewees stated:

- *“It’s starting to be a big problem here, if I see a cheetah, I shoot it, doesn’t matter if there is a collar or not, when you shoot it, you report it to the MET.”*
(Interviewee Nr. 14/2)
- *“(…) if anything threatens your life you take it out of the system. You can’t afford to have jackal or cheetah or leopard take out of your stock, out of animals, because that is your livelihood, that’s what you live from, it’s like running a bakery in town and you say it’s alright you can come in and not pay it.”*
(Interviewee Nr. 14/1)

Besides the statements that predators are killed, the killing of livestock and game was also reported during the interviews as this respondent explains:

“We reintroduced species, blesbok, we put in 10, the next 10 years it grew to 50, and now we have 4 left since NamibRand started to reintroduce cheetah, we

have 4 left (...) when you drive in the field it's scary how many carcasses you find. And it's a loss, it's our life, we have a hunting company, we do trophy hunting and it's our income and it's gone. We have one less species we can hunt, we have one less species we can advertise.“ (Interviewee Nr. 14/1)

The testimony above also includes an issue that was mentioned by several interviewees: the increase of predators in the area since the reintroduction through the NRNR:

“There is a lot of cheetah around here, since NamibRand was created, last week I found two tracks from cheetah, I don't know if it was from NamibRand but a couple of years I did not have cheetah and now there are and I have a couple losses.” (Interviewee Nr. 14/2)

Not only farmers, but also conservation-minded landowners described this trend:

“Since NamibRand has introduced cheetah, the numbers were going up, lot of sightings, lot of camera traps.“ (Interviewee Nr. 12)

Also the NRNR explained that the cheetah population seems to be increasing and healthy (NRNR 2013c). During the research period one cheetah was sighted (Photo 8).



Photo 8 – Cheetah sighting during research on the reserve (Photo: Stephanie Haberl)

Although livestock losses were reported several times, some of the respondents communicated that losses are not a big problem for them and they accept it as natural as following statement shows:

“If livestock is killed, that’s just the way nature works. You cannot live in this area without accepting nature around you.” (Interviewee Nr. 4)

Another aspect mentioned negatively is the problem with zebras competing for food on livestock and game farms, as numbers are very high:

“There are problems with the zebra. They destroy grazing, there are just too many, that’s also a big problem. When it becomes this dry, zebra is even worse, up to 500 in a group.” (Interviewee Nr.14/2)

One conservation-minded landowner explained that for his neighbours the zebras are a big problem and that fences must therefore be kept up, so zebras could not graze and drink on the neighbouring land (Interviewee Nr. 12).

Interestingly, one aspect was only mentioned once however it could have an important impact on the value of the NRNR: the lighting (Interviewee Nr. 12). As the NRNR has been declared an ‘International Dark Sky Reserve’, not only is it important what type of light bulbs are used within the reserve in order to keep light pollution at the lowest level, but also what lights are used around the borders.

Positive aspects

Even though many negative aspects were discussed, there were also some positive effects of being a neighbour to the NRNR. Some interviewees expressed that either the NRNR or the neighbouring land acts as a buffer zone, as this statement shows:

“We managed to get the farm back in 12 years time. Nature comes back if you don’t interfere, but was only possible because of being next to NamibRand, if the farm were at another place, it would have taken longer.” (Interviewee Nr. 9)

Furthermore, one neighbour sees positive aspects in the international recognition of the NRNR:

“It’s fantastic for us being next to NamibRand, because it has this international recognition, that people know. Even when you say you are just next door to it. People immediately associate you with this initiative.” (Interviewee Nr. 1)

Other positive aspects include the help from the NRNR that neighbours experience in the case of veld fires and some neighbours appreciate the intentional non-maintenance of fences at borders with similar land uses, which aids the free movement of wildlife. Only two respondents stated that being next to the NRNR does not have any negative or positive impact on them.

Solution and prevention measures

The subject of solution and prevention measures was approached during the interviews. Several people claim that the correct livestock management techniques would decrease livestock losses through predators, as this statement demonstrates:

“There are very few farmers who bring in their cattle at night, they just leave it out alone in the bush which is just asking for trouble.” (Interviewee Nr. 1)

Another person states that it is not a surprise that those farmers that leave their sheep alone in the field complain about losses. Interestingly, those farmers that did use a shepherd or a guard dog did not complain about losses during the interviews (see photo 9). However only two of the neighbours visited and interviewed used a shepherd and only one of them a guard dog.



Photo 9 - Goats and sheep with guard dog (Photo: Stephanie Haberl)

Reimbursement was described as another solution tool. Two interviewees stated that some farmers had been reimbursed for their livestock losses in the past, after the reintroduction of collared cheetahs on the NRNR. However, this instrument is not active at the moment.

Other interviewees explained that for them “(...) constant communication is a tool to prevent conflicts.” (Interviewees Nr. 10 & 12)

Category 2: Relations to the NRNR

Communication between the NRNR and its neighbours

Since the literature review in chapter 1.3. led to the expectation that communication issues play an important role as source of conflicts, interviewees were asked about their relationships to the NRNR and the communication channels they usually use.

Several respondents state that they have a good and/or close relationship to the NRNR, its employees and the management. Some people even said that they are good friends.

Furthermore, some respondents have the feeling of being very involved by the NRNR in various issues regarding the reserve. One person explains:

“There are no problems or conflicts. They are incredibly helpful and incredibly open, as I said we are not part of NRNR but they always make us feel included, even though we are a separate entity (...).” (Interviewee Nr. 1)

Furthermore, two persons from the NRNR explained that their efforts are high to reach acceptance from surrounding farmers, as this statement shows:

“I also represent NRNR at the farmers meeting, this is also an attempt to try and improve relations with the farming community.” (Interviewee Nr.2)

Observations made during the stay in the research area were that the employees and the management of the reserve always tried to be very polite and helpful with the farmers and other neighbours around them. One would occasionally stop at a farm to check personally if everything is all right or if help is needed.

Only three interviewees claim that there is not much or no communication (Interviewees Nr. 6, 7 & 13).

Potential to join the NRNR

Where applicable, interviewees were also asked if they could imagine joining their land to the reserve. The majority stated ‘no’ for various reasons. One of the main reasons described during the interviews is the strict constitution of the NRNR that landowners would have to sign once they join the reserve, as the testimony of this person shows:

“Yes, I would like to join eventually, I’m not sure if I buy into the whole constitution (...) in terms of growing the area bigger, one must be slightly more flexible, in terms of giving more authority, landowners more freedom in how to run the land and looking at the bigger picture.” (Interviewee Nr. 12)

Also this statement speaks about the strict constitution as a reason not to join:

“The constitution was too strict, they wanted to prescribe things like whether you are allowed or not, or how to hunt, or driving around the farm (...).“ (Interviewee Nr. 9)

Other landowners simply explained that they could not join because they have adapted different land uses that do not work together with the constitution and concept of the NRNR:

“So, I cannot join, because you have to remove all the fences and you cannot farm.“ (Interviewee Nr. 4)

Other reasons regarding not joining the reserve included competitive and historical issues that still have an influence on the relationship between the NRNR and the neighbouring landowner (Interviewees Nr. 1, 3 & 15).

Nevertheless, it was also explained that the constitution of the NRNR was changed slightly in favour of potentially joining landowners, leaving them more authority rights over the land. This is reason enough for two landowners to express a decision to join the reserve, which will probably happen in the near future (Interviewees Nr. 9 & 12).

Category 3: Attitudes

Towards farmers and farming

Some respondents think that the farmers of the area have out-dated mentalities as the following statement shows:

“Most of the farmers I have met, have “old-school” mentality, where they shoot anything they see.” (Interviewee Nr.1)

Speaking about farming some people explained that it could also be someone's livelihood and income source:

- *“If you need income from land you look at it from a different perspective.”*
(Interviewee Nr. 15)
- *“ (...) And what the difficult situation is, that people must understand, that this is what we live from. It's not a hobby. It's not a piece of land that we bought because we have the money and we could look at it and it's nice and we have a couple of sheep just for a braai {barbecue} once in a while. No, it's our life.”*
(Interviewee Nr.14/1)

These results show the different views people have about farming. For some people it is their livelihood and they depend on it. Photo 10 shows a livestock farm next to the NRNR.



Photo 10 - Cattle behind a fence next to the NRNR (Photo: Stephanie Haberl)

Some people interviewed could also not imagine that income from land could be generated in ways other than only farming:

“What should the farmers do to make a living with farming if they would dedicate their land to nature protection? It's their life. There would be no income anymore.” (Interviewee Nr. 6)

However, understanding for farmer's behaviour was also shown:

“A place like NamibRand is obviously an eyesore, because of jackals, hyenas, cheetah; obviously if you are a farmer you shoot a cheetah which we don't like, which I understand, if I was a farmer, I would potentially do the same.”

(Interviewee Nr. 8)

Towards conservationists

There were only a few statements towards conservationists. One of them sees conservationists, and in this case the NRNR, as the enemy:

“So we depend on our farming. So that's the problem, your enemy is now your neighbour. I can't farm when I got jackal, cheetah, leopard, hyenas, they kill our stock and that's our income.” (Interviewee Nr. 14/2)

The farmer also claims that Greenpeace is the destroyer of the karacul business that was flourishing in the area some decades ago as described briefly in chapter 2.1.3.

Towards nature protection and wildlife

Attitudes towards nature protection and wildlife vary enormously. Firstly, several people stated that land could not remain unused:

- *“We can't stop farming for the sake of conservation, because what does your country live off, we need to eat.” (Interviewee Nr. 14/2)*
- *“Big areas in Namibia are dedicated to nature conversation but one cannot farm anyway in most of these areas, therefore land that is usable for food production should be used.” (Interviewee Nr. 13)*
- *“Many people starve in Africa, we need to produce food.” (Interviewee Nr. 11)*
- *“No, one cannot do nothing. You need to have income, you can conserve but you also need to earn something.” (Interviewee Nr. 4)*

Other statements deal with the topic of combining different land uses, including the idea that conservation and other land uses should work together. One respondent states:

“Pure conservation model is not the way to go, there must be a balance, and it can work together. Can't just be conservation, the model must be wider.” (Interviewee Nr. 8)

Surprisingly, attitudes amongst farmers differed as well. Some farmers expressed that they shoot predators and do not value them, whereas others have no problem with predators:

- *“You must protect nature, otherwise your grandchildren would have to look in a book what a leopard looks like.” (Interviewee Nr. 5)*
- *“I shoot them (predators).” (Interviewee Nr. 11)*
- *“It is important to protect nature, we humans must live in balance with nature. We depend on it and we already have destroyed most of the parts on earth. If one kills leopard and cheetah, the whole food chain would be disturbed.” (Interviewee Nr. 4)*

For some of the interviewees it was not difficult to explain how much they value nature, as they have dedicated their land to nature protection and have created small private reserves themselves (Interviewees Nr. 9, 12 & 16).

Category 4: Development of the area (past and future)

Answers in this category relate to varying issues and are thereby sorted accordingly.

One issue discussed several times by different respondents, farmers and other landowners, is that there is a change towards more conservation-minded landowners and thus, a change in mind-sets:

- *“A lot of farmers did not like NamibRand – but through years, neighbours changed way of thinking.” (Interviewee Nr. 2)*
- *“We are more people that are conservation-minded in the area, so I think that has become the majority, which is the other way around than before, it was more farming community (...) it’s a global change of how you see the environment.” (Interviewee Nr. 12)*
- *“It has changed over the last couple of years, as everybody is much more conservation conscious, because of everything around us, if he {referring to a predator} doesn’t hurt you, you leave him...but that doesn’t happen often.” (Interviewee Nr. 14/1)*

Another issue that came up when speaking about the possible future development of the area is that a mix of land uses could be most appropriate:

-
- *“(…) if people still want to do to livestock farming, we would allow them to do it, because it would speed up the process, maybe going back to shepherding.” (Interviewee Nr. 12)*
 - *“People should be open. Agriculture and conservation can go very well together.” (Interviewee Nr. 8)*

From a political point of view regarding the future development of the area, one respondent claims:

“I would like to build a model that appeals more to the government as well, also more black empowerment, because lot of the times it is the white elite ownership, so the government looks at it from a fear point of view.” (Interviewee Nr. 12)

Another person sees the responsibility for the government to change something:

“From the farmers’ side it is really difficult and I think it is the governments’ responsibility, that there must be areas, that are dedicated to wildlife and there are areas that are dedicated to farming and to get those two things to work together, that it is commercially viable to still be a farmer, it’s extremely difficult.” (Interviewee Nr. 14)

One significant political factor that could shape the future of the area is the resettlement program of the government. Interviewee Nr. 10 explains that farms in the area could be expropriated and given to Nama families (an ethnic group mainly living in the south of Namibia). He states that this is an issue that should not be disregarded.

Economic aspects play an important role in the future of the area according to several people. As already mentioned, for some people in the area farming is their only income and they cannot imagine how else they could generate income if not with farming (Interviewees Nr. 4, 6 & 14/1).

Another interesting idea is expressed by this respondent:

“(…) in my mind, there is something special about being out there {referring to the Namib Desert}. It is so wide; there is so much space. It’s something that is going to be a lot of money worth in the future.” (Interviewee Nr. 9)

Other respondents explain that the future development of the area will depend on income issues. If less people are dependent on agriculture and have other income sources, setting land aside for nature protection becomes easier. One interviewee states:

“The proof is in the pudding, tourism income versus farming income will decide the future.” (Interviewee Nr. 8)

This demonstrates the opinion that tourism generates more income than farming in the area.

Finally, two respondents expressed the belief that nature will arrange the future of development of the area; as farmers are highly dependent on water for the fodder of their livestock, the longer that droughts prevail in the area, the higher the possibility is that farmers give up and move to other areas, as is already occurring (Interviewees Nr. 4 & 12).

To summarize and to answer the key questions raised in chapter 1.5., one can say that conflicts occur between the NRNR and its neighbours. The land use conflicts are primarily related to the presence of the fences around the reserve. Consequences of the existence of the fences are that firstly, animals are hindered following their natural routes while searching for water and secondly, many of those animals are being killed by trying to cross the fences which counteracts conservation efforts and the protection of those species.

Another negative factor is the HWC; predators are killing livestock and farmers are potentially shooting predators as interview results show. Furthermore, with regards to the zebras, resulting in competition for grazing and consequently less fodder for livestock. Sources for the HWC are of course the existence of predators in the area and the efforts to increase them by conservationists. Furthermore, inappropriate livestock management techniques, as stated by various interviewees, could be the source of increased livestock predation.

Other types of conflict that can be identified through the analysis of the results include the negative attitudes towards the protected area. This non-acceptance may be rooted in historical issues or attitudes based on prejudices. However, non-acceptance was only infrequently the case; the majority of interviewees accepted and welcomed the reserve. Although some conflicts have been identified, positive edge effects are also present.

One conflict solution or rather prevention method that is already in place is clearly the high communication effort on the side of the NRNR. Regarding communication matters, it can be summarized that the majority described good relations with the reserve and vice versa. Furthermore, some of the neighbours expressed a feeling of close involvement in issues regarding the reserve and its surroundings. This also coincides with the efforts stated by the NRNR to include farmers of the area in their communication efforts and to reach wider acceptance amongst them. The involvement in the cooperative management project of NamPlace as described in chapter 2.1.3., is also an attempt on the side of the NRNR to bring conservationists and farmers together and to achieve more tolerance in the area.

However, the majority of the respondents expressed that it would not be an option for them to join the reserve for various reasons which are described above. Nonetheless, two landowners are potentially joining the reserve in the near future.

Attitudes vary immensely, nevertheless it can be concluded that the majority has positive opinions towards nature protection and wildlife. Few farmers see conservationists as the enemy. However, some of the farmers state that farming is their livelihood and they could not imagine an alternative.

One main aspect that arose while speaking about the development of the area in the past and in the future was the shift in mind-sets towards conservation. This statement came from various types of people interviewed, amongst them farmers and conservationists. This was also observed during participation in one of the farmer's meetings. During general discussions regarding the issue of predators, several farmers stated that they had been shooting predators in the past but are interested in trying different methods now. Additionally, the regular newsletter of the NRNR (The Barking Gecko) included the statement that "The results (referring to being a member of the farmer's association) are already encouraging with two of the more conservative members changing their stance on predator release and predator behaviour" (Nrn 2014a). This also shows a shift in the minds of farmers, becoming more conservation-minded or at least open to implementing alternatives.

Furthermore, several other issues were described as being crucial and game-changing for the future development of the area, among; political, economic and ecological issues that could all shape the area in the long-term.

4. Discussion

As the results in chapter 3 show, land use conflicts are present at the borders of the NRNR confirming the hypothesis raised in chapter 1.4. One of the key issues derived from the results is the problem of the fences. The majority of people interviewed would prefer the removal of the fences. Some landowners stated that the fences between them and the reserve are still up, however not well maintained in order to facilitate wildlife movement. When asked for the reason why fences would not be totally removed instead, respondents stated that the fences still mark the border. Here the question arises whether there are other tools more appropriate for marking a border. If both sides are for the removal of fences, then why leave them for the sake of border marking? In the case when both involved parties, neighbouring landowner and the NRNR, follow the same goal of conserving nature, then efforts should be made to find other solutions for marking the borders.

Evidence indicates the existence of fences does not hinder the passage of predators. However, border fences must be kept up between the NRNR and neighbouring farms that apply competing land uses, for the primary purpose of preventing the escape of livestock from farms.

It is difficult to evaluate the situation where non-maintenance of the fences was claimed from either side. Proofs of who does or does not maintain the fence could not be made. In general, it can be assumed through participant observation in the area that the reserve maintains its fences especially at those spots where the non-maintenance could lead to disagreements. Proof of the importance and awareness of this issue can be found in almost every management report during the last few years, where the urgency of the maintenance of the fences between the NRNR and one specific neighbour is declared a pressing issue. However, the condition of fences can vary on a daily basis, as wind and animals can create gaps. Since the fences cannot be monitored on a 24/7 basis, this has to be taken into consideration when examining the claims of involved parties.

Another negative aspect that must be discussed regarding the existence of fences is the fact that many animals get stuck and die. Questions arise on how big the impact is on the population size of the different species affected. As described in chapter 2, WOODROFFE & GINSBERG (1998) suggest that reserve borders can act as population sinks for wide roaming animals. Even though their study concentrates on the killing of

wildlife, especially predators by humans, it should be questioned if fences could have the same effect on the animals concerned in this area, such as kudu, springbok and oryx. This directly leads to the discussion of the statements that farmers are shooting predators. These statements originated from both sides, conservationists and farmers. Some of the farmers interviewed directly admitted to shooting predators. As concentrated conservation attempts are made to increase populations, this conflict has adverse effects. Here again, reserve borders could potentially act as a population sink and underline the findings of WOODROFFE & GINSBERG (1998). Nevertheless the truth of the statements remains questionable, as does the number of predators really being shot (for limitations of the study please refer to chapter 5). From at least one of the farmers the impression was transmitted that he prides himself with the death of any animal that approaches his livestock.

On the opposing side, it should not be forgotten that for some of the farmers interviewed, agriculture is their main or only source of income and naturally they desire the removal of anything that threatens this income. However, here it is important to find alternatives to the killing of predators. The implementation of a shepherds and/or guard dogs as suggested by MARKER et al. (2005) could be a solution, however it seems that the majority of farmers around the NRNR are not willing to consider this option. Only one farmer visited during the research made use of a shepherd and a guard dog. Reasons for the low interest in guard dogs could be the efforts that have to be invested in the upbringing and education of these dogs. However, the validity of this reason is questioned, as the effort to find, hunt and shoot predators is also very time-consuming. In addition, several organisations provide their help to the farmers with the introduction of the guard dogs and even give them the dogs free. Thus, the high investment of time for a short period could prevent livestock losses in the long-term which should be an attractive option for farmers. Reasons for the low interest should be further developed. Moreover, perhaps other methods could be considered on the side of the NRNR. As described in chapter 1.3.2., instead of reimbursement, one could think about certain incentive schemes, similar to ecosystem services where farmers receive certain benefits from keeping predators alive (PECHACEK et al. 2013). However, implementation might be difficult, as ways have to be found to prove that a farmer saw a predator, e.g. a cheetah and did not shoot it.

Several people expressed that the cheetah population has increased since the NRNR has introduced these animals into the area. Therefore, the NRNR is often blamed when livestock is killed. However, one can never be sure that the cheetah in question originated from the reserve or arrived from other places in Namibia. As already mentioned in 2.1.2., Namibia has the largest population of wild cheetah of which 80% can be found on private land.

One conflict that could be influential in the future is the light impact of the neighbouring farms on the reserve. As the NRNR has been declared a valuable place on earth to see the night sky, it is important to keep light pollution at the lowest level. The NRNR has undertaken all measures and implemented light bulbs with low light impacts at the concessionaires and former farmhouses throughout the whole reserve. The favourable location within the Nubib Mountains and the Namib-Naukluft Park already decreases light pollution from two sides. There are only some farms left in the south and the north of the reserve that could have an impact on the night sky.

Several statements show that being next to a protected area does not only have negative, but also positive aspects. Of course this depends on the land use. If a landowner has dedicated his efforts to nature conservation, it is clear that being next to a nature reserve is very helpful. The more the land uses correspond the smaller the probability for conflicts. Furthermore, being close to a protected area could act as an advertising benefit for adjacent tourism operators and help with the attraction of new tourists.

However, through detailed analysis of the results, neighbours with competing land uses (livestock farming) also claimed that there are positive aspects of being next to the reserve: neighbours also benefit from the fact that the NRNR is extremely well equipped to fight veld fires, and this is an example of the NRNR always trying to help where they can, regardless of land use.

As chapter 1.3. shows, communication matters play an important role in the issue of land use conflicts. Regarding this theory and comparing it with the situation around the NRNR, it seems that communication efforts from the side of the NRNR are high which could be the reason for the predominantly positive relationships stated between the reserve and its neighbours. The attempt to reach out to the farmers through the

membership in the local farmer's association is a valid move to find solutions to existing conflicts, to facilitate a platform for discussion and to develop prevention measures in cooperation with the persons affected. The situation around the NRNR strengthens the hypothesis described by STOLL (2000) and RUSCHKOWSKI (2009) that the lack of participation can be a source of conflict. On the contrary, the strong feeling of involvement of the neighbours and the participation efforts of the NRNR could be a reason for the positive attitudes towards the reserve by its neighbours. Besides, some of the interviewed neighbours described their relationship to the NRNR and particular people within the reserve as friendship, which suggests that good relationships and meaningful communication on a personal level are in fact a valid basis to prevent conflicts as described in chapter 1.3. (STOLL-KLEEMANN & O'RIORDAN 2002; MARSHALL et al. 2007; RUSCHKOWSKI 2009).

Nevertheless, it should not be forgotten that the research area lies in a region of Namibia where the population density is below 1 person per km² which makes communication easier, and one also has more time when there are not hundreds of people living along reserve borders as is the case with many other national parks. Good and meaningful communication is definitely easier to manage when there are few people and in addition, the majority are friends. Hence, good communication in order to prevent conflicts is a valid concept, however, in areas where population densities are higher, it might be more difficult to establish good and meaningful relationships with all the involved parties.

Regarding attitudes towards farmers and conservationists it is interesting to see that typical stereotypes are stated as STOLL-KLEEMANN (2001) suggests and described in chapter 1.3.: "Farmers have out-dated mentalities and conservationists are the enemy." It could be that these thoughts about the other group hinder those particular participants from effective communication. As described, these stereotypes awaken negative feelings even before getting to know the other person which could make efforts to find conflict solutions, such as alternatives to the shooting of predators, ineffective and difficult. Based on observation at the farmer's meeting and through evaluating statements made by various farmers during the problem-centred interviews, there seems to be a gradual paradigm shift towards more awareness of the importance of nature protection amongst farmers. Of course there are still some farmers that have very traditional views and express their opinion that land is there to produce food and that it

is wrong not to cultivate it. As laid down in chapter 1.3. these are cultural drivers (STOLL 2000) that lead to negative feelings towards nature protection and thus are sources of conflict between farmers and the NRNR. In this case, it might be very difficult to incite change towards more sustainable land uses and might only be possible through generational shifts and/or landowner changes.

Yet, it is an encouraging surprise that half of the farmers interviewed had very positive attitudes towards the protection of nature and wildlife, for example the knowledge of the importance to save wildlife in order to be able to show it to the grandchildren. During the farmer's meeting, one of the farmers made it clear to those that still shoot predators, that they should think about their wrong-doing and how they will feel, once they have to show their grandchildren what a leopard looks like in a book. Interestingly, many of the attendants agreed with his speech. However, questions arise from where these positive attitudes arise. Are they related to educational issues, personal experiences or other reasons? The social data collected in the short questionnaire does not provide any connections between for example the level of education or age and the level of accepting wildlife or nature protection. Additionally, the number of people interviewed is too small to demonstrate a representative result. To find answers to these questions could be an approach for further research, in order to discover incentives that would motivate people towards changing their attitudes about nature protection and more sustainable land uses.

Concluding, to consolidate social and psychological aspects in the research of land use conflicts around the NRNR as suggested by MARSHALL et al. (2007) has been a crucial contribution to the overall findings of this study.

Regarding the development in the area in the past and possibly in the future, one can formulate that from a conservation point of view it looks very promising. Several individuals communicated that they had the feeling that everyone is becoming more conservation-minded in the area. And not only did conservationists have this opinion but also farmers. One farmer even expressed that only through the establishment of the NRNR he had started thinking about the importance of protecting nature.

It seems that the area has shifted from a majority of farmers to a majority of conservationists over the last decades. This probably has several reasons. As described in chapter 2.1.3., many farmers gave up during times of droughts and with the new

landowner the land use changed. This shows the power nature has in the future development of the area and in the change of land uses from agriculture to more sustainable ones. In case of longer droughts in the future, more and more farmers might give up livestock farming and sell their farms. Nevertheless, an abundance of rainfall in the coming years would make it easier to produce livestock for fodder, resulting in more farmers staying.

This issue of nature also leads to the next idea. Maybe only because the region is so hostile with any kind of cultivation being impossible and livestock farming very challenging, it is easier to change land uses to nature conservation and ecotourism, because there is nothing else one could do? With regards to many other protected areas in the world, that are on cultivatable land, it might be more difficult to convince people at the borders to also convert to sustainable land uses if their land is highly productive and often securing livelihoods. Herewith another question arises: As the example of the neighbours of the NRNR shows, some of the landowners have the means to dedicate their land to pure nature protection without any further income that is created by the land itself. However, this fortunate situation is not the rule and the majority of landowners in Namibia and worldwide has to generate income from the land. As the case of the NRNR shows eco-tourism is one way to finance nature protection. Hence one should not forget when discussing about changing land uses to more sustainable ones, it is not always an easy process as financial matters and the secureness of livelihoods play an important role in many parts of the world.

Other suggestions to expand the protected area further were the idea of combining several land uses on a sustainable basis such as nature conservation, ecotourism and livestock farming (back to shepherding) as already suggested by MOMBESHORA & LE BEL (2009). Especially because some of the people in the area still have traditional views and cannot imagine stopping farming, one should think about the possibility of allowing sustainable farming practices with low animal numbers instead of prohibiting any kind of livestock farming in the constitution.

When questioned, many interviewees ejected the possibility of joining the reserve in the future, with the reason that the constitution was too strict and they would fear loss of authority rights on their land. However, the management of the NRNR has already reacted and adapted certain parts of the constitution which brings two landowners to possibly join the reserve in the near future. However, here again, more flexibility on the

side of the NRNR with the combination of different sustainable land uses would potentially expand the protected area faster.

Lastly, the cooperative approach of protecting the wider landscape and its biodiversity around the NRNR with the participation in the GSN-LCA project is definitely a valid tool to prevent conservation conflicts as already described in chapter 1.3. As STOLL-KLEEMANN & O'RIORDAN (2002) explained, when people have the feeling to belong to one group following the same aims, the potential for conflict is reduced. Therefore, the attempt to bring farmers, nature conservationists (private and public), tourism operators and other landowners from the area together to follow one common goal has a high potential to be a successful model for the promotion of more sustainable land uses and increase the importance of nature protection in the future.

5. Limitations to the study

Although this study has produced valid findings and aspects of interest regarding the situation around the NRNR, some limitations must be acknowledged.

Firstly, regarding the method, the problem-centred interview certainly has its advantages as described in chapter 2.2., but is also accompanied by some disadvantages. One aspect is that respondents may be influenced by the words and character of the interviewer and thus communicate accordingly. Even though it is advised to stay neutral during the interview, it remains difficult not to communicate in some way. This results in the fact that interviewees might have responded differently if a different person had conducted the same interview. Thus, interviewees could act according to their counterpart, the interviewer, with a greater or lesser degree of forthrightness and narrative or less open, leading to other results.

Furthermore, results are mainly based on statements and opinions made by different people and have not been verified in some cases. Hence, the researcher heavily relies on the trustworthiness of the people interviewed. Statements are generally assumed to be true. However, it could also happen that false statements were made that misrepresent the results.

Moreover, some neighbours of the NRNR could not be interviewed for various reasons and are thus not represented in the results (see research coverage in figure 7).

Nevertheless, this method has proven to be effective enough to receive a general overview of the situation at the borders of the reserve. Starting from this overview, more research with other methods should be made wherein the most important results are examined further from different perspectives.

6. Conclusion

The aim of this research was to evaluate land use conflicts and other edge effects at the border of the NamibRand Nature Reserve (NRNR), a private conservation initiative in southern Namibia. The review of studies made in the field of conservation conflicts led to the expectation that when two different land uses collide conflicts arise. Thus, the hypothesis of this study was that land use conflicts must occur at the borders of the NRNR, because neighbours with different land uses surround the reserve, from agriculture to trophy hunting and tourism.

Results of this study, mainly collected through problem-centred interviews, show that various conflicts exist around the NRNR. However, neighbours also express positive effects as a consequence of being located next to a protected area and positive attitudes towards nature protection and the reserve prevail.

Several types and sources of land use conflicts elaborated during literature review (see chapter 1.3.) could not be found in and around the NRNR. Clearly, the reason is that some theories were simply not applicable in this region, such as relocation and top-down approaches, or were just not mentioned during the interviews, such as illegal resource use. The literature review also let assume that the source of land use conflicts is often connected to communication issues such as mis- or non-communication. However, communication efforts with neighbours from the side of the NRNR are high, hence, the majority stated good relationships and the feeling of close involvement. This confirms the theory that high communication efforts and good communication skills are a valid tool to prevent conservation conflicts or keep it at a very low level. Nevertheless, it has to be mentioned that the case of the NRNR is very particular due to various reasons: harsh climate conditions, a very low population density and some landowners with the financial means to dedicate their land to nature protection.

Consequently, land use conflicts are often very site-specific and it is thus important to always evaluate the particular situation in the given area and to take all individual factors into consideration when searching for conflict solutions. Hence, it remains difficult to develop general solution or prevention methods, as every protected area encounters different situations and deals with various stakeholders all consisting of other specific and varying social characteristics. Therefore, every land use conflict should be examined individually in order to fully understand the drivers and thus, develop valid solution proposals.

With regards to the results of this study, the management of the NRNR should consider revising the situation of the fences again. Research could be undertaken to examine the impact of the fences on population sizes and if fences act as population sinks. If this is the situation then further areas should be identified where more fences could possibly be removed. This should especially be the case where the reserve and the neighbour follow the same goal: nature protection. In addition, other methods of border marking could be developed.

Even though efforts are high to promote guard dogs amongst farmers to prevent or at least decrease livestock predation, most of the farmers around the reserve do not implement this alternative. Studies could be made to find out the real reasons behind the low interest of farmers in the area, as this is a valid prevention tool as several studies have proved in the past.

Further research could be done about the question where the positive attitudes towards nature conservation, which were identified during the interviews, originate. This could give a basis for conclusions regarding incentives or approaches that negatively minded farmers or other landowners would need to change their opinions about the protection of nature and wildlife.

Also, the strong communicative efforts of the NRNR towards its neighbours, the close involvement of the people around the reserve in management meetings and other events, and the good information politics conducted by the NRNR should be pursued further in order to retain positive attitudes and prevent further conflict. Additionally, the project of Namplace has brought different stakeholders from various backgrounds and land uses together to follow one common goal for the sustainable management of the land and the conservation of the outstanding biodiversity of the region. These attempts have great potential to further initiate change in the attitudes of the residents and possibly act as a role model for other protected areas in the world.

Farmers dominated the area a few decades ago, whereas now hardly any remain, and more conservationists are active to restore the degraded nature. In addition, half of those farmers remaining stated beliefs favouring the protection of nature. If this development of paradigm shift in the attitudes of the residents continues, the NRNR and the nature surrounding it have a promising future ahead continuing to secure the outstanding biodiversity of this part of the world.

BIBLIOGRAPHY

- ADAMS, M.E. & DEVITT, P. (1992): Grappling with Land Reform in Pastoral Namibia. Pastoral Development Network, ODI.
- BARNARD, P., BROWN, C.J., JARVIS, A.M., & ROBERTSON, A. (1998): Extending the Namibian protected area network to safeguard hotspots of endemism and diversity. *Biodiversity and Conservation*, 7, pp. 531-547.
- BERTZKY, B., CORRIGAN, C., KEMSEY, J., KENNEY, S., RAVILIOUS, C., BESANÇON, C. & BURGESS, N. (2012): Protected Planet Report 2012: Tracking progress towards global targets for protected areas. IUCN, Gland, Switzerland and UNEP-WCMC, Cambridge, UK.
- CAPEACTION (2014): Cape action for People and the Environment: What is CAPE?. Accessed April 12th, 2014 from: <http://www.capeaction.org.za/index.php/what-is-cape>
- CCF (2014): Cheetah Conservation Fund. Accessed April 12th, 2014 from: <http://cheetah.org/>
- DISTEFANO, E. (2005): Human-Wildlife Conflict worldwide: collection of case studies, analysis of management strategies and good practices. SARD Initiative Report, FAO, Rome, Italy.
- FAO (2003): Natural resource conflicts management case studies: an analysis of power, participation and protected areas. Rome, Italy.
- GÖTTERT & ZELLER (2008): Das Etosha Pufferzonenprojekt – ein Konzept zur Unterstützung der Bemühungen zur Anbindung des Etosha Nationalparks and das transnationale Netzwerk von Schutzgebieten im südlichen Afrika. *Beiträge zur Jagd- und Wildforschung*, Bd. 33, pp. 283-292.
- GSN-LCA (2013): Briefing - Co-management and Development of the Greater Sossusvlei - Namib Complex. Greater Sossusvlei-Namib Landscape Conservation Area, Namibia.
- HAUSSER, Y., WEBER, H. & MEYER, B. (2009): Bees, farmers, tourists and hunters: conflict dynamics around Western Tanzania protected areas. *Biodivers Conserv*, 18, pp. 2679-2703.

-
- HERZOG, S. (2013): Wildlife Management in Protected Areas – Goals and Concepts. 5th Symposium for Research in Protected Areas, pp. 295 – 298, 10th to 12th June, 2013, Mittershill, Austria.
- INSKIP, C. & ZIMMERMANN, A. (2009): Human-felid conflict: a review of patterns and priorities worldwide. *Fauna & Flora International, Oryx*, 43 (1), pp. 18-34.
- KRUG, W. (2002): Private Supply of Protected Land in Southern Africa: A Review of Markets, Approaches, Barriers and Issues. Centre for Social and Economic Research on the Global Environment (CSERGE), OECD, Paris, France.
- KÜHN, T. & WITZEL, A. (2000): Der Gebrauch einer Textdatenbank im Auswertungsprozess problemzentrierter Interviews. *Forum für qualitative Sozialforschung*, Vol. 1 (3), Art. 18.
- LAC (2005): Our Land we farm - An analysis of the Namibian Commercial Agricultural Land Reform Process. Legal Assistance Centre, Windhoek, Namibia.
- LAGENDIJK, D. D. G. & GUSSET, M. (2008): Human-Carnivore Coexistence on Communal Land Bordering the Greater Kruger Area, South Africa. *Environmental Management*, 42, pp. 971-976.
- LEWIS, C. (1996): Managing Conflicts in Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK. Xii + 100 pp.
- LOOSE, S. (2013): Namibia. Travel Handbücher. Dumont Reiseverlag, Ostfildern, Germany.
- MARKER, LL., DICKMAN, AJ. & MACDONALD, DW. (2005): Perceived effectiveness of livestock-guarding dogs placed on Namibian farms. *Rangeland Ecology and Management*, 58 (4), pp. 329-336.
- MARSHALL, K., WHITE, R. & FISCHER, A. (2007): Conflicts between humans over wildlife management: on the diversity of stakeholder attitudes and implications for conflict management. *Biodiversity Conservation* 16, pp. 3129-3146.
- MCNEELY, J.A. (1995): Expanding Partnerships in Conservation. Washington, DC: Island Press.

-
- MENDELSON, J. (2006): Farming Systems in Namibia. RAISON, Windhoek, Namibia.
- MET (2010): State of Protected Areas in Namibia – A review of progress and challenges. Ministry of Environment and Tourism. Windhoek, Namibia.
- MET (n.y.): Briefing Notes: History of Conservation in Namibia. Ministry of Environment and Tourism. Windhoek, Namibia.
- MOMBESHORA, S. & LE BEL, S. (2009): Parks-People Conflicts: the case of Gonarezhou National Park and the Chitsa community in south-east Zimbabwe. *Biodiversity Conservation* 18, pp. 2601-2623
- N/A'AN KU'SÊ (2014): Home.
Accessed April 12th, 2014 from: <http://www.naankuse.com/home/welcome.html>
- NRNR (2008): NRNR Tourism and Economic Development Plan. NamibRand Nature Reserve, Namibia.
- NRNR (2012): The NamibRand Nature Reserve – Promotional Material, Poster 2012, NamibRand Nature Reserve, Namibia.
- NRNR (2012): Management Plan 2012. NamibRand Nature Reserve, Namibia.
- NRNR (2013): Executive Summary. NamibRand Nature Reserve, Namibia.
- NRNR (2013a): Map NRNR. NamibRand Nature Reserve, Namibia.
- NRNR (2013b): Annual Game Count 2013. NamibRand Nature Reserve, Namibia.
Accessed April 28th, 2014 from:
<http://www.namibrand.com/Library/NRNR%20game%20count%20June%202013%20-%20report.pdf>
- NRNR (2013c): Management Report April – October 2013. NamibRand Nature Reserve, Namibia.
- NRNR (2014): About the NamibRand Nature Reserve. NamibRand Nature Reserve, Namibia.
Accessed April 28th, 2014 from: http://www.namibrand.com/About_NRNR.htm
- NRNR (2014a): The Barcking Gecko. Newsletter April 2014. NamibRand Nature Reserve, Namibia.

-
- ODENDAAL, N. (2005): The functions of the NamibRand Nature Reserve and benefits to members. NamibRand Nature Reserve, Namibia.
- ODENDAAL, N. & SHAW, D. (2010): Conservation and Economic Lessons learned from managing the NamibRand Nature Reserve. *Great Plains Research*, 20, pp. 29-36.
- PACKER, JJ. & BIRCKS, JDS. (1999): An assessment of British farmers' and gamekeepers' experiences, attitudes and practices in relation to the European polecat (*Mustela putorius*). *Mammal Rev* 29 (2), pp. 75-92.
- PECHACEK, P., LI, G., JUNSHENG, L., WANG, W., WU, X. & XU, J. (2013): Compensation Payments for Downsides Generated by Protected Area. *Ambio*, 42, Royal Swedish Academy of Science, pp. 90-99.
- REDPATH, SM., ARROYO, BE., LECKIE, FM., BACON, P., BAYFIELD, N., GUTIÉRRES, RJ. & THIRGOOD, SJ. (2004): Using decisions modelling with stakeholders to reduce human-wildlife conflict: a Raptor-Grouse case study. *Cons Biol* 18 (2), pp. 350-359.
- RUSCHKOWSKI, VON E. (2009): Causes and Potential Solutions for Conflicts between Protected Area Management and Local People in Germany. In *Protected Areas in a Changing World*, Proceedings of the 2009 George Wright Society Conference, pp. 240-244.
- SPAN (2009): Map of Namibia, Protected Area Network. Strengthening the Protected Area Network Project. Ministry of Environment and Tourism, Windhoek, Namibia.
- STOLL, S. (2000): Akzeptanzprobleme in Großschutzgebieten: Einige Sozialpsychologische Erklärungsansätze und Folgerungen. *Umweltpsychologie*, Jg. 4, Heft 1, pp. 6-19.
- STOLL-KLEEMANN, S. (2001): Barriers to Nature Conservation in Germany: A Model explaining Opposition to Protected Areas. *Journal of Environmental Psychology*, 21, pp. 000-000.
- SWEET, J. & BURKE, A. (2006): Country Pasture/Forage Resource Profiles – Namibia. FAO, Rome Italy.
- TAJFEL, H., (1978): Differentiation between Social Groups: studies in the social psychology of intergroup relations. London: Academic Press.

-
- TAJFEL, H., TURNER, J. (1986): The Social Identity Theory of Intergroup Behaviour. In S. Worchel & W. G. Austin, *Psychology of Intergroup Relations* pp. 7-24. Chicago: Nelson.
- THIRGOOD, S.J., REDPATH, S., NEWTON, I. & HUDSON, P. (2000): Raptors and red Grouse: conservation conflicts and management solutions. *Cons Biol* 14 (1), pp. 95-104.
- UN (2007): United Nations declarations on the rights of indigenous people. United Nations, New York City, U.S.
- VILLAR, S.J., VARGAS, H.P., VACA, R., SCHROTH, G., ZEPEDA, Y., SOTO-PINTO, L. & NAHED-TORAL, J. (2012): Resolving Conflict between Ecosystems Protection and Land Use in Protected Areas of the Sierra Madre de Chiapas, Mexico. *Environmental Management*, 49, pp. 649-662.
- WDPA (2012): World Database on Protected Areas: Incorporating the UN list of protected areas, Statistics. Cambridge, UK.
Accessed April 6th, 2014 from: <http://www.wdpa.org/Statistics.aspx>
- WELADJI, R. TCHAMBA, M. (2003): Conflict between people and protected areas within the Be' noue' Wildlife Conservation Area, North Cameroon. *Oryx*, Vol 37 (1), pp. 72-79.
- WIKIMEDIA 2014. Location of Namibia. Wikimedia Commons.
Accessed, May 20th, 2014 from:
http://commons.wikimedia.org/wiki/File:Namibia_in_Africa.svg
- WITTEMYER, G., ELSÉN, P., BEAN, W. T., BURTON, A., C., O. & BRASHARES, J., S. (2008): Accelerated Population Growth at Protected Areas Edges. *Science*, 321, 123, AAAS, Washington D.C., U.S.
- WITZEL, A. & REITER, H. (2012): The Problem-centred Interview – Principles and Practice. SAGE Publications. London, UK.
- WOODROFFE R. & GINSBERG, J.R. (1998): Edge Effects and the Extinction of Populations Inside Protected Areas. *Science*, Vol. 280, pp. 2126 – 2128.
- WWF (2003): Common Ground: Solutions for reducing the human, economic and conservation cost of human-wildlife conflict. Species Programme, WWF International, Geneva, Switzerland.

YOUNG, J., WATT, A., NOWICKI, P., ALARD, D., CLITHEROW, J., HENLE, K.,
JOHNSON, R., LACZKO, E., MCCRACKEN, D., MATOUCH, S., NIEMELA, J. &
RICHARDS, C. (2005): Towards sustainable land use: identifying and managing
conflicts between human activities and biodiversity conservation in Europe.
Biodiversity and Conservation, 14, pp. 1641-1661.

Appendix

Interviewee	Type	Land Use	How	Date	Additional Information
1	Neighbour	Tourism	In person	October 3rd, 2013	Recorded
2	NRNR	Nature Protection	In person	October 12th, 2013	Recorded
3	Neighbour	Tourism	In person	October 16th, 2013	Recorded
4	Indirect neighbour	Farming	In person	October 20th, 2013	Recorded
5	Neighbour	Farming	In person	October 21st, 2013	Recorded
6	Neighbour	Mixed	In person	October 21st, 2013	Recorded
7	Neighbour	Nature Protection	In person	October 28th, 2013	Recorded
8	NRNR	Nature Protection	In person	October 29th, 2013	Recorded
9	Neighbour	Nature Protection	In person	October 29th, 2013	Recorded
10	NRNR	Nature Protection	In person	October 30th, 2013	Recorded
11	Neighbour	Farming	In person	November 5th, 2013	Recorded
12	Neighbour	Nature Protection	In person	November 12th, 2013	Recorded
13	Indirect neighbour	Mixed	In person	November 18th, 2013	Not Recorded
14	Neighbour	Mixed	In person	November 22nd, 2013	Recorded, Group Discussion
15	Neighbour	Nature Protection	In person	November 26th, 2013	Recorded
16	Neighbour	Nature Protection	Email	March 31st, 2014	/

Appendix 1 – More detailed information on the interviews

Statutory Declaration

I herewith declare that I have written the submitted thesis independently. I did not use any outside support except for the quoted literature and other sources mentioned in the paper.

I clearly marked and separately listed all of the literature and all of the other sources which I employed when producing this academic work, either literally or in content.

I am aware that the violation of this regulation will lead to failure of the thesis.

Student's Name

Matriculation Number

Student's Signature

Place, Date