

Evaluating land use conflicts at the borders of Etosha National Park, Namibia: A social-ecological approach

by

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Declaration

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Dedication

*To Meaghan and Michaela,
And to improving our common future...*

(Romans 8:31)

Abstract

Protected areas and their surrounding landscapes are becoming increasingly integrated. A more general awareness is emerging of the relevance of these integrated areas to nature conservation and to human well-being. In Namibia, areas dedicated to conservation are expanding due to the proliferation of conservancies and game reserves. This entails integrating land use practices variably dedicated to wildlife management and the inclusion of resident communities in the protected area decision-making process. The interface between natural and social systems in protected area governance is poorly understood, however. In applying a social-ecological systems framework to the understanding of rangelands surrounding the Etosha National Park (ENP) in Namibia, I try to better understand this interface. I first explored the factors that have contributed to community conservation success in the country.

An expansion of Namibia's protected area network will require changes in land use practices by the surrounding private and communal properties. Stakeholder analysis was used to identify and categorise stakeholder groups, and to both quantitatively and qualitatively assess their importance in the decision-making process. Twelve stakeholder groups were identified, and categorised relative to each other according to scores of *position*, *interest* and *power*. Together, these attributes provided an indication of the most important stakeholders (i.e. those most likely to affect or be affected by an expanded protected area network) and the various roles they potentially play in protected area planning and natural resource governance in the study area. Here, livestock farmers, although interested in the concept of being integrated into the protected area network, mostly opposed protected area expansion on both private property and communal land. To gain insight into the social-ecological interface of the study area, I assessed management challenges (i.e. issues affecting decision-making) and land use conflicts (i.e. disaccord between stakeholder groups due to divergent values), associated with being located adjacent to a protected area. Using grounded theory, I found that management challenges were related to primary land use, while conflicts significantly depended on land tenure. Production, wildlife and human conflicts were experienced, and these were driven by the lack of grazing, water and maintenance of the ENP fence.

Management of integrated landscapes requires an understanding of the institutional context. I therefore assessed the institutional aspects of an integrated conservation landscape around ENP. Current policies associated with land and natural resource management were studied, guided by the literature on common pool resource governance. A wide variety of issues were incorporated, including ecological and stakeholder attributes, rules-in-use and the patterns of interactions between these. Six distinct resource management systems were identified, each variably focused on wildlife as a resource and each regulated by different institutions that shape the behaviour of stakeholders. Patterns of interaction exist between the various policies regulating management systems, which together condition access to and use of land. Potential outcomes of interacting

policies include a Bill that is still in draft format, potentially hindered by the land tenure system and reluctance on behalf of the state to fully devolve rights over resources to land owners and resident communities.

Keywords:

Ecosystem services, institutions, multifunctional rangelands, protected area network, stakeholders.

Opsomming

Beskermdede gebiede en hul omliggende landskap begin toenemend om teïntegreer. Groter bewustheid is opkomende van die toepaslikheid van hierdie geïntegreerde gebiede vir natuurbewaring en menslike welsyn. Namibiese gebiede toegewy aan bewaring het, as gevolg van die verspreiding van bewaringsgebiede en wildreservate, uitgebrei. Dit behels die integrasie van grondgebruik praktyke wat wisselvallig toegewy is aan wildbestuur, so wel as die insluiting van boere en natuurlike hulpbron gebruikers in die beskermdede-gebied se besluitnemingsproses. Die verhouding tussen natuurlike en sosiale stelsels in die bestuur van beskermdede gebiede word egter swak verstaan. Dus word 'n sosiaal-ekologiese stelsel raamwerk toegepas om die weiveld rondom die Etosha Nasionale Park (ENP) in Namibië te verstaan. Eerstens, word die faktore wat bygedra het tot die suksesvolle gemeenskapsgebaseerde bewaring in die land ondersoek.

Die uitbreiding van Namibië se beskermdede gebiede sal veranderinge in grondgebruik praktyke deur die omliggende private en gemeenskaplike eienskappe vereis. Belanghebbendes analise (of stakeholder analysis) is gebruik om belangegroepe te identifiseer en te kategoriseer, en beide kwantitatief en kwalitatief te beoordeel wat hul belangrikheid in die besluitnemingsproses is. Twaalf belangegroepe is geïdentifiseer, en gekategoriseer relatief tot mekaar volgens tellings van posisie, belangstelling en mag. Bygevoeg, verskaf hierdie eienskappe 'n aanduiding van die belangrikste rolspelers (bv diegene wat die meeste beïnvloed of geraak word deur 'n uitgebreide beskermdede gebied) en die verskillende rolle wat hulle potensieel speel in beskermdede gebied beplanning en natuurlike hulpbron bestuur in die studie area. Veeboere, alhoewel hulle belangstel in die konsep van meer beskermdede gebiede rondom die ENP, is meestal gekant teen die uitbreiding daarvan op beide private eiendomme en kommunale grond. Om insig te verkry in die sosiaal-ekologiese koppelvlak van die studie area, het ek bestuur uitdagings beoordeel (bv kwessies wat besluitneming beïnvloed) en grondgebruik konflikte (dws disakkord tussen belangegroepe te danke aan uiteenlopende waardes). Ek het gegronde teorie gebruik en het gevind dat bestuur uitdagings verband hou met die primêre grondgebruik, terwyl konflikte aansienlik van grondbesit afhang. Produksie, wild en menslike konflikte word ervaar, en dié was gedryf deur die gebrek aan weiding, water en instandhouding van die ENP heining.

Bestuur van 'n geïntegreerde landskap vereis 'n begrip van die institusionele konteks. Dus beoordeel ek die institusionele aspekte van 'n geïntegreerde bewaring landskap rondom ENP. Huidige beleid wat verband hou met grond en natuurlike hulpbronbestuur is bestudeer, gelei deur die literatuur oor gemeenskaplike hulpbronne bestuur. 'n Wye verskeidenheid van kwessies is opgeneem, insluitend ekologiese en belanghebbende eienskappe, reëls-in-gebruik en die patrone van interaksie tussen hierdie. Ses verskillende hulpbronbestuur stelsels is geïdentifiseer, elk wisselvallig gefokus op wild, as 'n hulpbron en elke een is gereguleer deur verskillende instansies wat die gedrag van belanghebbendes vorm. Patrone van interaksie tussen die verskillende beleide reguleer bestuurstelsels. Altesaam beheer die beleide die toegang tot, en gebruik van grond.

Potensiële uitkomst van die interaksies tussen beleide sluit in 'n wetsontwerp wat nog in konsepvorm formaat is. Dit word verhinder deur die land se grondbesitstelsel en onwilligheid namens die staat om regte oor natuurlike hulpbronne ten volle aan eienaars en gemeenskappe oortehandig.

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List of Acronyms

CBC	Community-based conservation
CBNRM	Community-based natural resource management
ENP	Etosha National Park
EPAN	Expanded protected area network
FMD	Foot-and-mouth disease
IADF	Institutional analysis and development framework
GRN	Government of the Republic of Namibia
MET	Ministry of Environment and Tourism
NACSO	Namibian Association of CBNRM Support Organisations
NGO	Non-governmental organisation
SES	Social-ecological systems
SESF	Social-ecological systems framework
TA	Traditional Authority
VCF	Veterinary cordon fence

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Introduction

Protected areas remain essential to global conservation efforts (Chape et al. 2005). In Africa, these areas have become more and more isolated (Newmark 2008) as the demand for agricultural land has increased (Krug 2001) due to growing human populations (Harcourt et al. 2001, Wittemyer et al. 2008) and the ensuing demand for food (Sanderson et al. 2002). As human-driven pressures on protected areas and adjacent ecosystems are increasingly acknowledged, the planet's vulnerability to these changes are emphasised, as are the multiple values we accrue to natural systems and the benefits they provide humanity (Costanza et al. 1997, Daily 1997, Daily et al. 1997, Naughton-Treves et al. 2005). Solutions to counteract these changes involve the expansion of protected areas by integrating conservation areas into land use plans and actively (re)connecting the conservation landscape (Hannah et al. 2002). This requires the inclusion of a broad range of actors, who collectively manage ecosystems and who share the benefits, as well as the costs of living in the conservation landscape (Ervin et al. 2010).

Namibia offers one of the most unique and compelling stories in this regard. Joint ventures between rural communities, tourism enterprises and the state have led to the devolution of rights over resources, the recovery of wildlife populations, a boom in the tourism industry and the improvement of human well-being (Ashley 2000, Boudreaux 2010). Although roughly 15% of Namibia is currently protected in the form of national parks; concerted efforts over the past 30 years have gone into expanding biodiversity conservation beyond these state protected areas to allow benefits to flow to those living alongside wildlife. Overall, the protected area network expanded by 28 983 km² (9%) between 2010 and 2013 (MET 2014), benefitting roughly 177 000 people, or 9% of the population (NACSO 2014). The Namibian model places particular emphasis on both participation and engagement of relevant stakeholders. The country's conservation approach is based on the conviction that by weaving together best practices from the private sector with those of collective governance, wildlife conservation is able to contribute to the long-term economic, social and ecological sustainability of Namibia (Boudreaux 2010). Continued success, however, requires effective institutional arrangements to manage inputs from the environment, communities, government, non-governmental organisations (NGOs) and the private sector.

Over the long-term, the country's proposed approach to conservation and human development involves the further expansion of the protected area network, where land and natural resource management is integrated and where partnerships that involve pro-conservation land use practices are encouraged. Land use trends over the past 20-25 years have generally favoured pro-conservation practices, with many private landowners gradually moving away from livestock production and converting to game farming or various tourism enterprises that include the consumptive and non-consumptive use of natural resources (Boudreaux 2010). The country's land

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reform policies have also resulted in large tracts of land being dedicated to habitat conservation and the protection of natural resources, through the creation of communal conservancies. Overall, Namibia is viewed as a pioneer in the sustainable management of wildlife through efforts on private land dedicated to wildlife management and communal conservancies focused on integrated conservation and human development (Brown and Bird 2011).

Although an argument can be made that such areas do not necessarily translate to effectively managed conservation areas, they are considered a valuable supplement to protected areas (Holmes 2013). Land adjoining national parks acts as a buffer (Martino 2001), serving as a soft edge between protected areas and other forms of land use (Dudley 2008, DeFries et al. 2010). Generally, adjacent landscapes provide five basic functions to protected areas (Forman 1995). These include expanded habitats (e.g. for apex predators outside national parks, see Marker et al. 2003), a filter against disease transfer or exotic species, a conduit or corridor for the movement of migratory species (e.g. Kinnaird and O'Brien 2012), and as a source and sink for both plants and animals (Forman 1995).

On a regional scale, land adjacent to national parks potentially links cross-border conservation areas, offering an opportunity for transfrontier parks, such as the Kavango-Zambezi Transfrontier Conservation Area (KAZA) in north-eastern Namibia and the /Ai/Ais-Richtersveld Transfrontier Park in the south of the country. Not only could this enable the establishment of a network of protected areas that link ecosystems across international borders, it could also improve human well-being, support economic development and foster regional peace and stability (see www.peaceparks.org).

Considered in an integrated manner, natural resources and the human beneficiaries of their services are embedded in complex social-ecological systems (SES). To achieve sustainable outcomes in such systems, multiple actors must collectively interact with each other, negotiating and self-organising in response to social norms (Ostrom 1990). In the study area, for example, land reform has resulted in mixed groups of livestock farmers, tourism operators, game reserve managers and resident communities having to share ground water sources (van Vuuren 2011). Water appropriation depends on acceptable rules of behaviour, such as reduction of cattle herd sizes during periods of drought, rotational grazing practices and the efficient use of surface water during the rainfall season (Christelis and Struckmeier 2011). Failure to comply with such social norms can result in perpetrators being shunned or suffering other consequences (Falk et al. 2016). Social norms or 'rules-of-the-game' are affected by both the direct and indirect contributions provided by nature (Raymond et al. 2013), such as water provision and appropriation in the form of surface and ground water and the maintenance of ecosystems for pasturage, biodiversity and pollination, etc (MA 2005).

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Known as ecosystem services, these contributions from nature collectively refer to the multitude of benefits people obtain from ecosystems (MA 2005). In the current study, the landscape provides several ecological functions and processes, all with several possible uses (e.g. grasslands for pasturage, to sustain wildlife and maintain biodiversity). Thus in order to plan and manage this increasingly integrated landscape, the types of ecosystem services appropriated (namely provisioning, supporting, regulating or cultural) needs to be considered (MA 2003, de Groot 2006, de Groot et al. 2010). Such an assessment needs to account for the SES under study including social norms and the decision-making context for which the ecosystem services are being considered (Fisher et al. 2009), since the values attributed to ecosystem services drive land use decision-making (Goldman et al. 2008, Pascual et al. 2014, Sitas et al. 2014, Guerry et al. 2015, Ruckelshaus et al. 2015) and influence landscape planning (Reed et al. 2009, Wegner and Pascual 2011).

A great deal of the literature is dedicated to the role of communities in SES (Berkes et al. 2003), as well as their successes and failures in achieving conservation and development success based on social norms applied in particular contexts (Ostrom 1990, Pretty 2003, Brooks et al. 2012). Less is known about the involvement of local institutions in decision-making and conservation planning pertaining to protected area management (Pimbert et al. 1997, Pretty and Smith 2004, Reed 2008, Andrade and Rhodes 2012). Even less is known about the interplay between different forms of land tenure and land use practices; or the costs and benefits accrued to being part of a conservation landscape.

Definition of Terms Used

Social-ecological system refers to the integrated concept of humans in nature. The term *conservation landscape* is understood here to be land peripheral to the protected area, designated with the intention of benefiting the local community and providing additional protection for the conservation area. *Working landscapes* and *multifunctional rangelands* are used synonymously in the dissertation and refer to commercial and pastoral livestock production, tourism and hunting ventures, wildlife management areas, all with varying degrees of contribution to conservation, and functioning in the same landscape. The term 'local people' actually covers a wide variety of groups. It encompasses the indigenous peoples who have traditionally lived on and derived their living from the area, long-settled farmers and recent immigrants in search of new land, large landowners and wealthy residents living in second homes as well as a variety of urban communities. Here the terms *local community*, *resident community*, *local land owners* and *land users* are used interchangeably. *Communal conservancies* refer to pieces of land owned by the state, where local communities have limited rights to manage and benefit from the use of natural resources collectively. *Resettlement farms* indicate land procured by the state and awarded to previously disadvantaged communities in an attempt to equitably distribute social, economic and ecological benefits of land and natural resources. Lastly, the term *land use conflicts* refer to situations of

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competition and potential disagreement between land users over use of and access to natural resources and land. Although these have not resulted in full-scale conflicts in the study area, these issues embody elements that could potentially lend themselves to conflict.

Etosha National Park

The Etosha National Park (ENP) was first proclaimed in 1907, although its boundary has been altered four times, in 1947, 1956, 1963 and 1975 (Berry 1997a). Currently, the size of the park totals 22 270km², of which 23% comprises saline pans while the renowned Etosha Pan covers about 4 590km² of the park's total surface area (Figure 1.1). Considered to be Namibia's flagship park, ENP is the cornerstone of the country's growing tourism industry (MET 2010). The national park also serves as a stronghold for endangered and rare wildlife species such as black rhinoceros (*Diceros bicornis*) and black-faced impala (*Aepyceros melampus* spp. *petersi*), respectively. Due to its vastness, wildlife can roam around relatively freely, though the fence has cut off the traditional migration routes of some species such as blue wildebeest (*Connochaetes taurinus*) and Burchell's zebra (*Equus quagga* spp. *burchellii*), reducing population sizes over the past few decades (Gasaway et al. 1996, Berry 1997b, Harris et al. 2009).

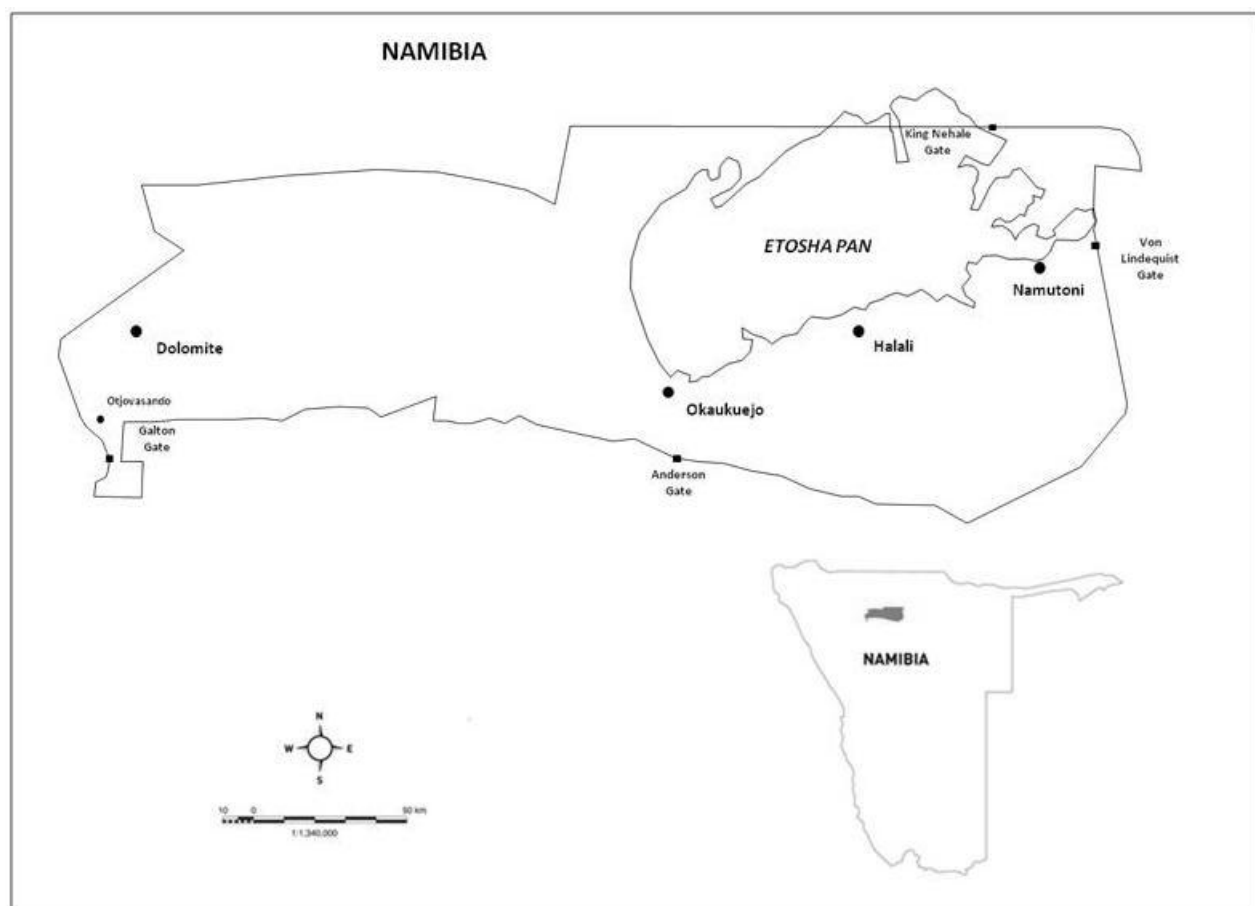


Figure 1.1 Location of Etosha National Park (ENP), in north western Namibia (as adapted from MET 2010).

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In terms of management of the ENP, inadequate strategic leadership and an excessively top-down management approach have resulted in local level inefficiencies, while no consistent strategy regarding research and management is evident (Brown et al. 2005). Lions (*Panthera leo*) and elephants (*Loxodonta africana*) regularly leave the park, causing conflicts with neighbouring farmers and communities. A great deal of effort is being spent on preventing animals from breaching the fence and/or returning them to the park. It has been recommended that ENP management and park neighbours would benefit from entering into strategic conservation agreements, with commercial farmers along the southern and eastern boundary and communities to the north and west to provide the necessary buffer to ease pressure on ENP's boundaries (Brown et al. 2005). A barrier to this has been the extensive veterinary cordon fence (VCF) or 'red line' that divides the national park from adjacent rangelands (O'Connell-Rodwell et al. 2000). Veterinary cordon fences are used in southern Africa to separate wildlife from domestic animals in order to prevent the transmission of infectious diseases (Scoones et al. 2010). Recognised by the World Organization for Animal Health, such fences serve as a control method for establishing disease-free zones in beef exporting countries (Scoones et al. 2010). In the case of Namibia, the VCF separates the foot-and-mouth free zone south of ENP from the foot-and-mouth protection zones north of the park (Figure 1.2, Berry 1997b).

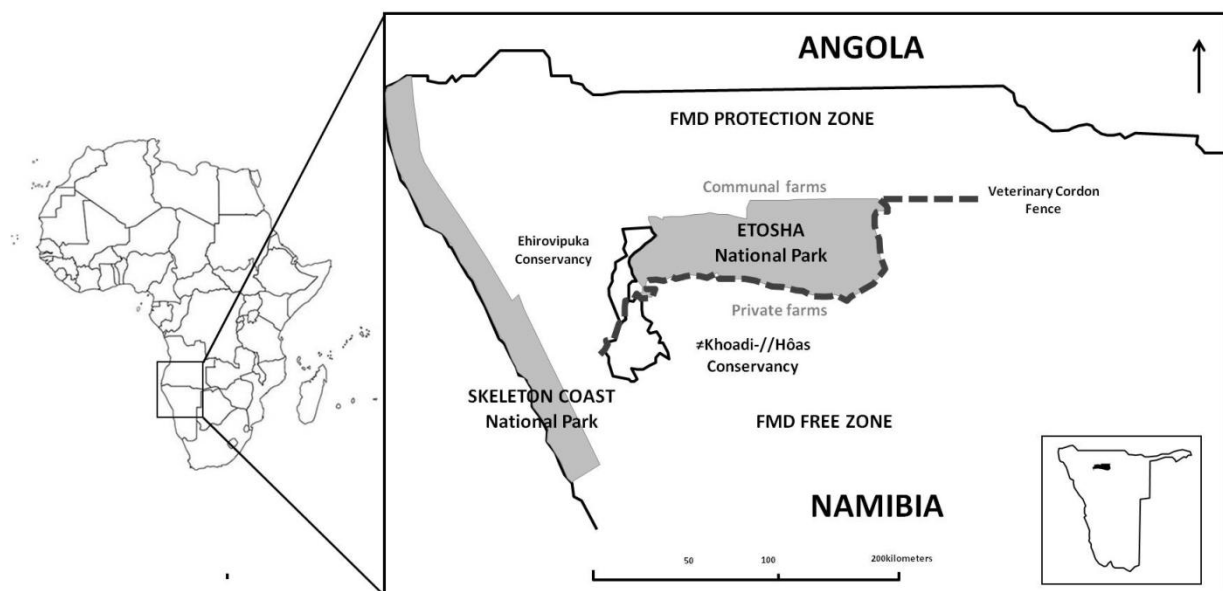


Figure 1.2 Veterinary Cordon Fence or 'Red Line' (dashed line) demarcating the foot-and-mouth (FMD) Free Zone and the FMD Protection Zone.

Private Farmers

Under freehold title, private or 'commercial' farmers in Namibia have absolute land rights over their properties, with the freedom to sell or transfer the title deed as they wish. In the study area, private land to the south of ENP is variably dedicated to livestock production, wildlife production and combination livestock and wildlife farms. Some land has also been acquired by large tourism operators to offer exclusive tourism facilities, mostly to foreign visitors. The average sizes of privately-owned farms are about 7000 ha (Mendelsohn 2006) and are mostly owned by white Namibians. Land use practices are more established than in other areas, due mostly to decades of experimentation and access to expensive advisory services (Angula and Sherbourne 2003). In most cases, farms have clear boundaries, are well developed and are capital/export orientated.

Communal Farmers

Under customary tenure, the land belongs to the state and resources are 'free' and authorised by traditional leaders. Farmers depend on open access grazing for their livestock, while the commonage is also used to harvest firewood and other natural plant products. Here, only cropping areas are exclusively allocated to individual households and comprise small areas immediately surrounding their homes. Production systems are labour intensive and based on pastoralism with the majority of households in the study area subsistence-based.

In the study area, two conservancies were created by the state to allow communal area residents access to benefits from wildlife.

- #Khoadi-//Hoas, or 'elephant's corner' in Khoekhoegawab, was formed in 1998. It covers 3324 km² (332400 ha) and is home to roughly the same number of people who mostly speak Khoekhoegawab, a language shared by the Damara and Nama, descendants of the San (Bushman).
- Ehi-Rovipuka; after the Otjiherero phrase for 'place of wildlife', was formally registered in 2001. It covers a smaller area, 1980 km² (198000 ha), but has fewer residents (1846 registered members) mostly of Herero decent.

Both conservancies are self-governing, democratic entities with fixed boundaries. Although community members run the conservancies, the state, through the Ministry of Environment and Tourism (MET), has the power to de-register a conservancy if it fails to comply with conservation regulations.

Resettlement Farmers

Land reform is an important economic and political topic in the country. Under the Agricultural (Commercial) Land Reform Act of 1995, the government buys farms from commercial farmers, under the 'willing buyer, willing seller' principle, and allocates it to previously disadvantaged (black) communities (Werner and Odendaal 2010). On communal land, which already belongs to the state, land is parcelled into small units and distributed by traditional leaders.

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Between 2008 and 2012, seven private farms south of ENP were purchased specifically for a group of Hai|om (San) Bushmen residing in the national park (average farm size 5264 ha, total 36845 ha). At the time of my study, roughly 690 people (~120 households) had been registered to relocate to the resettlement farms. The main settlement, Seringkop (6361 ha) had between 20-30 households already living there. Although a few residents owned cattle at the time, livestock is considered an important source of subsistence and income. Livestock production is constrained by a lack of access to water, uneven grazing conditions, disease and predation. Although the Hai|om have been 'resettled', their case continues however, with the community having launched an aboriginal land claim for the ENP.

Despite the physical barrier imposed by the veterinary cordon fence, the different land uses, property rights and social contexts, ENP is ideally situated compared to many other African parks. An excellent opportunity thus presents itself for implementing a joint strategy together with park neighbours and focused on developing surrounding areas towards an effective expanded protected area network (EPAN). Managing these areas cooperatively provides an opportunity for integrated natural resource planning and management by resident communities and land owners.

General Scope of the Study

This dissertation therefore considers the Etosha National Park (ENP) in northern Namibia and its surrounding rangelands in an attempt to better understand the current narrative of those living adjacent to a protected area. Broadly, I evaluate conflicts of land use surrounding the ENP, choosing to focus the conversation on *conflicts*, as opposed to the other interactions stipulated in the social-ecological systems framework (see Table 2.1, Chapter 2). This interface between people and their natural environment is the only variable common to all the land uses present in the study area, apart from *deliberation processes*¹ and to an extent, *harvesting*² (Ostrom 2007; 2009). Conflict is defined here as a difference within a person or between two or more people, or groups of people, due to different and potentially divergent values (White et al. 2009, Young et al. 2010, Redpath et al. 2013). Though the study considers interactions with animal populations (e.g. elephants damaging infrastructure or lions killing livestock), the primary focus is on *land use* conflicts as occurring between people. Conflicts are often perceived negatively and can lead to people developing negative attitudes toward conservation and protected areas (Hazzah et al. 2009). Conflicts can also have positive influences, by providing opportunities for increased dialogue or by influencing resource management, which, in this case, is the process of decision-making and the process by which decisions regarding natural resources are implemented, or not implemented.

¹ The process through which relevant stakeholders, in particular resource users, converge to reflect and discuss management issues and determine action steps; requires knowledge about participation mechanisms and rights as well as trust building processes

² Quantity of resource(s) harvested by different users; requires information on harvesting levels, harvesting effects on SES and free-riding (Ostrom 2007; 2009).

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Land use conflict occurs when incompatible land uses are located in proximity to each other (Wehrmann 2008). Approaches to dealing with land use conflicts include strategic planning that avoids conflict by identifying areas of compatible land uses, thereby separating potentially conflicting land uses. Where separation of land uses is not possible due to existing land use patterns, such as in the study area, integration of land use practices is required. To achieve such integration, for example through forming multifunctional landscapes, the values attributed to land and resources need to be understood, since the values that people attribute to land and resources dictate land use planning and decision-making (de Groot 1992, Costanza et al. 1997, de Groot et al. 2002). Yet, there is still a considerable lack of data on how we value land and resources, and as de Groot et al. (2005) argue, we continue to make decisions on integrating different land use options based on incomplete information. Since conflict is the outcome of divergent values (White et al. 2009, Young et al. 2010, Redpath et al. 2013), I evaluate land use conflicts as experienced by resident communities living adjacent to ENP, arguing that an understanding of current conflicts provides insight into decision-making, and thus resource management (Adams and McShane 1996, Wilhere 2002, Tompkins and Adger 2004, Folke et al. 2005, Treves et al. 2006). Ultimately this understanding could aid in assessing the potential for land use planning and integrated management of the conservation landscape.

Statement of the Problem

How do we establish the objectives of the conservation landscape surrounding the ENP when dealing with a mosaic of land uses, each with its own objectives and social-ecological conflicts? A need lies in first understanding those social-ecological issues, from the perspective of resident communities themselves. Imperative to the development of strategies to overcome the artificial boundaries of the ENP is the incorporation of different forms of land use, where various conflicts occur/potentially can occur and where contextual solutions and approaches are called for. To date, initiatives aimed at overcoming the isolation of the ENP were mainly founded on 'top-down' approaches to conservation planning with limited participation by local stakeholders (Brown et al. 2005). Although CBNRM initiatives have tried to include resident communities in the use and monitoring of natural resources (Jones 1999), such communities rarely partake in the protected area decision-making process (Roe et al. 2009). In order to successfully implement the conservation landscape and to overcome the artificial boundaries encapsulating the ENP, a need lies in *i*) incorporating the different forms of land use and managing ensuing conflicts; and *ii*) including the opinions of different stakeholders and considering their different interests and needs so as to create ecologically and socially sustainable solutions. This integration of different ecological and social aspects, stakeholders and functions is central to the study.

Objectives and Research Questions

The study assesses the social-ecological land use conflicts at the borders of ENP, investigating to what extent the national park influences the livelihoods of landowners and local communities in different areas (private farms, communal farms and communal conservancies). Insight gained will potentially inform the integrated management of land and resources surrounding the ENP. The study aims to give a more holistic perspective on the complex and interdependent conflicts and developments surrounding the SES approach to landscape planning and the valuation of ecosystem services. More specifically, it aims:

- To apply the social-ecological systems framework to the proposed expansion of ENP.
- To assess the factors contributing to joint conservation and development success.
- To apply the stakeholder analysis method to identify relevant stakeholders around the ENP and to assess their relative interests, positions, power and salience toward an expanded protected area network.
- To assess management challenges and land use conflicts as experienced by stakeholders surrounding the ENP and link these perspectives to land tenure and land use.
- To identify best practice solutions for policy makers, planners, conservationists, businesses and communities around the ENP and in general.

In particular, this study seeks to answer the following research questions:

1. What factors contribute to the successful integrated management of protected area landscapes in Namibia?
2. How well does the stakeholder analysis method (Freeman 1984, Reed et al. 2009) work to identify stakeholders and their key interests in protected area landscapes?
3. What are the land use challenges and conflicts in the ENP landscape, as experienced by resident communities, using grounded theory (Hutchison et al. 2010)
4. What are the effects of institutions on outcomes in the ENP landscape, based on Ostrom's (1990) institutional analysis and development framework?

Research Design

A place-based case study (Newing et al. 2011) of the social-ecological aspects of land use conflicts adjacent to the ENP forms the central research approach. Due to the complexities involved in SESs, an integrated research approach, incorporating the social sciences and conservation research is applied. In this context, interdisciplinarity, where different disciplinary perspectives inform one another (Barry et al. 2008) is valuable as 'a means of solving problems and answering questions that cannot be addressed satisfactorily using single methods or approaches' (Marzano et al. 2006, p. 186). Case studies involve the systematic collection of information, aiming at a detailed understanding of how the subject operates or functions.

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During the pilot phase of this project in February 2013, experts (n=7) on the ENP and its surrounds were consulted on the stakeholder selection process, land and resource management challenges and the proposed interview schedule. Prior to this, informed consent was obtained from individual participants, in addition to institutional support letters in the event of individuals representing an organisation or group. Together, we designed a comprehensive questionnaire to ascertain who the stakeholders are, what their perceived management challenges and land use conflicts are and the rules-in-use regulating land and natural resource governance. The questionnaire included, to varying degrees, a consideration of the variables highlighted in the social-ecological systems framework (see Table 2.1, Chapter 2) and aimed to gain a holistic perspective on the conflicts involved in landscape planning and decision-making. Individual farm or reserve owners were interviewed on their respective properties which included commercial livestock farms, private game reserves, tourism and trophy hunting enterprises (n=20). Since the communities were more populated and it was not possible to interview all individuals, a systematic sampling strategy (Newing et al. 2011) was used to select households in the conservancies (n=24) as well as on a resettlement farm (n=12). The questionnaire was administered face-to-face with the respondents in English or Afrikaans. Interpreters were used to translate between Afrikaans and Otjiherero or between Afrikaans and Damara>Nama where these local languages are used. I chose not to record the interviews, and made detailed notes at the end of each interview. Comprehensive memos were also made of each observation, discussion, meeting and walkabout.

Ethical Considerations

One of the main objectives of this research is to produce and disseminate information that contributes to biodiversity conservation and social welfare through the enhanced capacity of protected area stewardship. Every attempt has been made to fully understand any potentially negative consequences of the research by understanding the social, political, cultural and biophysical context of the research project. Study participants were informed of any risks attendant to the study prior to attaining their consent to participate. Additionally, a commitment was made to the following:

- voluntary participation on behalf of the research subjects and expert informants;
- no harm to study participants; and a responsibility to, where ever possible and appropriate, reasonably empower research subjects, at least in terms of their confidence and understanding;
- informed consent from selected subjects;
- respondent data to be kept both confidential and anonymous through data collection, analysis and presentation; and
- findings of the study will be peer reviewed prior to release and publication; limitations to the study will be described; and the study respondents provided an opportunity to view findings.

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In general, all research observed the international norms of avoiding harm, providing benefit wherever possible and acting justly. A permit was applied for and granted by the Ministry of Environment and Tourism prior to fieldwork (Permit number 1828/2013).

Theoretical Perspectives

The social-ecological systems framework (SESF, Ostrom 2007; 2009) is applied throughout the dissertation since it provides an integrative overview of the challenges and conflicts faced by users in multifunctional landscapes. The framework, originally proposed to analyse the sustainability of SESs, integrates the efforts of many scholars and provides a common language of concepts and terms. The SESF provides an integrative and multidisciplinary approach to understand complex interactions within different systems and scales around natural resources governance, enabling comparison of SESs in different contexts (Epstein et al. 2013). The framework also serves as a template for theorising explanatory relationships between the components of a SES, the interactions involved therein, and the outcomes of these interactions (Partelow 2016). Here, the latter contributes to a better understanding of the human-nature interactions in the ENP case study. The conceptual framework is elaborated on in Chapter 2, and is used in this chapter to illustrate the operational framework (Figure 1.3).

The entire system under study, surrounded by the dotted-and-dashed line in the diagram, is influenced by related ecosystems as well as the social-economic-political setting that the system occurs in. These settings are assessed in Chapter 3, in the form of a literature review focused on the factors contributing to the success of Namibian community-based-conservation initiatives (Research question 1). The system itself, comprising the State of the Ecosystem and the State of the Societal System, although illustrated here as separate entities, are studied as a logical whole throughout the dissertation. The ecological component comprises the protected area and its surrounding landscape as the Resource System, while the Resource Units that the study participants are asked to consider as part of this Resource System encompasses the grasslands, water systems, wildlife populations and livestock present in the study area. The Resource System and Resource Units respectively set the conditions for, and are inputs to, the Social-Ecological Interaction under study, namely 'conflicts', which are established in Chapter 5 using grounded theory (Research Question 3). Outcomes of this interaction affect ecosystem services delivery and can only be understood through a consideration of the Actors at play, which are first ascertained here in Chapter 4 using stakeholder analysis (Research Question 2). The standards or norms controlling Actors are set by the Governance System, studied in Chapter 6 using institutional analysis. Together, these components set the condition for all other social-ecological interactions occurring in the system, affecting outcomes and the probability of collective action and the sustainable use of resources (Chapter 2).

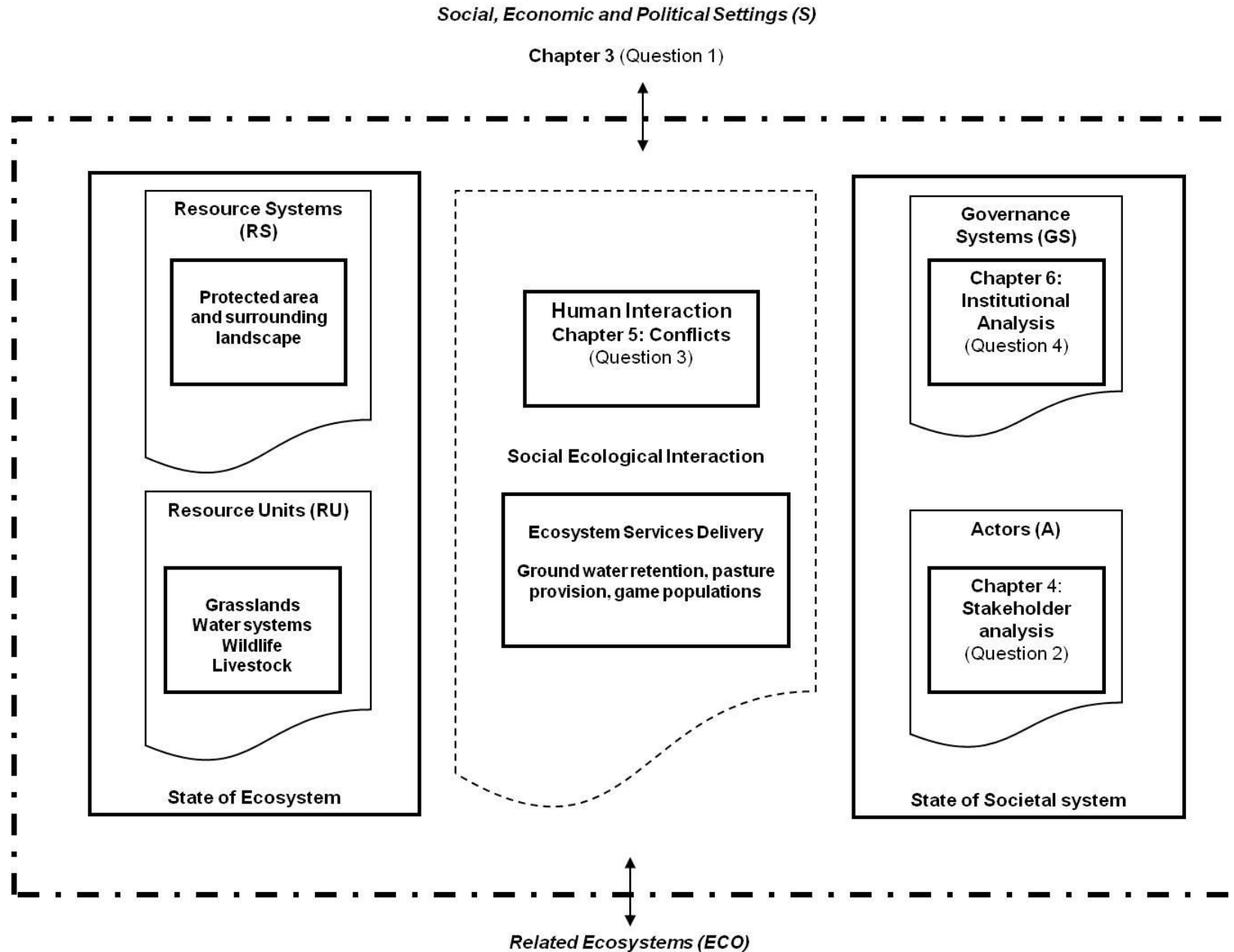


Figure 1.3
Operational framework of the dissertation based on Ostrom's social-ecological systems framework (Chapter 2, Ostrom 2007; 2009, McGinnis and Ostrom 2014).

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Dissertation Structure

The dissertation is divided into seven chapters: four synthesis chapters (introduction, conceptual framework, a literature review and the conclusion) and three data chapters (Chapter 4: stakeholder analysis, Chapter 5: conflict analysis and Chapter 6: institutional analysis). All the chapters contribute to understanding land use conflicts at the borders of ENP and the potential expansion of the protected area network. Data chapters have been written as stand-alone manuscripts for publication, so there is some necessary duplication in the introductory and conclusion material. The dissertation is interdisciplinary in nature and combines natural and social science approaches. See the operational framework (Figure 1.3) that depicts how the chapters link and relate to each other.

Chapter 1: Provides an introduction to the background of protected area expansion. It outlines the aim, scope and objectives that influence all subsequent chapters, their objectives and scope. The research is conducted iteratively and adaptively to provide a more integrated understanding of the narrative and to ensure that the right questions were asked to the right people. This exploratory approach means that the findings from each chapter informed the approach and content of subsequent chapters. The methods and analysis used in each chapter are explained in detail in each.

Chapter 2: Since my study focuses on an interaction between actors and their natural environment, i.e. conflict; causal relationships need to be assessed. For this reason; I integrated the ecosystem services approach (Turner and Daily 2008) with Ostrom's (2007; 2009) SESF. This enabled me to analytically describe the interactions between the ecological and social systems, providing deeper insight into the system under study.

Chapter 3: Comprising a literature review, this chapter provides insight into the social, political, economic and ecological aspects of the SES under study. It explores the political, economic, social and ecological dimensions of integrated conservation and development, the criticisms against this joint approach to landscape management and the factors that have contributed to the success of Namibian community-based conservation initiatives.

Chapter 4: Since land use surrounding the ENP is variably dedicated to wildlife management, ranging from conservancies, trophy hunting concessions, combined livestock and game ranches to reserves promoting only non-consumptive natural resource use, the relevant stakeholders need to be identified and classified. This chapter therefore applies stakeholder analysis, estimating relative salience of each stakeholder group involved in the expansion of the protected area network around ENP.

Chapter 5: In this chapter, resident community perceptions regarding management challenges and land use conflicts are analysed to provide insight to the social-ecological interface and its contribution to an expanded protected area network. The analysis is based on the premise that these issues and conflicts inform and determine land and resource decision-making and planning. Grounded theory was applied to elicit emergent concepts of conflict and these were linked to land

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tenure and primary land use. Understanding land owner and resource user viewpoints within their differing contexts provides insight into the opportunities and constraints that face ecosystem service conservation in multifunctional landscapes.

Chapter 6: Using the Institutional Analysis and Development Framework (Ostrom 2005), this chapter incorporates a variety of issues, including ecological and stakeholder attributes, rules-in-use and the patterns of interactions between these to provide insight into the mechanisms and conditions influencing management and policy outcomes.

Chapter 7: The concluding chapter provides a synthesis of the study and presents the main insights gained and their implications for future research and practice. The challenges and limitations of the research are also outlined.

Significance of Study

Significant effort has been spent on comprehending the complexity of social and ecological systems and the need to understand the linkages between these systems in adaptive co-management aimed at fostering resilience. The study aims to identify means for achieving biodiversity conservation through effective interaction between national parks and the surrounding landscape, as alternatives to fence-and-fines approaches that typify much of present day national parks management (Brown et al. 2005). Conservation literature is replete with concerns about the increasingly island nature or isolation of protected areas (DeFries et al. 2005), corresponding threats to ecological integrity (Naughton-Treves et al. 2006), the safeguarding of ecosystem services and biodiversity protection within parks (Brooks et al. 2006, Daily and Matson 2008), and growing threats to biodiversity on the landscape level surrounding designated protected areas (Chape et al. 2005, Wittemyer et al. 2008). Many have argued that the way forward is to integrate conservation with community development (Turner et al. 2012, Sayer et al. 2013, Milder et al. 2014). The research thus applies the theory of interlinked SESs (Ostrom 2007; 2009, McGinnis and Ostrom 2014). A specific research objective of the study is the identification of institutions involved in the implementation of conservation landscapes and an assessment of how these would affect an expanded protected area around ENP. Biodiversity conservation and ecosystem service protection at the landscape scale demands partnerships in collective action among multiple stakeholders. In terms of practical outcomes, the case study contributes to Namibia's Ministry of Environment and Tourism current attempt at strengthening the country's protected area network. The findings potentially assist various agents in creating cooperative management approaches. The research is topical in that it fits in the emerging fields of interdisciplinary inquiry concerning the future of community-based conservation and evolving community management models for national parks and protected areas, particularly concerning adaptive co-governance of natural resources.

Conceptual framework: Applying the social-ecological systems framework to the case study

Abstract

Natural resource systems and their beneficiaries are embedded in complex social-ecological systems. These systems require an integrated study approach if the aim is to develop effective policies to enhance the sustainability of the system and safeguard the livelihoods of those dependent on the services supplied by the natural environment. The multiple-use rangelands surrounding the Etosha National Park require such an integrated study approach, as there are plans to expand the protected area network by incorporating some of these areas. The long-term sustainability of Namibia's working landscapes; however, are dependent on stakeholders in multifunctional rangelands, and their abilities to make decisions that secure their livelihoods while also protecting vital ecosystems. The decisions they make are linked to their management objectives, the conflicts they face and their values and perceptions regarding ecosystem services. Within this scope, the goal of this chapter is to apply a social-ecological systems framework to select the most suitable variable to best describe changes in the social and ecological system, conceptualising the reciprocal interactions between the systems. A series of questions were asked to identify the most relevant variable. These related to who the actors are that are benefiting from the system, the collective goods involved in the generation of those benefits, and the focal action situations in which the collective goods are provided and appropriated. Interactions among these highlighted *conflicts* as a variable applicable to all actors in the SES. Since conflict is an interaction between people and their environment, there was a need to also assess the interface between the social and ecological systems. Here I incorporated the ecosystem services approach into the social-ecological systems framework. This integration contributes to a better understanding of human-nature interactions in the social-ecological system.

Keywords:

Ecosystem services, multifunctional landscapes, action situation, conflict

Introduction

Globally, attempts are being made to strengthen and expand protected areas (IUCN 2014, Watson et al. 2014). Conventionally centred on conserving ecosystems and biodiversity, the objectives of protected areas now increasingly include the improvement of human well-being as well as potentially offering nature-based solutions to the complex challenges faced by humanity (Naughton-Treves et al. 2005, Stolton and Dudley 2010). As coupled human and biophysical systems (Berkes and Folke 1998), protected areas are viewed as social-ecological systems (SES) that both affect and are affected by various ecological, social and political processes (Mathevet and Mauchamp 2005). To achieve an increase in areas dedicated to conservation, focus has been directed toward people and land adjacent to protected areas, as both complementary and essential elements to protected area systems. This is particularly relevant to rangelands across sub-Saharan Africa where biodiversity and traditional practices are linked and where the management of land and resources requires a consideration of cultural practices, incorporation of multiple forms of land use and ownership, and the need to sustain local livelihoods.

The growing demand for sustainable food production and the need for effective biodiversity conservation places more and more pressure on rangelands across southern Africa (Reed et al. 2015) and across the globe (Boyd and Svejcar 2009). Rangelands are complex, multifaceted working landscapes that provide an array of ecosystem services, including provisioning, regulating, cultural and supporting services (MA 2005, Neely et al. 2009). Growing human population pressures negatively affect these services (Vitousek 1997, MA 2003; 2005) and a great deal of time, effort and money is being spent on finding effective solutions for attaining both growing human needs and conservation goals (Barrett 2010, Balmford et al. 2012). Widely acknowledged is the need to take a landscape approach when trying to jointly overcome conservation and development challenges (Phillips 2002, Sayer 2009, DeFries and Rosenzweig 2010) with particular emphasis being placed on the importance of including the human or 'social' component in such considerations (McShane and Newby 2004, Chan et al. 2007, WRI 2008, Lawrence 2010, McShane et al. 2011, Carpenter et al. 2012).

The literature on protected area landscape planning, natural resource management and policy decision-making all accentuate the need for improved communication and collaboration among resource users, land managers, policy makers, conservation practitioners and scientists (Daily et al. 2009, de Groot et al. 2010, Briske 2012, Bestelmeyer and Briske 2012, Ban et al. 2013). A wide acceptance of people-centred landscape approaches to ecosystem management has focused attention on human impact on the environment (Laven et al. 2005, Lindenmayer et al. 2008, Honey-Rosés and Pendleton 2013, Förster et al. 2015, Martinez-Harms et al. 2015) but we still lack sufficient research coverage on the social and institutional concepts relating to environmental management (Berkes and Folke 1998, Davidson 2010, Sayer et al. 2013). This highlights the critical need to include resident communities in the planning and implementation of multifunctional

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working landscapes surrounding protected areas, i.e. the conservation landscape. The direct dependence of resident communities on the resource base involves them having unique values and perceptions that influence decision-making, planning and adaptive governance strategies. These are also the individuals and communities expected to apply and conform to the rules and regulations set in place by policy makers.

This is especially true when considering common pool resources typically provided by rangelands (e.g. water, pasturage) where local residents have the weakest incentives to consider the impacts of their actions (Ostrom 1990; 2005, Agrawal 2001). For this reason, Ostrom (2007; 2009) proposed a framework to analyse the sustainability of SESs that provides an integrative and multidisciplinary approach to understand complex interactions within different systems and scales around natural resources governance (Epstein et al. 2013). Ostrom's (2007; 2009) social-ecological systems framework (SESF) provides researchers from diverse backgrounds, focusing on different resource sectors and in disparate geographic, biophysical and temporal contexts the needed vocabulary to construct and test alternative theories and models that 'determine which influences on processes and outcomes are especially critical in specific empirical settings' (McGinnis and Ostrom 2014, p. 1).

Such an interdisciplinary framework provides a common language that can be adopted to uncover interactions and outcomes occurring in complex rangeland systems. With its origins in institutional analysis of the commons, the framework has been applied to SESs ranging from water institutions (Meinzen-Dick 2007, Cox 2014), forests in Nepal (Nagendra 2007), lakes in Wisconsin (Brock and Carpenter 2007) and Bangalore (Nagendra and Ostrom 2014), common property meadows in the Swiss Alps (Baur and Binder 2013) and community-based conservation initiatives across the globe (Berkes 2007). The application of the SESF in diagnosing the complex management challenges related to expanding protected areas and the sustainable management of rangelands is yet to be explored. In this dissertation I apply the SESF to the Etosha National Park (ENP) case study in an attempt to understand land use conflicts, stakeholders' perceptions regarding the conservation landscape and the overarching governance mechanisms needed to achieve sustainable outcomes.

Rangelands surrounding the ENP support commercial and subsistence cattle production, hunting, tourism and wildlife management and act as vital conduits between other protected areas. They encompass vast conservancies dedicated to Namibia's land reform efforts and the integration of nature conservation and human development. The long-term sustainability of Namibia's working landscapes are dependent on land owners, resource users and resident communities and their abilities to make decisions that secure their livelihoods while also protecting vital ecosystems. The decisions of these land and resource users, in turn, are partially dependent on their management strategies and goals and the conflicts involved therein, as well as their values and perceptions

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regarding ecosystem services. Within this scope, the goal of this chapter is to apply the SESF to select the most suitable variable to best describe changes in the social and ecological system, conceptualising the reciprocal interactions between the systems.

The Social-Ecological Systems Framework

As complex, adaptive systems, protected area landscapes are considered coupled SESs in that they entail human and biophysical components (Liu et al. 2007) linked across multiple scales (Cumming 2011, Cumming et al. 2013) that provide essential resources to people associated with them (Berkes and Folke 1998). The SESF (Ostrom 2007; 2009) describes the key components of SESs that are critical to the sustainability of the commons, i.e. land owned or used jointly by the residents of a community (Ostrom 1990, Ostrom et al. 1994, Agrawal 2001). As shown in Figure 2.1, the framework has six primary components (as adapted from Ostrom 2007; 2009, McGinnis and Ostrom 2014). The solid boxes portray the first-tier components, namely Resource Systems (RS), Resource Units (RU), Governance Systems (GS) and Actors (A), each containing multiple variables at the second and lower tiers. The surrounding dotted-and-dashed line indicates that the interior elements of the focal social-ecological system can be considered as the logical whole, and that exogenous influences from the social-economic-political settings (S) and related ecological systems (ECO) can affect any part of the system.

Together these aspects set the conditions for, and act as the inputs to, the focal action situations that lead to Interactions (I) and Outcomes (O). The fixed arrows in the figure denote direct links between components and the dashed arrows depict feedback from action situations to each of the subsystems. Within each of these components are second-tier variables (Table 2.1) that have been identified, through extensive empirical analyses of a large number of case studies, as essential to SESs analysis (Anderies et al. 2004, Janssen et al. 2007, Wollenberg et al. 2007, Poteete et al. 2010, Basurto et al. 2013, McGinnis and Ostrom 2014). In total, the framework includes over 50 potentially influential second- and third-tier, and at times fourth- and fifth-tier variables ordered within a nested hierarchy of variables. Variables are not relevant in all contexts and the intent is rather to find the variables that are applicable and to organise these into connected groups based on existing knowledge, previous research and theoretical formulations.

As mentioned, focal action situations are influenced by Actors (A) who extract or modify Resource Units (RU) (e.g. fish, trees, water, ecosystem services) from the larger Resource Systems (RS) (e.g. rivers, forests, watersheds). These variables, interacting over time, are also influenced by, and create feedback to, the external social, political, and economic setting (S) and related ecosystems (ECO). This implies a type of 'input-output' logic with the different components of a SES contributing to a certain input that is transferred into Outcomes (O) via the Interactions (I) in an action situation.

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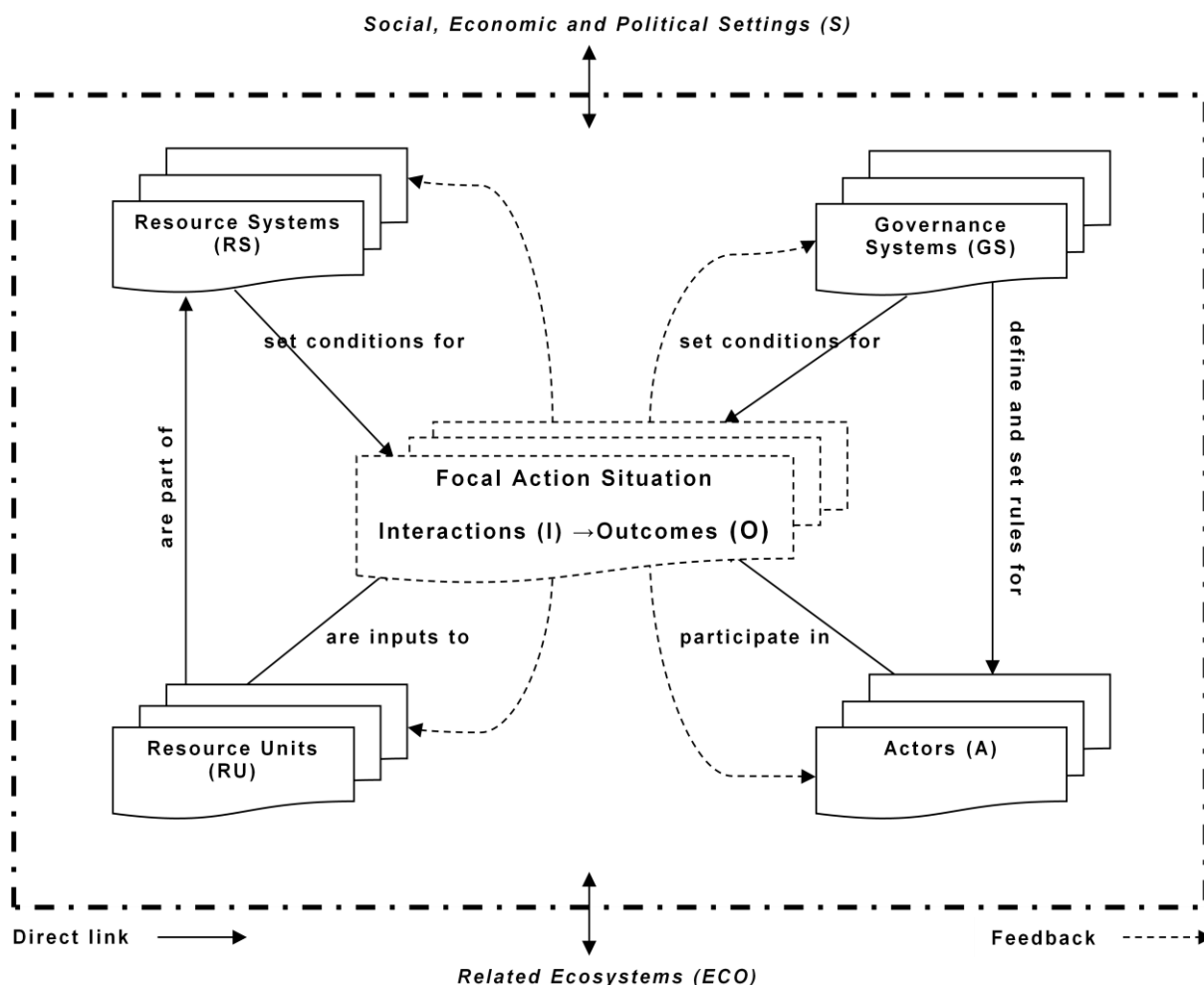


Figure 2.1 The social-ecological systems framework (as adapted from Ostrom 2007; 2009, McGinnis and Ostrom 2014).

For example, trees (RU) form part of a forest (RS) and are extracted by a forester (A), who is governed by various rules-in-use, such as quotas, national forestry policies, etc (GS). Via an Interaction (I), namely harvesting, the trees and the forest (ecological system) are transformed into Outcomes (O) by the social system comprising the forester and the institutions regulating resource use. The forester is also affected by the current social, economic and political setting (S), having to take into consideration rising fuel costs and technological advances, as well as having to consider climate and pollution patterns (ECO). Ideally, the Outcomes (O) are sustainable; both socially (i.e. equitable and efficient) and ecologically (i.e. resilient and adaptive). The effects of these Outcomes (O) then feeds back on the four subsystems.

The SESF addresses the relationship between the social and ecological subsystems as reciprocal (i.e. implying that the number of foresters affect the number of trees harvested and vice versa). This helps to conceptualise the interplay between people and their environment by defining the first-tier variable, Interaction (I). I argue, however, that since both ecological and social processes act synergistically, it means that these components cannot be studied in isolation. In other words, studying the economic value of different tree species in isolation from the property

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rights system regulating harvesting is an oversimplification of the relationship between humans and natural resources and potentially leads to mismanagement and conservation failures. It is therefore more worthwhile to study the interaction; harvesting, in attempting to discern if the management of the SES is sustainable. In the Etosha context, the protected area and its surrounding rangelands interact directly, with wildlife (RU) constantly breaching the park fence and the entire system dependent on the same ground water source and the maintenance of biodiversity (RS). At the same time, different actors (A) with a variety of attributes and governed by different property rights systems (GS), affect both the ecological and the social processes. For this reason it is more important to take Interactions (I) into consideration, than try and assess the components in isolation.

In order to identify the variable relevant to the ENP case study, I applied the diagnostic procedure proposed by Hinkel et al. (2014; 2015). This was done by answering a series of questions relating to the actors benefiting from the system, the collective goods involved in the generation of those benefits, and the focal action situations in which the collective goods are provided and appropriated. The answers to these questions are summarised in the Table 2.2. Firstly, the boundaries of the system need to be defined by establishing the research question. In this case, 'what is the potential Outcome (O) of land owners and resource users (A) surrounding ENP (RS), becoming part of the protected area landscape?' This helped me to ascertain the relevant actors, the benefits they derive from the resource system and resource units, as well as the activities involved in the provisioning and appropriation action situations. According to Hinkel et al. (2015), the former refers to situations in which 'users face a collective challenge to create, maintain or improve a collective good', for example farmers jointly maintaining an irrigation system. Appropriation action situations involve those in which individuals face a collective challenge of preventing the over-exploitation of a collective good (e.g. farmers appropriating water from an irrigation system). You will see that the alternative to self-organisation, namely the ideal scenario in the case of an expanded protected area network; is *conflict*. Although other activities and processes are evident in the system, including *harvesting, monitoring, evaluation, information sharing* and *deliberation processes*, the only variable common to all actors is *conflicts*.

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Table 2.1 Second-tier variables, within each of the top-tier categories of a social-ecological system (as adapted from Ostrom 2007).

First-tier variable	Variable code	Second-tier variables
Social, economic, and political settings	S	Economic development Demographic trends Political stability Other governance systems Markets Media organizations Technology
Related ecosystems	ECO	Climate patterns Pollution patterns Flows into and out of focal SES
Resource systems	RS	Sector (e.g., water, forests, pasture, fish) Clarity of system boundaries Size of resource system Human-constructed facilities Productivity of system Equilibrium properties Predictability of system dynamics Storage characteristics Location
Governance systems	GS	Government organizations Non-governmental organisations Network structure Property-rights systems Operational-choice rules Collective-choice rules Constitutional-choice rules Monitoring and sanctioning rules
Resource units	RU	Resource unit mobility Growth or replacement rate Interaction among resource units Economic value Number of units Distinctive characteristics Spatial and temporal distribution
Actors	A	Number of relevant actors Socioeconomic attributes History or past experiences Location Leadership/entrepreneurship Norms (trust-reciprocity)/social capital Knowledge of SES/mental models Importance of resource (dependence) Technologies available
Action situations: Interactions → Outcomes	I → O	Harvesting Information sharing Deliberation processes Conflicts Investment activities Lobbying activities Self-organizing activities Networking activities Monitoring activities Evaluative activities Social performance measures Ecological performance measures Externalities to other SESs

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Table 2.2. Series of questions asked to identify the relevant variable in the Etosha National Park (ENP) case study
(as adapted from Hinkel et al. 2014; 2015)

¹ **Research question:** 'what is the potential outcome of land owners and resource users surrounding ENP becoming part of the protected area landscape?'

² Actor	Benefit	Activity	³ Stock of Resource Use (RU)	⁴ Subtractability	⁵ Resource System (RS)	⁶ Appropriation Action Situation	⁷ Provisioning Action Situation
Livestock farmer	water for livestock	extracting water	underground water supply	high	hydrological system and infrastructure (e.g. boreholes)	conflict or self-organisation	nature: provisioning/regulating ecosystem services
			surface water (rainwater)	high (seasonal)	hydrological system and infrastructure (e.g. dams, reservoirs)	monitoring, evaluation, investment activities conflict or self-organisation in communal areas	resource user: maintenance of infrastructure
	pasture for livestock	extracting grass	grasslands	high (communal areas)	grasslands	conflict or self-organisation	nature: provisioning/regulating ecosystem services
				low (private land)	grasslands	monitoring, evaluation	resource user: maintenance of infrastructure (e.g. fire breaks etc)
Tourism facilities	income from tourism	non-consumptive tourism	total expenditure of tourists	low	landscapes and infrastructure (roads, accommodation facilities etc)	monitoring, evaluation, investment activities	nature: provisioning/regulating/supportive ecosystem services resource user: maintenance of infrastructure
		consumptive	total expenditure of tourists	medium (resource mobility)	landscapes and infrastructure (roads, accommodation facilities etc)	conflict or self-organisation	nature: provisioning/regulating/cultural ecosystem services resource user: maintenance of infrastructure

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Table (cont.)

² Actor	Benefit	Activity	³ Stock of Resource Use (RU)	⁴ Subtractability	⁵ Resource System (RS)	⁶ Appropriation Action Situation	⁷ Provisioning Action Situation
Tourists	recreation	enjoying the landscape	locations for enjoying the landscape	medium	grasslands	conflict or self-organisation	nature: provisioning/regulating/cultural ecosystem services
		hunting	game/wildlife	high	grasslands	conflict or self-organisation	resource user: payment for services
Households	water for drinking	extracting water	underground water supply	high	hydrological system and infrastructure (e.g. boreholes)	conflict or self-organisation	nature: provisioning/regulating ecosystem services
			surface water (rainwater)	high (seasonal)	hydrological system and infrastructure (e.g. dams, reservoirs)	monitoring, evaluation, investment activities conflict or self-organisation in communal areas	resource user: maintenance of infrastructure
	timber for energy/construction	extracting timber	trees	high	forests	conflict or self-organisation	nature: provisioning/supporting ecosystem services
	plant resources for selling/consumption/crafts	extracting natural resources	natural resources/biodiversity	high	landscapes	conflict or self-organisation	nature: provisioning/supporting/cultural ecosystem services

¹ What is the research question? (To reduce the complexity of the SES, all subsequent questions need to be answered with regards to the research question).

² Which actors (A) obtain which benefits from the SES?

³ Which collective goods are involved in the generation of these benefits?

⁴ Are any of the collective goods obtained subtractable; i.e. the extent to which one person's use of a resource diminishes others' use? (If so, an appropriation action situation arises where activities subtract from a stock of resource units. For nonsubtractable goods there is no need to consider the variables of the RU).

⁵ What are the biophysical processes involved in the generation of the stock of RU? (Collectively referred to as the Resource System (RS)).

⁶ How do the variables of RS and RU characterise the appropriation-related governance challenges?

⁷ Which actors contribute to the provision, maintenance or improvement of the RS and by what input? (This defines a provision action situation associated with a particular RS. For nonsubtractable collective goods, the action situation is the provisioning of a pure public good; e.g. air).

Ecosystem Services Approach

The manner in which the social system interacts with and changes the ecological system is not conceptualised in the SESF. It does, however, provide second-tier variables that indicate that Actors (A) impact the ecological system by using resources, and that they assess the condition of the resource, in such a manner that, 'if the initial set of rules established by the users, or by a government, are not congruent with local resource conditions, long-term sustainability may not be achieved. Studies [...]'³ suggest that long-term sustainability depends on rules matching the attributes of the resource system, resource units, and users' (Ostrom 2009, p. 421). Again, such a singular focus on the components of the SES ignores the inherent complexity and dynamism of ecosystems and fails to take into account the nonlinear feedbacks and thresholds (Costanza 2008) that tightly connects it to the social system (Menzel and Teng 2010). For example, focusing only on the policies involved in protected area expansion in the study area potentially overlooks the individual landowner response to converting land use practises from agriculture to wildlife management. Thus, no matter how well we study the ecological components and the human drivers of change, uncertainty will always remain regarding the interactions involved within SESs and the system's responses to external drivers.

A point of departure for the work presented here is that instead of focusing on a resource, or a Resource Unit (RU) in the case of the SESF, as an input (e.g. number and spatial/temporal distribution of livestock predation), my research assesses the integral, dynamic and complex interactions of people and their natural environment so as to better understand this interdependence. I do this by focusing instead on ecosystem services, the biotic and abiotic components that support the livelihoods of those in the conservation landscape (Boumans et al. 2002, Limburg et al. 2002). I address how these services affect people's perceptions regarding conflicts, linking these to the broader institutional and governance context.

The concept of ecosystem services was developed in the late 1990s to capture the outputs of ecological subsystems within SESs, describing how nature supports human well-being by generating multiple benefits (Costanza et al. 1997, Daily 1997, Daily et al. 1997, de Groot et al. 2002, MA 2005). The ecosystem services approach recognises the complex interactions occurring across the landscape, focusing on the dynamics between the structures, processes and services of an ecosystem (Turner and Daily 2008, Fisher et al. 2009). It also acknowledges that synergies exist between some of these services, while trade-offs occur amongst others. Such ecosystem service trade-offs arise when provision or appropriation of one service is enhanced at the cost of reducing the provision or appropriation of another service, while synergies occur when multiple services are simultaneously augmented (MA 2005, Bennett et al. 2009, Raudsepp-Hearne et al. 2010).

³ ... of irrigation systems (Meinzen-Dick 2007), forests (Agrawal 2001, Ostrom and Nagendra 2006), and coastal fisheries (Wilson and Wilson 2007)...

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The synergies and trade-offs present in SESs, although an interesting topic, are beyond the scope of this chapter. What is important to note is that trade-offs occur between contrasting land uses due to changing social goals and these ultimately result in conflict. (For example, due to policy reforms, Namibian landowners are converting from livestock production to wildlife management areas; leaving cattle farmers increasingly isolated in the landscape. The occurrence of livestock predation has increased, leading to increased tensions between cattle farmers and reserve owners, see Jokisch 2009). Much of the literature on ecosystem services governance is dedicated to understanding trade-offs and the resolution of conflicts, highlighting that ecosystem services conflict and trade-offs are fraught with power imbalances, resource inequalities and disparate outcomes (Paavola 2007, Robards et al. 2011, Paavola and Hubacek 2013). I argue that an understanding of ecosystem services governance and the actors involved therein provides insight into the potential for conflict. This insight can potentially generate institutional change that leads to more equitable and collective forms of resource use. An important first step therefore is to focus on the causal relationships between social and ecological systems and to understand these better.

Since the SESF separates the Resource System (RS) from Resource Units (RU) by simply describing the latter as 'part of' the former (Ostrom 2009, McGinnis and Ostrom 2014), it impedes a deeper understanding of ecosystem governance in working landscapes, oversimplifying the interdependence within and between actors and their natural environment. This in turn overshadows the governance challenges that arise in SESs and the governance structures necessary for the effective conservation of the SES. In order to account for the complexity and dynamic nature of SESs, the underlying causes of human involvement in ecological systems needs to be considered, as well as the resulting adaptations to any ecological changes. This helps conceptualise the interaction between the social and the ecological system as reciprocal, providing greater clarity on the human-nature interaction between the social and ecological systems. Alone, the SESF considers the variables in each subsystem individually, separating the Resource Systems (RS) and Resource Units (RU) and implying linearity in the focal action situation. This isolated analysis of social and ecological systems does not allow me to capture the human-nature interaction, namely land use conflicts; and to successfully answer the research questions pertaining to stakeholders' perceptions regarding the conservation landscape and the overarching governance mechanisms needed to achieve sustainable outcomes (Chapter 1).

While the SESF helps in identifying the variable to consider, in this case *conflicts*, incorporating the ecosystems services approach aids in providing more clarity on the causes of these conflicts (e.g. changes in the property rights system regulating who owns land and may benefit from wildlife) that are rooted in the societal system. The causes and effects of societal feedback mechanisms, not conceptualised under the SESF, helps conceptualise the reciprocal linkages between the subsystems. Hypothetically, an incorporation of adjacent land into the conservation landscape

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would entail the implementation and enforcement of institutions (informal/formal rules and norms) that will lead to social changes in that actors will have to protect and enhance rangelands for the purpose of multifunctional conservation landscapes. This is considered the goal of a protected area landscape around ENP, based on participant observation, an analysis of current and proposed policy and on expert interviews during the pilot phase of my study. The impact of an integrated conservation landscape, through human intervention, could be the maintenance of rangelands. The societal system would respond by attributing increasing use-value to ecosystem services. At the same time, changes in land use, driven by exogenous factors instigated by the broader social-economic-political settings (S) of the SES, leads to changes in the state of the ecosystem. The maintenance of the Resource System (RS), i.e. the conservation landscape, and a reversion to healthy ecosystems lead to greater use value attribution of the Resource Units (RU) in the form of increased wildlife populations and other ecosystem services. The impact of this improvement of the ecological system mobilises ecosystem services delivery and thus greater appropriation of these services, affecting the societal system through an increased valuation of ecosystem services, as perceived by Actors (A). The response leads to trade-offs between different land use practices, implying either conflict or potential cooperation, i.e. collective action and adaptation.

Conclusion

The SESF describes variables for assessing collective action and sustainable outcomes in SESs. In a SES with multiple users (Actors) and uses of the ecosystem service, one stakeholder may consider the provision or appropriation of a service as positive, while this provision or appropriation might be considered as negative by another stakeholder as it displaces other services (Nassl and Löffler 2015). Since my study focuses on an interaction between actors and their natural environment, i.e. *conflict*, the interface between these need to be assessed. For this reason, I have combined the ecosystem services approach with the SESF. This combined framework provides the necessary structure to organise my research findings, providing coherence between the chapters of my dissertation.

According to the ecosystem services approach, ecosystem services underpin human well-being, which are dependent on a stakeholder's needs and objectives. The use of an ecosystem service depends as much on the attributes of the beneficiaries of these services as on the attributes of the biology providing the service (Chapter 4: stakeholder analysis). This is an important step in integrated SESs thinking. The ecosystem services concept helps identify, compare and evaluate the different needs and objectives in the SES under study, enabling an analysis of the trade-offs and thus the conflicts (Chapter 5: conflict analysis) as well as governance challenges experienced by multiple stakeholders. This provides insight into potential outcomes and allows for well-informed policy recommendations that promote sustainable outcomes (Chapter 6: institutional analysis).

What factors contribute to successful integrated management of protected area landscapes in Namibia?

Abstract

The joint achievement of development and conservation is a significant challenge to protected area management. Through biodiversity conservation and rural development, community-based conservation efforts attempt to address this challenge by including resident communities in natural resource management. The community conservation approach remains strongly criticised, however, with many contesting the effectiveness of integrating conservation and development. Much of the academic literature is dedicated to theoretical and empirical studies that attempt to understand the factors contributing to successful community conservation initiatives. In taking a social-ecological systems approach, the effectiveness of such initiatives need to be evaluated against the broader settings in which they occur. Since community-based conservation initiatives in Namibia have largely been considered a success, I explore the dynamics thereof across the political, social, economic and social dimensions to try and better understand how they have affected wildlife conservation and rural development. The aim of this chapter is to uncover the factors that contribute to the integrated management of conservation landscapes. I found that crucial interactions within and across the dimensions of politics, society, economics and ecology, over time, have been successful because of policy reforms that resulted in the devolution of rights over resources at a local level. In turn, this has resulted in an increase in conservancies (82 registered since 1998, covering 19.6% of Namibia) and a recovery of wildlife populations. Biophysical and socio-economic conditions have led to there being minimal opportunity costs of alternative land uses, while institutional structures allow for cooperation between the private sector and communal conservancies. Although the successes observed are context specific, the policy reforms and the approach to benefit-sharing and private sector involvement can be emulated.

Keywords

Community, conservancy, governance, multifunctional landscapes, policy reform

Introduction

In attempting to expand protected areas, increasing attention is being focused on land and people adjacent to national parks. To incorporate communities into the conservation landscape, meaningful participation, particularly by those living within or adjacent to protected areas, is a prerequisite (Child 2004). The interests of both conservation and development therefore need to be

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simultaneously served (Hulme and Murphree 2001, Berkes 2004). By involving resident communities in natural resource management decision-making, community-based conservation (CBC) attempts to jointly enhance local well-being while protecting biodiversity (Adams and Hutton 2007). Broadly, CBC interventions refer to the range of resource management practices that contribute to the co-existence of humans and nature (Berkes 2007). These can take a variety of forms; from collective, civic, collaborative, participatory, local and community governance (Tole 2010) to community forestry, community wildlife management, buffer zone management, integrated conservation and development projects (ICDPs) and community-based natural resource management (CBNRM) (Agrawal and Ribot 1999, Horwich and Lyon 2007). Typically CBC aims to combine elements that connect conservation and development, actively engaging local communities as stakeholders and to some degree, devolving control over natural resources (Adams and Hulme 2001).

Despite their popularity, projects applying community-based approaches to conservation have had mixed outcomes (Kellert et al. 2000, Songorwa et al. 2000, Barrett et al. 2001, Brooks et al. 2013). Previous systematic reviews have assessed the factors influencing compliance by communities with conservation policies and the likelihood of project success. These focused specifically on the use of development as a conservation tool (Brooks et al. 2006), the effect of local cultural context on project outcomes (Waylen et al. 2010a), project engagement (Waylen et al. 2010b) and participation in the protected area decision-making process (Andrade and Rhodes 2012). CBC initiatives have faced criticism across several disciplines (Table 3.1). Summarising the literature against CBC, it becomes clear that arguments are focused around what constitutes a community, and the assumption, mostly by scholars, that communities are harmonious units (Brosius 2004, Rechlin and Taylor 2008). A great deal of the critique also draws attention to the failure of governments to truly devolve rights over resources to the local level (Ribot 2004; 2006). Relating to economics, the true costs and benefits of living alongside wildlife is poorly incorporated into markets, due to a lack of institutions that enable true devolution of rights over resources (Murphree 1994), as well as neo-liberal approaches to valuing natural resources (Child et al. 2012) that focus on the values attributed to ecosystem services (Costanza et al. 1997).

There are also opponents to the community conservation approach who call for a reversion to strict protected areas, highlighting the lack of community capacity to effectively conserve natural resources (Brechtin et al. 2003, Hutton et al. 2005). Others cite sharp trade-offs between conservation and economic development due to differing objectives (Fabricius et al. 2004, McShane and Wells 2004, Brockington and Scholfield 2010). In both cases, context is emphasised since the failings of CBC initiatives are often attributed not to the approach itself, but rather to the implementation thereof (Shackleton et al. 2002).

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Table 3.1 Summary of arguments against community-based conservation (CBC) from various disciplinary perspectives.

Argument	Discipline	References
<ul style="list-style-type: none"> • communities idealised as harmonious units <ul style="list-style-type: none"> – the concept of community is rarely defined or carefully examined – the concept of community needs to be examined in the context of development and conservation by focusing on the multiple interests and actors within communities 	<p>socio-cultural</p> <p>socio-cultural</p>	<p>Baland and Platteau 1996, Agrawal and Gibson 1999</p> <p>Rozemeijer 2003, Ruttan 2006; 2008</p>
<ul style="list-style-type: none"> • decentralisation of resource management is not always democratic <ul style="list-style-type: none"> – centralised governments are unwilling to cede power, thereby stalling decentralisation initiatives – the degree to which recipients of decentralised authority are accountable are questioned – initiatives can be manipulated by the state and the private sector, exploiting and marginalising the poor – when resource-based revenues stimulate increased local competition and a potential concentration of benefits to local elites in a way that violates local social norms and undermines collective action (so-called 'elite capture') 	<p>political</p> <p>political</p> <p>socio-political</p> <p>socio-political</p>	<p>Gibson 1999, Chabal and Daloz 1999, van de Walle 2001, Ribot 2006 Ribot 2004, Nelson 2010</p> <p>Mamdani 1996, Dzingirai 2003</p> <p>Madzudzo et al. 2006, Taylor and Murphree 2007, Rihoy and Maguranyanga 2007, Roe et al. 2009</p>
<ul style="list-style-type: none"> • market-based approaches assume that resource commercialisation is compatible with conservation goals <ul style="list-style-type: none"> – few studies examine how biodiversity conservation and poverty alleviation are related – question whether community-based approaches to natural resource management deliver the theoretically predicted economic benefits to local residents – poor distinction between direct and indirect benefits accrued from community conservation – people seek to manage natural environment when the benefits thereof exceed the costs 	<p>economic</p> <p>socio-economic</p> <p>socio-economic</p> <p>socio-economic</p>	<p>Barrett and Arcese 1995, Hulme and Murphree 1999</p> <p>Kellert et al. 2000, Emerton 2001, Marks 2001, Jones 2004, Blaikie 2006, Haller et al. 2008</p> <p>Silva and Mosimane 2012</p> <p>Murphree 1994</p>
<ul style="list-style-type: none"> • reverting to strict protected areas in favour of community involvement to improve conservation practices <ul style="list-style-type: none"> – communities are perceived as being incapable of protecting resources – ideal areas for nature reserves should be identified by science-based conservation planning – there are sharp trade-offs between conservation and economic development 	<p>ecological</p> <p>ecological</p> <p>social-ecological</p>	<p>Redford 1991; 1992, Oates 1995; 1999, Kramer et al. 1997, Brandon et al. 1998, Spinage 1998, Terborgh 1999, Wilshusen et al. 2002, Brechin et al. 2003, Hutton et al. 2005, Dressler et al. 2010</p> <p>Margules and Pressey 2000, Myers et al. 2000</p> <p>Emerton 2001, Turner et al. 2002, Fabricius et al. 2004, McShane and Wells 2004, da Fonseca et al. 2007, Brockington and Scholfield 2010</p>

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Table (cont.)

Argument	Discipline	References
<ul style="list-style-type: none"> • <i>failings of CBC is a problem of implementation rather than of concept</i> <ul style="list-style-type: none"> – CBC approach is too simplistic in its underlying assumptions regarding collective action – the development of authority and responsibility is lacking, as is dedication to participation, empowerment and institution-building – conservation and development should be delinked, since the joint objective does not serve either well – community-based approaches to natural resource management reflect rhetoric rather than substance – negative trade-offs in the development of natural resource management are mostly felt by the poor – CBC viewed as a new form of imperialism, with the concern for ‘global commons’ increasingly encroaching on the rights of rural people – increased human use in and around protected areas places higher priority over social considerations than on biological considerations, taking the CBC agenda towards tragic failure 	<ul style="list-style-type: none"> social-ecological social-ecological social-ecological social-ecological social-ecological socio-political social-ecological 	<ul style="list-style-type: none"> Cleaver 1999; 2000, Brown 2002, Reid 2002, Poteete and Ostrom 2004 Brown 2002, Murphree 2002 Blaikie 2006 Redford and Sanderson 2000 Shackleton et al. 2002 Jones 2003, Adams and Mulligan 2003 Brechin et al. 2003, Locke and Dearden 2005, Chapin 2004, Borgerhoff Mulder and Coppolillo 2005

As these criticisms remain unresolved; there is a strong need to better understand the factors associated with the success and failure of CBC projects (Chan et al. 2007). Although the academic literature offers valuable insight into the factors affecting CBC success, they do not consider the broader context. In accordance with the social-ecological systems framework (SESF), interactions among the four subsystems, i.e. the Resource System (RS), Resource Units (RU), Actors (A) and Governance Systems (GS), are mediated by this broader setting (S) (Ostrom 2007; 2009, McGinnis and Ostrom 2014). Different political, social, economic and ecological values are manifest at different scales with trade-offs occurring both within and between scales (Berkes 2004, Walker et al. 2004, Giller et al. 2008). Thus, the evaluation of CBC and its contribution to conservation and development can only occur after considering political, social, economic and ecological factors, which are subject to temporal and spatial interactions (Hobley 1996, Sarkar and Mantoya 2011). Such evaluation is difficult due to the inherent variability of such key processes, limited available data, and the absence of baseline studies against which additional⁴ can be measured (Sunderland et al. 2004, Ferraro and Pattanayak 2006, Roe et al. 2006). Since Namibia is largely considered a successful implementer of CBC (Brown and Bird 2011), I assess how the political, economic, social and ecological dimensions affect the conservation landscape in Namibia. I then highlight how these dynamics have led to the mostly successful joint conservation and development initiatives in Namibia and then try to identify the factors that have contributed to this success.

⁴ **Additionality** is the property of an activity being additional. It is a determination of whether an intervention has an effect, when the intervention is compared to a baseline.

Community Conservation in Namibia

Political context

In Namibia, protected areas were first created in 1902 when the idea of creating game reserves was proposed by the German colonial government. The aim was to help restore wildlife populations with the hope that, since game reserves were unfenced at the time, these re-established populations would feed into the surrounding European farm areas to be harvested for meat and commercial products (Dieckmann 2007). Namibia's protected areas were established and managed in accordance with the Nature Conservation Ordinance, No. 4 of 1975 promulgated for the South West Africa territory by the South West African Administration. This legislation criminalised resource use by indigenous peoples, while allowing predominately white landowners conditional rights of use and enjoyment of certain categories of wildlife. These rights were not extended to communal area residents, thereby causing a racial divide of rights over wildlife.

Despite its turbulent political past, Namibia has a long history of cutting-edge conservation legislation and has developed and instituted several incentive-based laws that have successfully inspired the recovery and increase of wildlife populations (Weaver and Petersen 2008). In 1965 the first visionary act was passed with the then government allocating use-rights to Namibian landowners over certain species of wildlife (Nature Conservation Ordinance No 31 of 1965). The conservation outcome of permitting private individuals to own and utilise these resources, thereby transforming the perception of wildlife as a competitor to livestock production to a valuable asset to be sustainably management for personal gain, has been dramatic. It is estimated that wildlife populations on private land in Namibia, comprising roughly 44% of the country, have increased by almost 80% since the passage of the law in the late 1960s (Weaver and Petersen 2008).

In recognition of the success of the 1965 legislation, the communal area conservancy legislation was instituted in 1996 (Nature Conservation Amendment Act 5 of 1996) and grants similar conditional ownership rights to communal area residents who form conservancies (GRN 1996a; b). Described as legally registered areas with clearly defined borders, conservancies have a constituted management body run by the community for the development of residents and the sustainable use of wildlife and tourism (GRN 1996b). By forming conservancies, communities are entitled to benefit from wildlife on communal land by collaborating with the private sector and contribute to the tourism industry, as private landowners had been doing since the 1960s and 1970s (Mosimane 2007). This legislation that links natural resource management with economic opportunity has led to large-scale community empowerment, livelihood diversification and poverty reduction in rural Namibia (Barnes et al. 2002).

Current Protected Area Legislation and Policies

Namibia's protected areas are still established and managed under the enabling authority and provisions of the Nature Conservation Ordinance, No. 4 of 1975, which has not been repealed or replaced. National parks, such as Etosha National Park, are managed and administered under legislation that is 'command-and-control' in character. This enables controlled use by park visitors and excludes indigenous use of natural resources with the aim of conserving the 'natural state' of flora and fauna of the country's national parks. Apart from protected area provisions, the Nature Conservation Ordinance, No. 4 of 1975 also sets out prohibitions and presumptions for permitted use of wildlife. It tables a series of use-rights for certain categories of wildlife by private landowners. These rights are not extended to communal area residents. The legislation states that the owner or lessee of a farm⁵ owns the huntable game, huntable game birds and any exotic game on the land, which the owner can hunt throughout the year without a permit.

For communal areas, a national CBNRM programme was developed and the passage of the Nature Conservation Amendment Act, 1996 allows for the devolution of wildlife use-rights to communal area residents. Those include rights to hunt, capture, cull and sell huntable game under quotas approved by the Ministry of Environment and Tourism (MET), in addition to the right to use quotas of specially protected game, e.g. elephant, for trophy hunting (WRI 2005). The Parks and Wildlife Management Bill, 2009 (draft legislation) provides a series of principles concerning biodiversity conservation, the maintenance and rehabilitation of essential ecological processes, sustainable use of wildlife and equitable access and benefits from natural resource management. Requirements for a 'National Biodiversity Action Plan' are stipulated under the Bill, proposing three categories of protected area, namely a national park⁶, a nature reserve⁷, and a protected landscape⁸.

⁵ or piece of land enclosed by an adequate fence or piece of land not less than 1000ha in extent and enclosed by a game-proof fence

In accordance with the Convention on Biological Diversity (CBD) and in line with the International Union for Conservation of Nature (IUCN) protected areas categories:

⁶ - A **national park** refers to Category II protected areas comprising large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

⁷ - A **nature reserve** is a Category Ia strictly protected area set aside to protect biodiversity and where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

⁸ - A **protected landscape** encompasses a Category V protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

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Social Context***Social Components of Community-Based Natural Resource Management (CBNRM)***

The Nature Conservation Amendment Act of 1996 provides communities with the same rights of use and benefit from wildlife as private farmers and the opportunity to access rights over tourism concessions. The legislation allows for the formation of a collective management institution, referred to as a 'conservancy'. Formally, it is considered a 'legally registered area with clearly defined borders and a constituted management body run by the community for the development of residents and the sustainable use of wildlife and tourism' (NACSO 2013, p. 7). The first conservancy, however, was only registered in 1998, due to the government insisting that these CBNRM regimes come into existence only through local voluntary initiation (Jones 2001, Roe et al. 2009).

Governance challenges indicate a dynamic situation of adaptive learning and incremental institutional change within conservancies (Long and Jones 2004). For example, since conservancy committees received funds from various non-governmental organisations (NGOs) during project implementation before operating costs could be met from their own income, committees were accountable to the NGOs rather than their members (Jones and Weaver 2009). This has changed, however, because of a change in the way that representation and decision-making are structured now that conservancy committees have become more self-sustaining (NACSO 2013). Community conservation planning and implementation also requires evaluation and adaptation. The Namibian Association of CBNRM Support Organisations (NACSO) collects information showing the status of institutional development annually. Data includes the level of involvement of conservancy members in decision-making and benefit distribution. According to recent status reports, Namibian conservancies appear to be well managed, with strong female participation (NACSO 2015). Moreover, traditional authorities play a very important role, with the active involvement of traditional authority representatives in most conservancies ensuring positive relationships.

Economic Context

By 2002, communities involved in CBNRM programmes began to earn considerable income through the consumptive and non-consumptive use of wildlife (Bandyopadhyay et al. 2010). By 2014, the total income generated by communities grew from N\$ 662 278 in 1998 to over N\$ 87 million (NACSO 2015). This includes all directly measurable income and in-kind benefits being generated and can be divided into cash income paid to conservancies (mostly through partnerships with private sector operators), cash income paid to residents (mostly through employment and the sale of products) and in-kind benefits provided to residents (such as the distribution of harvested game meat; NACSO 2013). Conservative estimates of the total revenues generated by community-supported enterprises (such as joint venture lodges, trophy hunting

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concessions⁹, thatching grass sales, community-based tourism enterprises, craft and live game sales) indicate that these enterprises contributed more than N\$93.4 million to private sector stakeholders and roughly N\$185 million to the Namibian economy during 2006. Furthermore, these enterprises employed 794 full-time and 5101 part-time conservancy residents (LIFE 2007).

The Significance of Economic Benefits

Understanding the economic impact of community conservation, however, requires collecting and analysing a range of quantitative and qualitative data that covers the different aspects of costs and benefits. Most available data are focused on the financial benefits of CBC, while little information is available on other benefit streams and on costs (Jones 2004). Other crucial factors that need consideration are how benefits are distributed at the individual or household level and how significant these benefits are at that level in a local context. This is important because where such benefits are highly skewed in favour of those in power or if they are trivial, then creating incentives for conservation and delivery of development outcomes will be undermined (Bond 2001, Jones 2004, Turner 2004). In southern Africa, a review by Roe et al. (2006) suggests that formal CBNRM projects are not a reliable generator of income at a household level, except in rare situations where communities are small and the value of wildlife resources is high. Numerous studies reviewing the distribution of CBNRM benefits have found that the relatively wealthy gain more than the poor (MNRT 2008, Thompson et al. 2009). In Namibia, however, the distribution of benefits does not particularly favour one wealth group over another. Bandyopadhyay et al. (2004, 2010) found that in Namibia, the improved welfare effects of conservancies are poverty neutral in the north-west (i.e. there is no significant difference in benefits received between poor and rich in this area).

Where data are available to determine the magnitude and distribution of returns from community conservation, it is important to place these findings into the context of the broader local economy (Roe et al. 2009). Often, household income from CBNRM is relatively insignificant compared to income from other sources. For example, around the Maasai Mara, one of the richest wildlife areas in Kenya, livelihoods in rangelands remain overwhelmingly reliant on livestock farming, as compared to income from tourism and agriculture (Homewood et al. 2009). In Kenya, livestock and arable agriculture accounts for 60% and 5% of household income respectively, while tourism and wildlife accounts for only about 16-25% (Norton-Griffiths 2007, Thompson et al. 2009). Even if benefits from CBC appear small, they can still be highly significant in areas where there are few other income-earning opportunities (Arntzen et al. 2007). In the vast arid and semi-arid regions of Namibia, few alternative sources of income can be derived (Barnes et al. 2002) and diversifying income is an effective and common strategy to counteract this. This contributes to the diversification of local livelihoods and enhances their resilience (Mizutani et al. 2005, Thompson et al. 2009.)

⁹ a lease, licence, easement or permit for an operation undertaken by any party other than the protected area agency (Thompson et al. 2014).

The Economic Costs of Community Conservation

Costs other than those incurred by establishing and running community-based projects include opportunity costs from alternative land uses incompatible with CBC and the costs of living with wildlife. In an arid country like Namibia, the opportunity costs of alternative land uses, such as agriculture, are minimal. What is often overlooked, however, is that where communities set aside land for wildlife and tourism, households lose access to grazing, water and other resources. In Namibia it is the poorest individuals, mostly women (NSA 2013) and households with limited alternative resources that suffer the most from loss of access (Sullivan 2000, WRI 2005, Vaughan et al. 2004). Often the distribution of benefits favour particular individuals at the expense of the majority (i.e. elite capture) a process that also operates across different scales of governance. This is most noticeable in terms of benefit capture by central and district government institutions in the form of revenue retention or a 'tax' on CBNRM income. In this, Namibia is unique as earnings are untaxed and communities retain all the income from wildlife (Roe et al. 2009).

Local communities can also be the victims of their own CBC success, as is the case in north-west Namibia where the increase in wild ungulates has increased competition between wildlife and livestock for grazing, browsing and water (Weaver and Skyer 2003). Human-wildlife conflict is viewed as one of the major challenges facing community conservation in the country. Perceptions of the conflicts, however, are often skewed or exaggerated. The belief that human-wildlife conflict is increasing, is flawed. Although the number of recorded incidences is rising, they do so with increases in the number of conservancies, with the average number of incidents per conservancy remaining roughly stable. Although substantial fluctuations occur in individual conflict categories, incidents in most categories were lower in 2014 than in 2013 (NACSO 2015). In 2009, the MET launched the Human-Wildlife Conflict Policy, providing national guidelines for conflict mitigation and setting out a local community level framework for managing wildlife conflicts (MET 2009). Appropriate land use planning and zoning are imperative for the prevention and mitigation of human-wildlife conflict as is the generation of tangible benefits from wildlife in promoting community willingness to co-exist with wildlife and to accept the challenges associated therewith. The latter involves the Human-Wildlife Self Reliance Scheme, which compensates those who have suffered losses (Jones 2004, Ogbahorya 2006, Jones and Mosimane 2007).

Periodically, safari-hunting clients are willing to pay to kill problem animals (i.e. crop raiders or livestock killers), helping to reduce human-wildlife conflict. The hunting of problem animals by trophy hunters can potentially generate revenues from animals that would have died anyway, thereby reducing indiscriminate revenge-killings by disgruntled local peoples (Lindsey et al. 2007). It is therefore not surprising that a large portion of CBNRM returns comes from hunting (Weaver and Peterson 2008). Furthermore, the Namibian approach to community conservation emphasises the importance of using a broad range of natural resources to enhance the value of these resources and ensure their protection, in addition to the protection of large areas of natural habitat

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(NACSO 2013). Also emphasised is the importance and value of using wildlife both for tourism and hunting, although the merits of using hunting as a conservation tool, as compared to photographic tourism, continues to be debated (Lindsey et al. 2007). In Namibia, optimum returns are facilitated through strategic partnerships with the private sector, which offers specialised skills and market linkages (NACSO 2015). Capacity building and skills transfer create further benefits; while communities are afforded the opportunity to establish themselves in the hunting and tourism sectors.

Ecological Context

Resource Use

CBC has contributed significantly to the recovery of wildlife populations across large parts of northern Namibia (Barnes et al. 2002, NACSO 2015). The numbers of black rhinoceros (*Diceros bicornis*), elephant (*Loxodonta africana*) and Hartman's zebra (*Equus zebra* spp. *hartmannae*) have generally increased due to concerted efforts to minimise poaching and ensure sustainable resource use (NACSO 2015). There are difficulties in attributing causality to any environmental improvement, since they could be caused either by external factors (such as changes in rainfall or disease outbreaks, for example) or by changes in management regime. Nonetheless, the general consensus is that without community commitment to conservation in Namibia, species such as black rhinoceros, would not survive, let alone increase in numbers, where elsewhere in southern Africa, their population numbers are in precipitous decline due to poaching and a lack of community commitment (Durbin et al. 1997, Gibson 2001, NACSO 2013; 2015).

In communal areas, wildlife is managed in accordance with a community's land use priorities, based on monitoring and off-take quotas. Management regimes that allow for the off-take of natural resources under such a quota system can be susceptible to over-utilisation, even exploitation (Wilcove et al. 1998). To avoid this, most conservancies in Namibia conduct periodic game censuses, the largest being the North-West Game Count, a joint exercise between conservancies in the north-west, the MET and various NGOs. The North-West Game Count has been conducted annually since 1999 and covers an area of about seven million hectares. The data are combined with aerial censuses conducted by the MET as well as harvest returns, desired stocking rates and records obtained from the Event Book Database, a highly successful management tool initiated in 2000 (Stuart-Hill 2005). Used by almost all registered conservancies, the Event Book System promotes community involvement in the design, planning and execution of natural resource monitoring.

Expanding the National Conservation Network

The extent of area influenced by community conservation increases annually affecting not only the number of people who benefit from natural resource use, but also expanding the national conservation network (Figures 3.1 and 3.2). Although the degree of conservation management differs across these areas, they all subscribe to sustainable resource use and oppose the illegal and destructive use of resources. Communal conservation areas often adjoin national parks and both communities and national conservation authorities jointly manage migrating wildlife populations, which improve monitoring and land use planning and provide more effective anti-poaching activities and fire management (NACSO 2013). These conservation complexes¹⁰ provide the impetus for the implementation of zonation, setting aside areas for wildlife and wildlife-based ventures. Conservancies also play a pivotal role in adjoining other conservation areas (such as game reserves, freehold conservancies), thereby creating vast areas dedicated to sustainable resource management. The percentage of state protected area boundaries in communal areas shared with conservancies, concession areas and community forests has also increased dramatically since the start of the CBNRM programme (NACSO 2015).

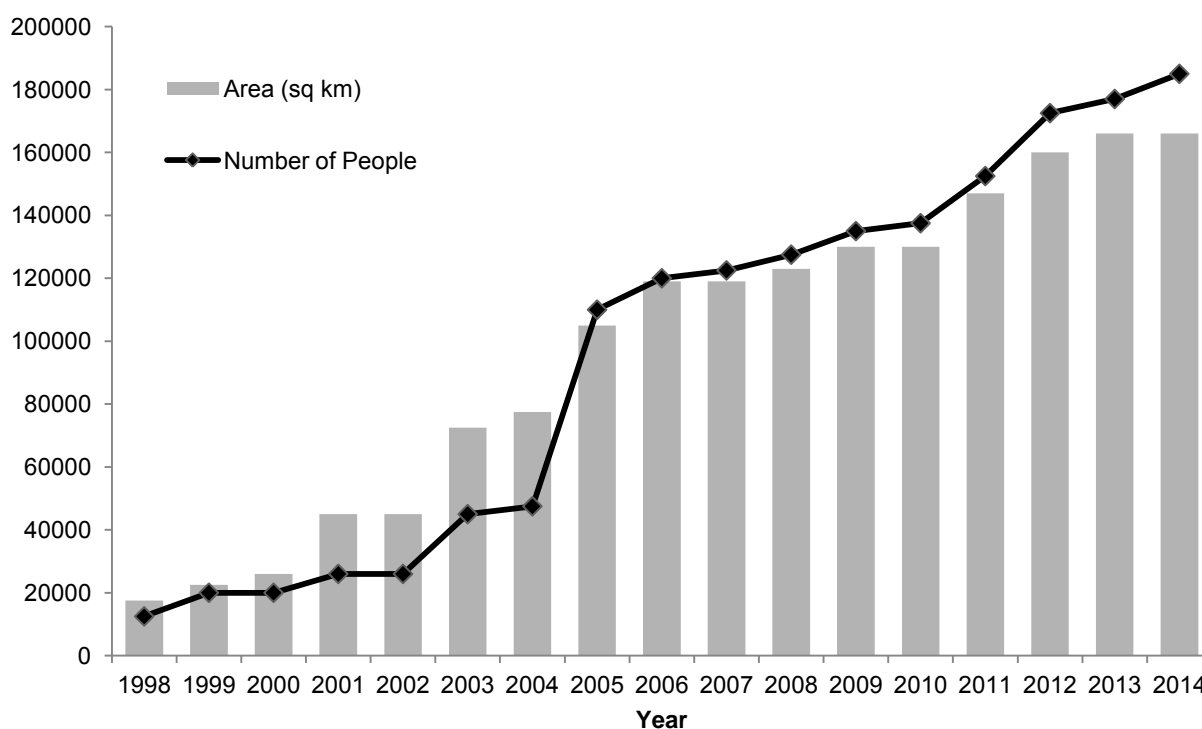


Figure 3.1 Communal conservancy cover and number of residents (NACSO 2015).

¹⁰ landscapes defined in the Namibian context as resilient, sustainable and jointly managed areas that deliver both ecosystem and economic services, in addition to equitably benefiting nature, culture and people. Local examples of such landscapes include the Mudumu North Complex, Khaudum North Complex and Greater Waterberg Complex (NACSO 2015).

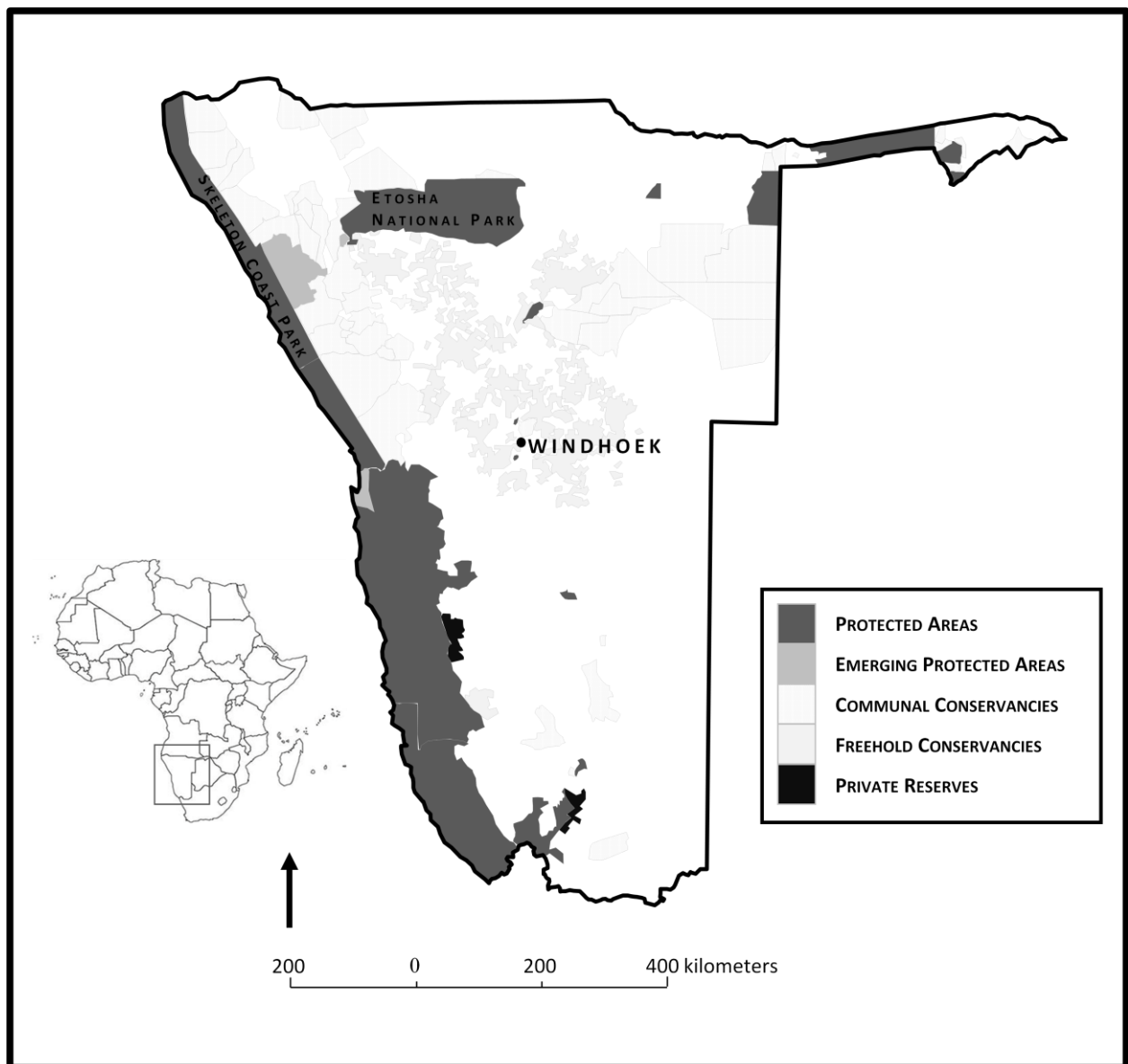


Figure 3.2 Namibia's protected area network, depicting established and emerging protected areas, communal and freehold conservancies and private reserves (As adapted from MET 2010, NACSO 2014).

Interactions across the Political, Social, Economic and Ecological Dimensions

Overall, CBC is recognised as contributing to a range of national developmental goals, including several related to the economy, society and the environment. Changes in these spheres, over time, have led to devolution of authority over natural resources, a conversion from agricultural production to wildlife management over large areas, an increase in private sector involvement and a diversification of the resource base and thus livelihood strategies (Figure 3.3). In particular, the contribution made by changing land use policies and property rights has led to improved market access and a more equitable distribution of the costs and benefits involved in being part of integrated landscapes. At the same time, community participation and the inclusion of local institutions have led to the recovery of wildlife populations and even more land being dedicated to conservation.

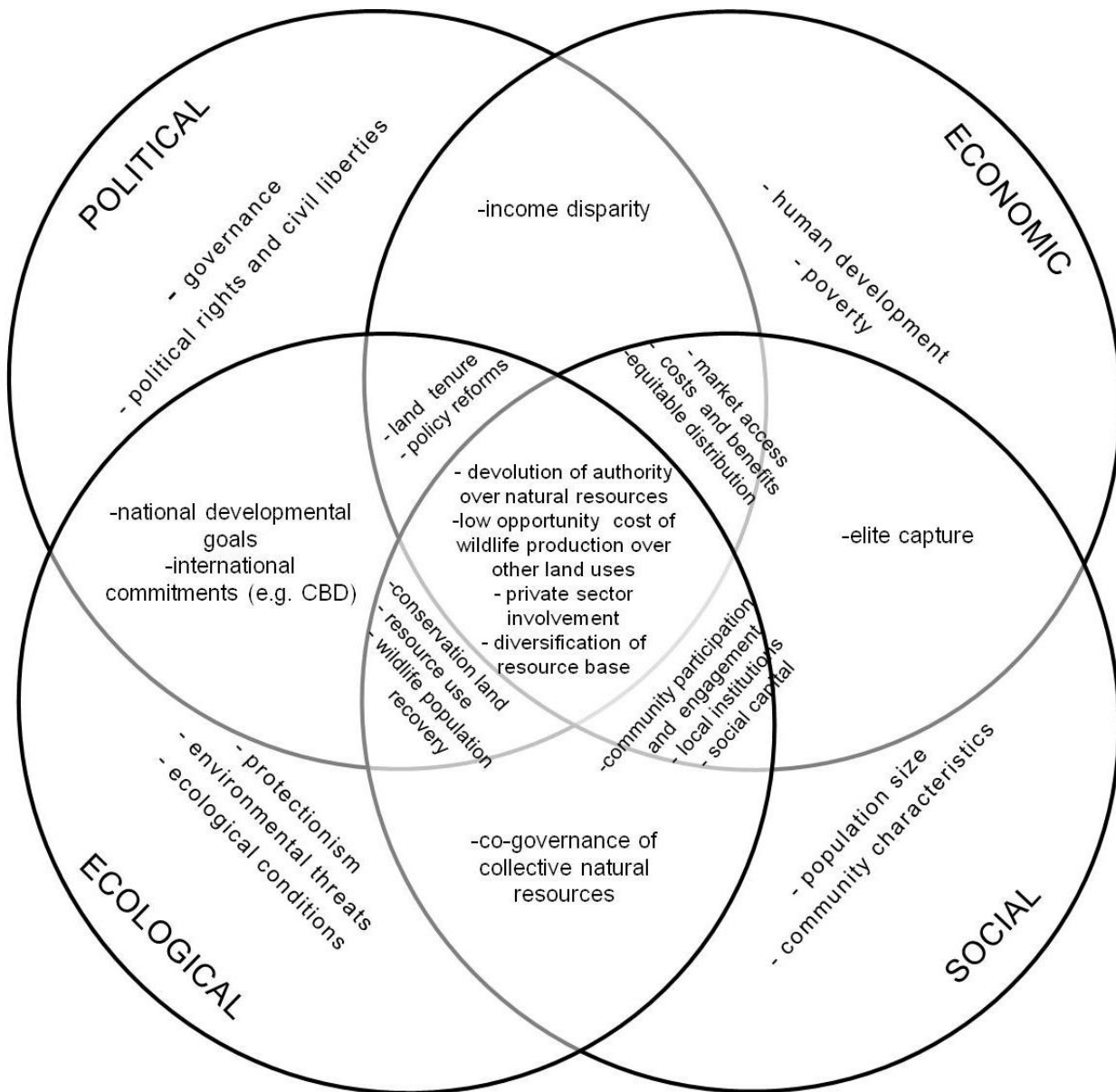


Figure 3.3 Venn diagram illustrating the relationships and interactions between the political, economic, social and ecological dimensions of community conservation in Namibia.

On a policy level, Namibia's efforts to fulfil its constitutional commitments have been advanced through CBC initiatives. The role that the Namibian Government has played has had a major effect on the implementation and success of CBC projects, not only in instigating the relevant policy reforms but also in enforcing joint conservation and development policies. Nelson and Agrawal (2008) argue that the outcomes of CBC efforts are strongly reliant on the institutional incentives facing political decision-makers, since valuable natural resources can at times incentivise central players to retain control over these resources, hampering decentralisation. In Namibia, however, the degree of stability, transparency and accountability of the state has positively influenced CBC outcomes by affecting confidence in the state and governance institutions.

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Nonetheless, as Brooks et al. (2013) argued, national political context (i.e. transparent and effective governance) is not as imperative to CBC success as is the manner in which a project is designed and the characteristics of those communities involved. They suggest that well-designed CBC projects can still be successful, despite being operated in national contexts not typically considered conducive to effective collaborative management of collective resources (i.e. where there are unstable or corrupt governments or poor regulatory governance).

The crux of CBC initiatives is the strengthening of locally accountable institutions, thereby assisting communities to sustainably manage their resources. Social advances in the country include the devolution of authority to the local level, community participation and engagement in decision-making, management and monitoring of land and resources. By adapting and conforming to existing local institutions, through the use of traditional authorities, Namibian community conservation projects have been more successful in that they emphasise co-management of the land and its resources. However, Namibia still has a long way to go in terms of including local institutions (namely, traditional authorities, kings and chiefs) in CBC decision-making processes, and conservation policies in general. This will surely contribute to enhancing the compliance of local communities with protected area management (Wilshusen et al. 2002, Mascia 2003, Aswani and Weiant 2004, Pretty and Smith 2004, Hayes 2006, Ban et al. 2008). Empirical studies also suggest that resident communities are more likely to comply and commit themselves to long-term conservation strategies when their knowledge and opinions are incorporated in the decision-making process (Mascia 2003, Fu et al. 2004, Pretty and Smith 2004, Gelcich et al. 2005).

To varying degrees, success can also be attributed to the involvement of local government, NGOs, resident communities and the private sector, which have all shared responsibilities to resource governance through diverse institutional arrangements. The improved capacity, knowledge and social cohesion has promoted cooperation among those involved in the joint governance of resources, and greater trust has been developed (NACSO 2014).

Economic advances include the diversification of livelihoods and opportunities, equitable benefit-sharing and effective mitigation of human-wildlife conflict. By restricting land cover change and curbing over-grazing, conservancies have contributed to the maintenance and even enhancement of other ecosystem services, particularly improved water and grazing availability, services that are potentially vital in rural areas (Borgerhoff Mulder and Coppolillo 2005, Padgee et al. 2006, Tole 2010). Land cover change restrictions, however, have had detrimental effects on resident communities in that they have prevented profitable agricultural and forestry activities and led to an increase in wildlife-related crop damage and depredation of livestock (NACSO 2013).

The benefits provided by community conservation initiatives have served as an incentive for conservation, but the increasing resource-based revenues have also engendered local competition and the potential concentration of benefits. Referred to as 'elite capture', this occurs when benefits

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become concentrated among local elites in such a manner that it contravenes local social norms and weakens collective action, thereby constraining or undermining the intended outcomes of CBC (Platteau 2004). Finally, success can also be attributed to Namibian communities being integrated into local and global hunting and tourism markets, which has facilitated sustainable utilisation, protection and conservation of wildlife resources (Hulme and Murphree 1999). This market integration has added value to local products although, the possibility exists that integration could also increase pressure on these vulnerable resources and habitats due to higher rates of extraction, a consequence of increasing opportunities for market sales and rising prices (Brashares et al. 2011).

Ecological advances include the recovery of wildlife populations and an expanding protected area network (NACSO 2004, Jones 2004). These developments pertain to the country's obligation to safeguard the environment while achieving economic growth and rural development. CBC approaches have promoted extensive wildlife productive systems, i.e. wildlife management areas enclosed in a wildlife-proof fence system with minimal human intervention (Dry 2009). When compared to agro-pastoral systems, such as livestock farming, wildlife management areas potentially reduce the pressure on rangelands (Child 1988, Bond et al. 2004). Although data are limited, land restored after an extensive period of intensive single-species production shows rapid improvement in its diversity, resilience and ecosystem function (du Toit 1999). Thus, wildlife management areas indirectly provide resource sinks, thereby diversifying the resource base on which communities depend (Roe et al. 2006). This, together with the revenues generated by community conservation programmes can potentially contribute to social resilience by mitigating the worst impacts of either climatic or economic stress (Lund and Treue 2008).

Discussion

The role of national government in community-based conservation is to implement and enforce policy (Nelson and Agrawal 2008). However, the success of these policies and the initiatives they aim to support depends on how people and communities perceive their respective political system (Ostrom et al. 1999, Smith et al. 2003, Gutiérrez et al. 2011). Furthermore, the sustainable use of common pool resources and successful CBC initiatives are assumed only to occur where communities negotiate and self-organise around resource use and the distribution of benefits (Ostrom 1990). Collective action, in turn, depends on the governance structures in place and the institutional capacity available in a community (Hulme and Murphree 2001). However, communities are inherently complex (Agrawal and Gibson 2001) and the very existence of a community should not be assumed (Adhikari and Lovett 2006).

Much of the literature concerning the economics of CBC considers the contribution of conservation to development (Berkes 2004) since the potential financial contribution of biodiversity to human well-being is often used as an incentive for resource conservation (McShane and Wells 2004, Tallis et al. 2008). To ascertain this economic contribution, however, requires an

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understanding of the costs and benefits accrued to protecting biodiversity and living alongside wildlife. Another motivation for CBC, particularly in arid southern African rangelands, is the lack of arable land (Roe et al. 2009) and the opportunity cost of alternative land use, such as livestock production (Child 1988, Bond et al. 2004).

In Namibia, community conservation aims to link a sound democracy and social and economic development to the conservation and management of the country's natural resources. The Namibian model focuses on both participation and engagement of relevant stakeholders, thereby providing an economic boost to the majority of rural Namibians (Bandyopadhyay et al. 2004; 2010, LIFE 2007, NACSO 2015). In so doing, it tries to avoid the usual bias where the elite mainly capture rights over, and obtain benefits from, common property resources (Adams and Hulme 2001). Furthermore, Namibia's community conservation programme is based on the belief that joining the best practices from the private sector with those of collective co-governance will contribute to its long-term economic, social and ecological sustainability. According to Nott and Jacobsohn (2004), the country's success can be attributed in part to the growth of local-level governance as well as the novel opportunities offered by policy reforms for biodiversity conservation.

Also important to the success of community conservation, is project design, particularly the need to include community participation, community engagement, capacity building and equitable distribution of economic benefits (Mansuri and Rao 2003, Tallis et al. 2008, Tole 2010, Waylen et al. 2010a, Persha et al. 2011). The distribution of benefits derived from CBNRM is also influenced by the nature of these benefits and how individuals are able to gain access to them. In Namibian CBC projects, the principles that govern the distribution of benefits are built into the policy governing communal conservancies. By being a registered member of a communal conservancy, resident communities can broaden their livelihood options, and actively manage and generate benefits from natural resources. The land and resource use rights granted to communities over wildlife are relatively broad and secure, and while conditional, these rights can be revoked, they are not term-limited and do not depend on the political party in office.

CBC governance structures provide communities with legitimate support for the tourism and trophy hunting industries, and allow a suite of other private sector, government and donor stakeholders, to formally connect with communities in an equitable manner (NACSO 2013). Importantly, no middleman exists between communities and the private sector, and the absence of a go-between has played a crucial role in the development of CBNRM in Namibia to date (Child and Weaver 2006). The benefits of private sector involvement in CBC include longer-term economic viability, since it empowers communities to select, negotiate and contract private sector partners, and develop current enterprises (Murphree 2000, Child and Weaver 2006, Taylor and Murphree 2007). These types of partnerships between community conservation initiatives and the private sector also provide access for eventual community self-managed small tourism enterprises

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(Davidson et al. 2006). The relationships reflect a 'proprietor-client' relationship, as this is vital for markets, income generation and the fostering of both commercial enterprise development and environmental stewardship (Roe et al. 2009).

Conclusion

Namibia has made great strides in achieving successful community conservation in the wildlife sector. The interactions between the political context and the ecological, social and economic dimensions have played a pivotal role in the accomplishments of community conservation. The country's socio-economic position (large gap between the rich and the poor, percentage of population dependent on the resource-base) and favourable social-ecological context (low population density, high aridity favouring wildlife over agriculture) favour the joint development and biodiversity conservation objectives of CBC. This is made possible by the devolution of authority over natural resources, the low opportunity cost of wildlife management over other land uses, the diversification of the resource base allowing for equitable distribution of benefits and the involvement of the private sector in hunting and tourism enterprises. Due to the interactions across the dimensions of politics, economics, society and the environment, continued success depends on the country developing a holistic approach to managing all its resources, human, natural and cultural.

Nonetheless, even when considering the broad political-economic-social and ecological setting, assessing the success of integrated conservation landscapes remains difficult. The links between biodiversity and livelihoods and between conservation and poverty alleviation are dynamic and locally specific (Agrawal and Redford 2006). To better understand how biodiversity conservation and community development are related, the trade-offs or compromises between these incompatible yet desirable features of CBC need to be assessed (McShane et al. 2011). This understanding affords multiple stakeholders a better idea of the options available in conservation and development and how the outcomes potentially alter diversity, functioning and ecosystem services and the range of benefits available over space and time.

Expanding the protected area network in Namibia: Identifying and categorising stakeholders around the Etosha National Park

Abstract

In Namibia, areas dedicated to conservation are increasing due to the proliferation of conservancies and game reserves. This entails integrating land use practices variably dedicated to wildlife management and the inclusion of land owners and resource users in the protected area decision-making process. The objective of this chapter is to use stakeholder analysis to identify local participants integral to an expanded protected area network around the Etosha National Park in Namibia. To achieve this, I identified and categorised important stakeholder groups, and quantitatively and qualitatively assessed their relative importance to the protected area decision-making process. Combining interviews, focus groups and participant observation, 12 stakeholder groups were identified, and categorised according to proximity to the national park, land tenure and land use type. Primary stakeholders, comprising livestock farmers, communal conservancy members, resettlement farmers and tourism/hunting enterprises, were individually scored and the cumulative values of *position*, *interest* and *power* calculated for each group. These attributes provide an indication of stakeholder salience (i.e. how likely stakeholders are to affect or be affected by an integrated conservation landscape). Attributes also provide an indication of the potential roles various stakeholders could play in protected area planning and natural resource management in the study area. This study indicates that livestock farmers, although interested by the concept of being incorporated into the conservation landscape, mostly oppose protected area expansion for both private (64%) and land owned by the state (i.e. resettlement farms, 73%). Stakeholder analysis provides a transparent and repeatable process for identifying and selecting key stakeholders, while a consideration of their position and interest regarding the protected area network in Namibia can potentially lead to better implementation of conservation areas in the country.

Keywords:

Stakeholder analysis, salience, policy, primary stakeholders

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Introduction

Protected areas are among the most important refuges of biodiversity (Myers et al. 2000, Pimm et al. 2001) and are crucial for the conservation of species threatened by land use change and habitat loss (Prendergast et al. 1993, Chape et al. 2005, Gaston et al. 2008, Joppa et al. 2008). Efficacy of protected areas depends on the ability to protect habitat and prevent its loss in areas within and surrounding protected area boundaries (Bruner et al. 2001). Increasingly, protected areas are becoming isolated in the landscape due to land use change and intensification (DeFries et al. 2005; 2010, Foley 2005) while some protected areas have evolved from being solely for biodiversity conservation to also improving human welfare (MA 2005, Naughton-Treves et al. 2005, Kareiva and Marvier 2012). The joint achievement of human development and biodiversity conservation inevitably involves several interested parties, at various scales, often with divergent values, perspectives and demands (Miller et al. 2011).

Unlike many other countries, Namibian protected areas are effectively expanding due to the proliferation of communal and freehold conservancies, where large areas are designated for the protection and conservation of natural resources, by communities or private individuals (Weaver and Skyer 2003, Weaver and Peterson 2008, NACSO 2014). These conservancies, together with national parks and private game reserves, ensure that, to some degree, wildlife is managed over roughly 40% of Namibia (MET 2010). This expanded protected area network (EPAN) includes different land use types and policy sectors, thereby generating multiple interdependencies between various stakeholders. Stakeholders include the state, assorted organisations, groups and entities from international donors and non-governmental organisations (NGOs) to private and communal farmers, communities, traditional authorities and hunting and tourism enterprises.

Stakeholder analysis is increasingly being used in the environmental decision-making process and in natural resource management (Prell et al. 2009). A technique developed in business management studies, stakeholder analysis is used as an approach to generate knowledge about participants and to better understand their interests and behaviours, and assess their value to decision-making (Varvasovszky and Brugha 2000). In development and natural resource management, stakeholder analysis can be used as an approach to understand social-ecological systems (SES) by defining the aspects of the system under study, and identifying who has a stake in these aspects (Grimble and Wellard 1997, Mushove and Vogel 2005, Prell et al. 2009).

Although opinions differ over the definition of stakeholder, according to Freeman (1984), stakeholders are those who are affected by the choices and actions taken by decision-makers and who have the power to influence the outcome of those choices and outcomes. Building on Freeman's stakeholder theory, more recent definitions of stakeholders distinguish between those who affect, and those who are affected by, a decision or action, sometimes referred to as active and passive stakeholders, respectively (Grimble and Wellard 1997, Andriof and Waddock 2002, Vos and Achterkamp 2006, Freeman 2010).

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Mitchell (1997) suggests that individuals, groups, communities, organisations, societies and the natural environment are all entities that qualify as being actual or potential stakeholders. The existence and nature of the stakes is what generates disparity, according to Mitchell (1997), since whatever is believed to constitute a 'stake' is that which will inevitably dictate 'what counts'. Therefore, the issue of defining who or what stakeholders are is partly linked to defining what comprises a legitimate stake. Much of the literature makes implicit assumptions about the legitimacy of stakeholders (Friedman and Miles 2002) presuming that stakeholders are self-evident and self-construed. This makes it extremely difficult to know which stakeholders should be involved in identifying relevant issues (Dougill et al. 2006) and to subsequently categorise stakeholders to better understand their interests and relationships.

It is necessary to identify who holds a stake and the nature of stake held. The latter in this case, would be the expansion of the protected area network around Etosha National Park (ENP) in Namibia; since the country's long-term vision is to develop a system of integrated land and natural resource management. This vision will essentially transform the current protected area patchwork into a protected area network, involving state-owned protected areas, game parks, private nature reserves, tourism concessions, freehold and communal conservancies (Brown et al. 2005). This chapter briefly places stakeholder involvement in the context of natural resource management and protected area decision-making, with the aim of identifying and categorising stakeholders involved in the expanded protected area surrounding ENP.

Stakeholder Involvement in Protected Area Management

Generally, stakeholder analysis has been used to generate information on the relevant participants in an attempt to understand their actions, perceptions, agendas and influence on decision-making processes (Brugha and Varvasovszky 2000). It also helps identify opportunities and threats to conservation projects, finding compatibility between objectives and stakeholder aspirations (Chevalier and Buckles 1999) and to better understand the diverse range of potentially conflicting stakeholder viewpoints (Friedman and Miles 2004; 2006, Prell et al. 2007). Much of the literature on natural resource governance and project management in general, however, makes implicit assumptions about who or what stakeholders are (Friedman and Miles 2002, Achterkamp and Vos 2008). Thus, normative approaches are increasingly advocated, emphasising the need to legitimise stakeholder involvement and empowerment in decision-making (Reed et al. 2009).

Although the interpretation of stakeholder analysis varies across disciplines, a central theme is stakeholder participation and empowerment. Stakeholder analysis is used in this study because it takes into consideration the multiple interests and objectives present in complex SESs. As depicted in Figure 4.1, the dual goals of integrated conservation landscapes, i.e. joint human development and protected area management, involves heterogenous land and resource users as well as ecosystem services valued differently by different people. The cross-cutting nature of

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SEs, which leads to subtractability¹¹, low excludability¹² and negative externalities¹³ means that multiple interdependencies exist between various stakeholders. In order to inform policy and decision-makers, the interface between these stakeholders first need to be understood and to do so their perceptions, opinions and interests and how these are related to land use need to be understood. By uncovering this knowledge about stakeholders, stakeholder analysis tries to assess people's value to decision-makers and to provide insight into the SES under study. According to Grimble and Wellard (1997), the explicit consideration of trade-offs between different policy objectives and conflicts between stakeholder interests facilitates effective project design and improves the likelihood of success thereof, aiding in the assessment of outcomes and avoiding the unexpected.

Stakeholder Identification and Classification

What can be established from stakeholder theory and its applications in natural resource and protected area management is a lack of consistent methods for stakeholder identification and categorisation. In order to identify stakeholders, this chapter considers the following criteria, as set out by Borrini-Feyerabend (1996):

- Stakeholders are aware of their role or stake in the SES being considered;
- Stakeholders possess certain capacities, such as knowledge or skills, and relevance to the system and its resources (e.g. their proximity to the protected area or rights over land and natural resources);
- Stakeholders are able to influence decision-making and bear the costs of doing so, or are willing to mobilise resources, including their time, money and political weight to influence the decision-making process.

Since it is not possible to include all stakeholders, demarcations, based on well-substantiated criteria, are needed (Clarke and Clegg 1998). In this case, geographical criteria such as the western and southern boundary of the ENP are used, since this is where the expansion of the protected area system takes place (Brown et al. 2005). Furthermore, according to Achterkamp and Vos (2008), to facilitate stakeholder identification, a stakeholder definition, based on a stakeholder classification model, is required. Freeman's (1984) 'affect criterion' is the most commonly used and distinguishes between affected stakeholders and stakeholders who can affect the outcome of a policy or project.

¹¹ Subtractability refers to the consumption of some resource by one consumer preventing simultaneous consumption by other consumers.

¹² Low excludability refers to the difficulty of preventing nonusers from consuming the resource or otherwise imposing obligations on those who use it.

¹³ Negative externalities refers to the consequences of an activity which affects other parties at another place or time, without the affect of the activity being reflected (in market prices) at the place or time where it was implemented, e.g. the poisoning of problem animals.

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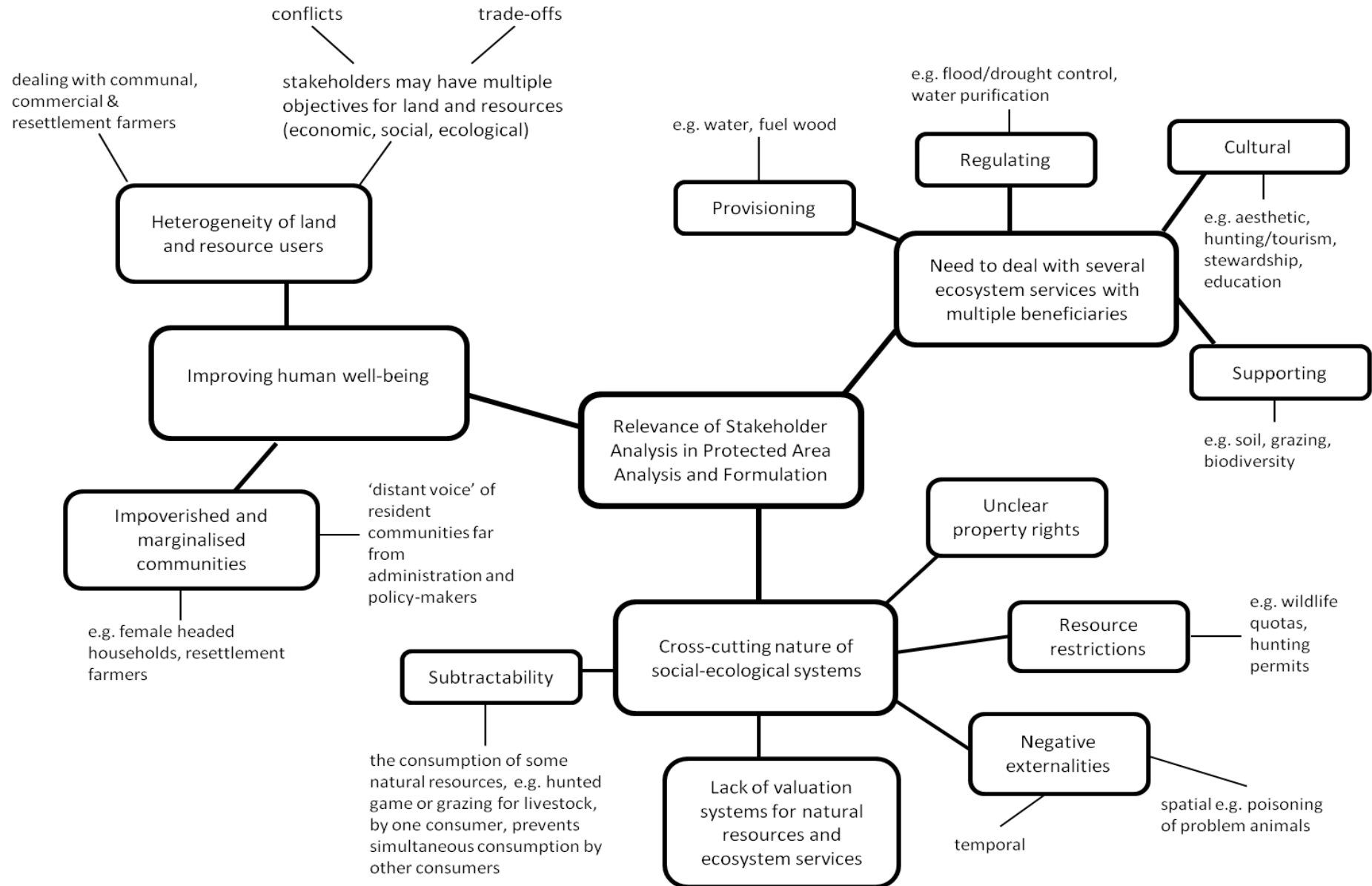


Figure 4.1 Diagram depicting the relevance of stakeholder analysis in the formation of protected areas.

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Most stakeholder analyses implicitly assume that stakeholder desires are similar or identical to outcomes as expressed by the investigators or analysts. Hence, this chapter included a consideration of a stakeholder's interest in the system under study and the suggested expansion thereof. Thus, in addition to distinguishing between primary and secondary stakeholders (Clarkson 1995), the 'affect criterion' (Freeman 1984) was also used in the study, while stakeholders were further classified according to the following attributes:

- Position, referring to their support or opposition for an EPAN;
- Interests, alluding to the advantages and disadvantages of an EPAN, as perceived by stakeholders;
- Power, indicative of the resources a stakeholder claims they were able to mobilise to express their position (i.e. support or opposition toward the issue);

Using these attributes, the aim of this chapter is to identify and categorise stakeholders involved in the expanded protected area surrounding ENP, revealing their relative salience to the protected area decision-making process. Thus, salience, refers to the prioritisation of stakeholder claims by decision-makers and was based on a perception of their power, interest and position (i.e. salience = position + interests + power).

Methods

Study Area

The study was conducted along the southern and south-western border of ENP in the Kunene region of Namibia. The region includes the northern Namib Desert (100 – 600 m above sea level) and interior highlands (1000 – 2000 m above sea level), with a semi-arid to arid climate (less than 50 mm to approximately 350 mm of average annual rainfall, respectively (Mendelsohn et al. 2003)). The mountainous topography leaves large areas of the landscape inaccessible, and combined with the aridity, this significantly hinders agriculture, such that, in a Namibian context, the region is relatively underdeveloped (Mendelsohn 2006). The region's economy is dominated by tourism and hunting enterprises, sedentary livestock production at low stocking rates and semi-nomadic pastoralism (Mendelsohn 2006). The area consists of a variety of arid savanna and desert-adapted mammalian species, including elephant (*Loxodonta africana*) and black rhinoceros (*Diceros bicornis*). Predators include lion (*Panthera leo*), leopard (*P. pardus*), cheetah (*Acinonyx jubatus*), spotted hyena (*Crocuta crocuta*) and brown hyena (*Hyaena brunnea*, Lindsey et al. 2013).

Apart from the ENP boundary fence, a veterinary cordon fence or 'red line' separates the conservancies in the west and private land in the south from the ENP (Figure 1.2; Berry 1997b). It serves as a physical barrier between the foot-and-mouth free zone south of the cordon fence and the foot-and-mouth protection zones north of the fence (Scoones et al. 2010). The fence dividing resident communities in the study area from the ENP is therefore a double fence, consisting of a

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high game-proof fence separated by a 10m passage from a stock-proof fence on the side of the farms and communities.

Sample Selection

A pilot study was conducted in February 2013 to identify relevant stakeholders in the study area and to design the interview schedule. This was done to ensure that the correct people were asked the correct questions and to obtain informed consent. Based on assessments made during this pilot phase, stakeholder interviews were then conducted with landowners and managers, conservancy members, resettlement farmers, conservation professionals and other experts in the area, and on individual farms along the southern border of ENP (Table 4.1).

Table 4.1 Study sample of individuals interviewed during the study.

Stakeholder category	Number of people/households interviewed	Sample selection
Conservancies:		Systematic sampling strategy*
– #Khoadi-//Hoas	12	
– Ehi-Rovipuka	12	
Private properties:		All properties in study area
– Livestock producers	6	
– Tourism/hunting facilities	6	
– Combination farmers (livestock production and hunting and/or tourism)	8	
Resettlement farm:		Systematic sampling strategy [#]
– Seringkop	12	
Other:		Snowball technique [†]
Etosha National Park Management	5	
State Veterinary Department	4	
Researchers	2	
NGO representatives	6	
Media	2	
Consumers (hunters/tourists)	4	
Investor	1	
Union representatives	2	

(Technique as adapted from Newing et al. 2011).

This entailed obtaining a list of registered communal conservancy members from each conservancy's management committee. Each list was alphabetised and considered as the sampling frame. Microsoft Excel (version 7) was used to select every 20th name on the list with equal selection probability. When the selected person was not available for the interview, or did not wish to comply, then a list of alternative selections was consulted and interviewed instead. For #Khoadi-//Hoas, only members residing in the main settlement, Marienhöhe, were included.

[#]A list of registered farmers was acquired from the Traditional Authority and the same systematic sampling strategy as above was carried out.

[†]This involved consulting each stakeholder, identified by experts with prior experience in the area, and requesting them to list other potential stakeholders until no new stakeholders or stakeholder groups could be identified (Billgren and Holmén 2008, Newing et al. 2011).

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Interview Protocol

Primary data were collected using participant observation, key informant structured interviews and semi-structured interviews (Appendix 1) with representatives from each stakeholder group (Chambers 1997). Formal, closed-ended questions were used to guide the interview and maintain structure, while open-ended questions allowed interviewees to speak freely and discuss issues they deemed relevant to the study, encouraging the emergence of unexpected themes and issues (Varvasovszky and Brugha 2000, Tashakkori and Teddlie 2003, Creswell 2009).

Secondary data were collected to ascertain the current SES surrounding ENP. This involved research on demographics in the area, the socio-economic setting of stakeholders, different land uses practiced in the area, the biogeographical setting and impact assessments of the EPAN and legislation concerning land use rights and the wildlife sector. The integration of a descriptive analysis of the system allows for a better overview of the complex interactions of stakeholders (Suškevičs et al. 2013).

Data Analysis

Interview protocols were translated, transcribed and analysed, with codes and categories being derived according to the research questions. Using QSR-NVivo (version 10), codes were assigned to words, phrases and sentences (Hutchison et al. 2010) that referred to stakeholders' perceived interests and their importance in relation to the proposed EPAN. According to similarities and differences in roles, categories were developed from codes giving inference to a stakeholder's stakes. (For example, participants citing their role in the system under study as livestock farmers were grouped together and their stakes assumed to be similar). Stakeholders and their roles or stakes were classified according to the 'affect criterion' (Freeman 1984), to classify 'active' and 'passive' stakeholders, i.e. those who affect (determine) a decision or action and those affected by the decision (Grimble and Wellard 1997, Eden and Ackerman 1998, Chevalier and Buckles 2008). Stakeholders were further distinguished as primary or secondary, based on how vital they are to the implementation of an expanded protected area system around ENP (Clarkson 1995). Table 4.2 provides explanations of key stakeholder terms used in this chapter.

The factors describing stakeholders' characteristics were position, interests, and power. The stakeholders were assessed using 10-point scales anchored at the ends, with semantic differentials (see Appendix 2, Osgood et al. 1957).

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Table 4.2 Explanation of key terms used in the text.

Term	Definition
<i>Stake</i>	an interest in a situation, in this case the expansion, management and development of the protected area network around Etosha National Park (ENP) originates from geographical proximity, dependence for livelihood, economic interest, institutional mandate, historical association and various other capacities and concerns
<i>Stakeholder</i>	an individual, group or organisation who possesses a direct, significant and specific stake in the expansion, management and development of the protected area network around ENP
<i>Salience</i>	the extent to which a stakeholder is able to prioritise their stakes or interests in other stakeholders' agendas. Refers to the degree to which decision-makers give priority to competing stakeholder claims
- <i>active stakeholder</i>	those who affect (determine) a decision or action
- <i>passive stakeholder</i>	those affected by the decision (whether positively or negatively)
<i>Stakeholder Analysis</i>	a holistic approach or procedure for gaining an understanding of the current social-ecological system and assessing the impact of changes to that system, by means of identifying key stakeholders and assessing their respective interests in the system pertaining to an expanded protected area network around ENP

(Borrini-Feyerabend 1996, Grimble and Wellard 1997, Mitchell et al. 1997).

Stakeholder attributes were based on answers to questions asked during the interview (Appendix 1) and were assessed as follows:

1. Position, i.e. the stakeholder's level of support or opposition for an EPAN was ascertained by recording each person's stated position (Schmeer 1999, Varvasovszky and Brugha 2000, Jepson and Eskerod 2009). Stakeholders were then categorised into three classes: *supporting* (strongly positive/positive), *neutral* (slightly positive/indifferent/slightly negative) and *opposing* (negative/strongly negative).
2. Interest, i.e. the disadvantages and advantages of an EPAN was obtained by combining each person's self-reported level of interest toward the concept with their perceived costs and benefits to being located adjacent to the ENP (descriptive). This value was further revised and normalised based on cross-checking with other data sources and consistency with other answers (Eden and Ackerman 1998, Schmeer 1999, Varvasovszky and Brugha 2000). Stakeholders were then categorised into the following: *low* (no to minimal interest), *medium* (general interest), and *high* (primary interest).
3. Power, i.e. the resources a stakeholder is able to mobilise in order to express their position, involves a combination of stated alliances and interactions with other stakeholders, resources available to oppose or support the concept of an EPAN and each person's self-reported influence (Schmeer 1999, Varvasovszky and Brugha 2000, Jepson and Eskerod 2009). Here stakeholders were categorised as follows: *low* (neither the resources nor the ability to mobilise the resources), *medium* (having one of either the

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resources or the ability to mobilise them), or *high* (both the resources and the ability to mobilise the resources).

4. Saliency, i.e. stakeholder importance. Stakeholder saliency was measured using a co-ordinate system in a 3-dimensional space delineated by three axes, each axis representing one of the selected attributes; namely stakeholder *position* on the an integrated conservation landscape concept, their *interest* therein and their relative *power* in having these realised (Figure 4.2). These attributes increase with distance, such that stakeholder groups farthest from the starting point of the co-ordinate system are considered more important. In some contexts, certain attributes would be considered more important than others and can then be weighed, effectively lengthening the distance from the starting point on the particular axis on which the attribute is plotted. For the current study, cumulative attribute values of *position*, *interest* and *power* range from 0 – 100 and were not weighted with all three attributes considered equally. To calculate saliency, I used the equation:

$$S = \sqrt{a^2 + b^2 + c^2}$$

Where S = saliency and a , b , c = the values of the selected attributes. Such that:

$$\text{Saliency} = \sqrt{\text{position}^2 + \text{interest}^2 + \text{power}^2}$$

According to experts with prior experience in the system under study and its resident community, these three attributes were representative and efficient in determining a stakeholder's importance in the decision-making process involving an EPAN. The analytical categorisation was based on that of Mitchell et al. (1997) who prescribes using *urgency*, *legitimacy*, and *power* to assess 'who and what really counts' in stakeholder theory (Mitchell et al. 1997, p. 864). Here, *urgency* was substituted with *interest* and *legitimacy* with *position* based on my observations of the system under study and how it functions (Reed et al. 2009).

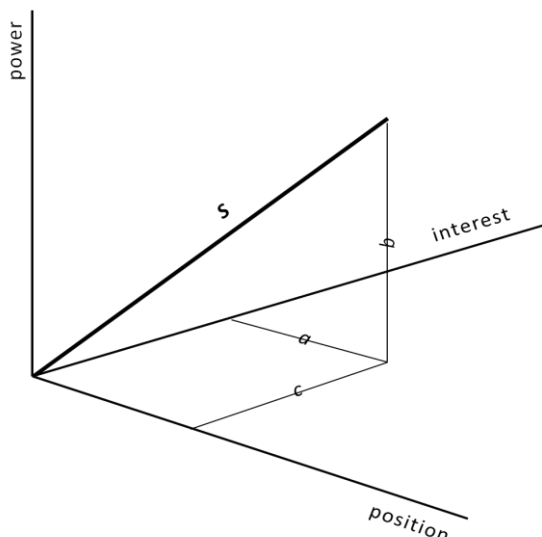


Figure 4.2. A co-ordinate system in 3-dimensional space delineated by three axes, each axis representing one of the selected attributes used to calculate stakeholder saliency (S), namely position (a), interest (b) and power (c)

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Table 4.3 Summary of attribute questions asked during stakeholder interviews and used by the researcher to ascertain *position*, *interest* and *power* during data analysis.

Attribute	Question
<i>Position</i>	<p>What is your role in the system surrounding you (i.e. in the social ecological system)?</p> <p>What is your capacity (owner, co-owner, manager, resident)?</p> <p>Would you ever consider changing the focus of land management?</p> <p>Would you ever consider diversifying your focus?</p> <p>Would you say you oppose or support the concept of an expanded protected area around Etosha National Park (ENP)?</p>
<i>Interests</i>	<p>How would an expanded protected area network around ENP affect you?</p> <p>How would you affect an expanded protected area network around ENP?</p> <p>What do you consider to be the most important advantage to farming on the borders of ENP?</p> <p>What do you consider to be the most important disadvantage to farming on the borders of ENP?</p>
<i>Power</i>	<p>What are the relationships between you and other resource users/land managers?</p> <p>How often do you participate in formal community activities?</p> <p>How often do you participate in informal community activities?</p> <p>What resources do you have that enables you to exert your influence on the other land owners, ENP rangers and communities in the area?</p> <p>What actors are involved in the resolution of the conflicts within, among and between sectoral resource users?</p>

Results

Twelve main stakeholder groups were identified based on differences in land use practices and their roles in the SES under study (Appendix 3). Stakeholders were classified as ‘primary’ or ‘secondary’ based on their proximity to the ENP (whether they were located adjacent to the park or not), land tenure (private or communal) and how important they were to the decision-making process guiding the EPAN (Figure 4.3). (Primary – a higher level of interdependence between the concept of an EPAN and this group. Secondary – those who may influence or affect decisions regarding an EPAN, or who are themselves influenced or affected by these decisions, but who are not engaged or essential to the decision-making process). The primary stakeholder groups are briefly described below:

Stakeholder Groups

- **Livestock farmers**

Individuals who own land adjacent to ENP and whose livelihoods are dependent on either commercial or subsistence livestock production. Although freehold title dictates that the title deed holder may use their land as they deem fit, many farmers in the area have partially converted their cattle ranches to wildlife management areas. In very few cases do landholders depend only on livestock production, with many having a secondary land use such as either hunting or camping facilities.

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- **Tourism facilities**

Hunting farms, game reserves and accommodation facilities located next to ENP and that cater to foreign and domestic tourists. Includes trophy and hunting concessions, as well as non-consumptive tourism facilities offering only accommodation or photographic safaris. Although local landowners still run some of the facilities in the area, they are increasingly selling their properties to larger tourism companies with several properties in the region being managed by outsiders.

- **Communal conservancy members**

Rural communities that have been awarded land use rights by the state and who are responsible for the sustainable use of natural resources and land. Traditional livestock production occurs alongside natural resource protection and although the communities may reside on the land, benefiting from the resources, they do not own the land. Conservancies are subject to a quota system when it comes to hunting game species or harvesting natural resources for commercial purposes and may sign contracts with hunting and tourism concessions for additional income.

- **Resettlement farms**

The Seringkop community are previously disadvantaged subsistence farmers who now manage land at the southern border of ENP. They constitute a group of Hai||om Bushmen who initially resided within the park.

Stakeholder attributes

- **Position**

Stakeholder positions on being incorporated into the EPAN are listed in Table 4.4. The position ratings for both the primary and secondary stakeholders are displayed visually in spider web diagrams (Figure 4.4.1). When the results of stakeholder position on being incorporated into the protected area landscape were assessed, opposition was found in the resettlement farmer, livestock farmer and communal conservancy member primary stakeholder groups (score = 4). But when I assessed the same results, classified as primary land use where the primary stakeholder groupings were no longer determined according to perceived stakeholder roles in the SES, but in accordance with land use (i.e. commercial or subsistence livestock farming, consumptive wildlife use, tourism, hunting etc), I found opposition in the livestock production group (Figure 4.4.2).

Livestock farmers directly adjacent to the park were in opposition. While they did not score '1' (strongly oppose the idea) and are categorised as moderately negative ('2' or '3'), their opposition was offset by the more 'moderate opposition' ('4' or '5') of the majority of their group (n=5).

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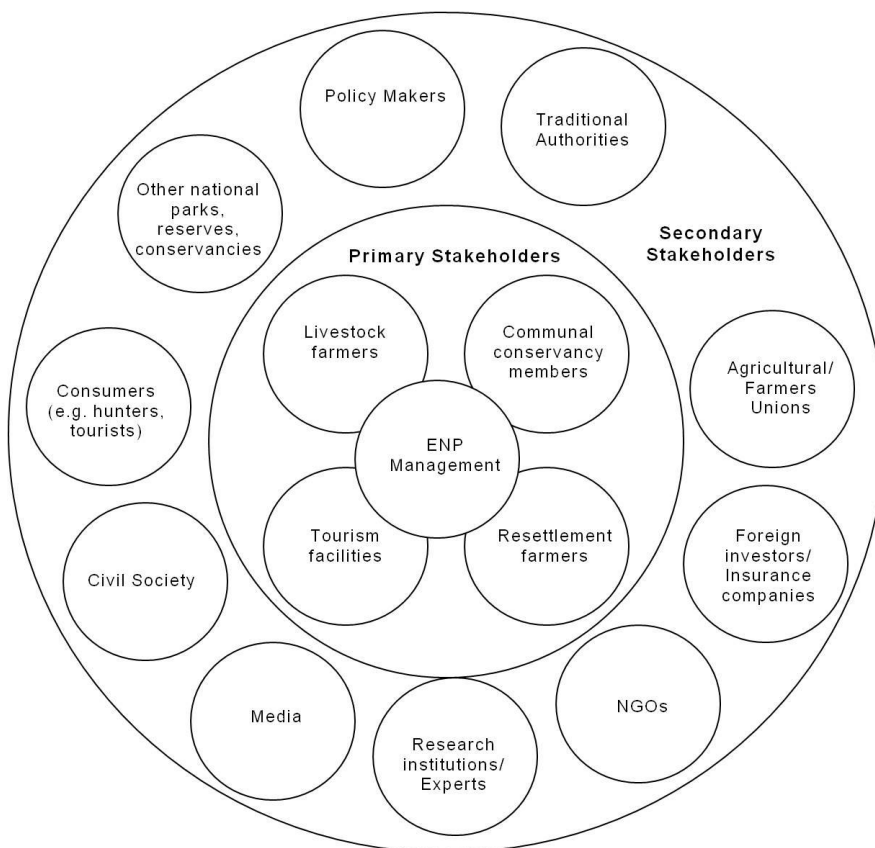


Figure 4.3 Stakeholder groups classified as primary or secondary stakeholders based on proximity to the ENP, land tenure and their decision-making ability.

Table 4.4 Stakeholder positions, reflecting groups' level of support or opposition to becoming part of an expanded protected area system. Individuals from the same stakeholder group may occupy different categories of opposition or support.

Oppose		Moderate			Support	
strongly negative	negative	slightly negative	indifferent	slightly positive	positive	strongly positive
	Livestock farmers	Livestock farmers Tourist facilities Communal conservancy members Resettlement farmers Agricultural unions	Media Investors/Insurance companies	Livestock farmers Tourist facilities	Livestock farmers Tourist facilities Government Consumers NGOs	Tourism facilities Experts Park management

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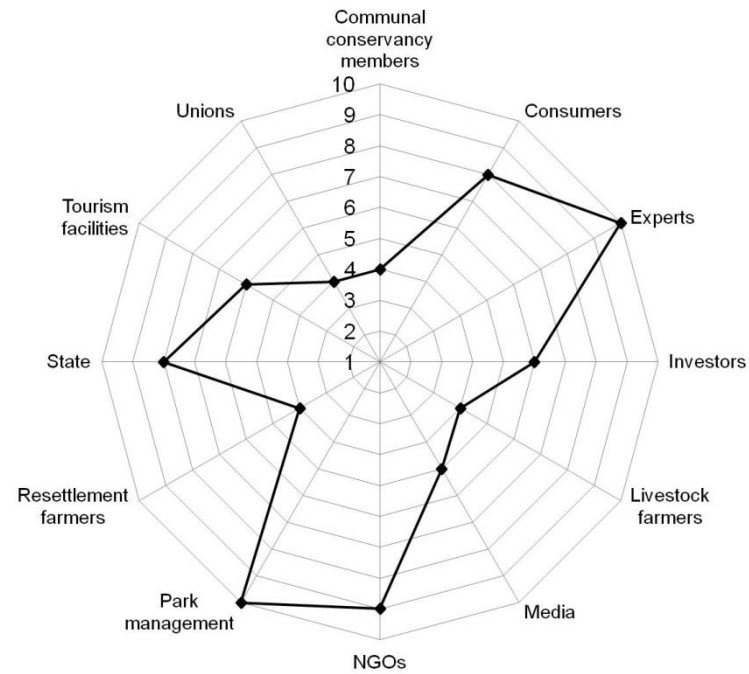


Figure 4.4.1 Position scores of all stakeholder groups (primary and secondary). (Position score 1 = a *strongly negative/opposed* stakeholder group and 10 = a *strongly positive/supportive* stakeholder group, when considering their perspectives on an EPAN, and their inclusion therein).

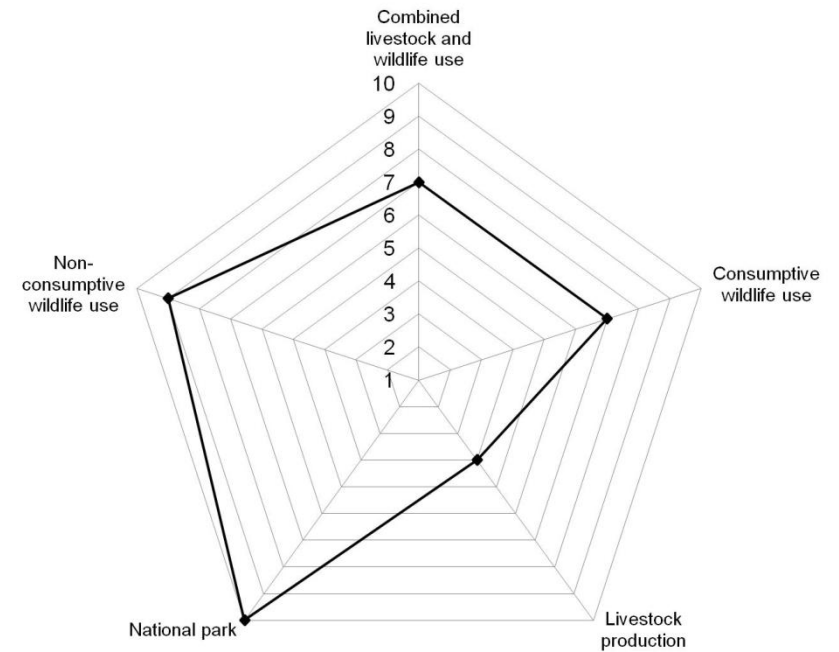


Figure 4.4.2 Position scores of only the primary stakeholder groups (i.e. livestock farmers, communal conservancy members, ENP management, resettlement farmers and tourism facilities). (Position score 1 = a *strongly negative/opposed* stakeholder group and 10 = a *strongly positive/supportive* stakeholder group, when considering their perspectives on an EPAN, and their inclusion therein).

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- **Interest**

Based on stakeholder responses to questions relating to their perceived advantages and disadvantages accrued to being incorporated into the protected area landscape, interest scores varied across and within stakeholder groups. The median scores of each stakeholder group are depicted in Figure 4.5 where stakeholders are categorised on a 1-10 scale ranging from 'no or minimal interest' to 'primary interest' to being part of an integrated conservation landscape. To provide more clarification on stakeholder interests, stakeholders were also grouped according to their stated interest in becoming part of the protected area landscape. Based on answers to open-ended questions, livestock farmers stated consumptive benefits such as "better quality grazing", "improved soil maintenance" and "rich underground water reserves". The tourism facilities mentioned non-consumptive benefits such as "increased wildlife sightings", "proximity to a renowned protected area" and "existence value". Those tourism facilities that provided game and trophy hunting experiences or the private landowners that practiced combination farming (i.e. livestock and game production) cited both consumptive and non-consumptive benefits related to being part of the conservation landscape.

Similarly, the communal conservancy stakeholder group stated that being part of the larger conservation area will benefit them tangibly (i.e. provisioning and supporting ecosystem services such as fuel wood and biodiversity, respectively) and intangibly (i.e. cultural and regulating ecosystem services, including hunting and tourism as well as flood and drought control). Unlike the other stakeholder groups, communal conservancy members are legally bound to maintain and monitor natural resources on their land and many mentioned this obligation during interviews or informal conversations. Together with the ENP management, their interests span consumptive and non-consumptive benefits being derived from the park, and also a concern, as determined by policy, for the ecological health of the ENP and its surrounds. Also stated by several participants in various stakeholder groups were certain "collateral benefits" of flanking the park, including roads, clinics and schools, in the area. This is attributable to a number of factors, such as the proliferation of state resettlement farms in the area, amongst others, and cannot be directly linked to the ENP.

The most commonly cited disadvantage, both within stakeholder groups and amongst all respondents, related to the ENP fence. The physical fence was viewed as ineffective in preventing human-wildlife conflict while it also represents a veterinary cordon fence. Researchers and ENP management mentioned disadvantages and threats to the protected area, mostly concerning issues surrounding increased poaching incidents, human encroachment, land conversion, invasive species (e.g. common impala) and illegal livestock grazing and fuel wood collection in the park. Concerns by these two stakeholder groups mostly involved general concern for the ecological health and well-being of ENP.

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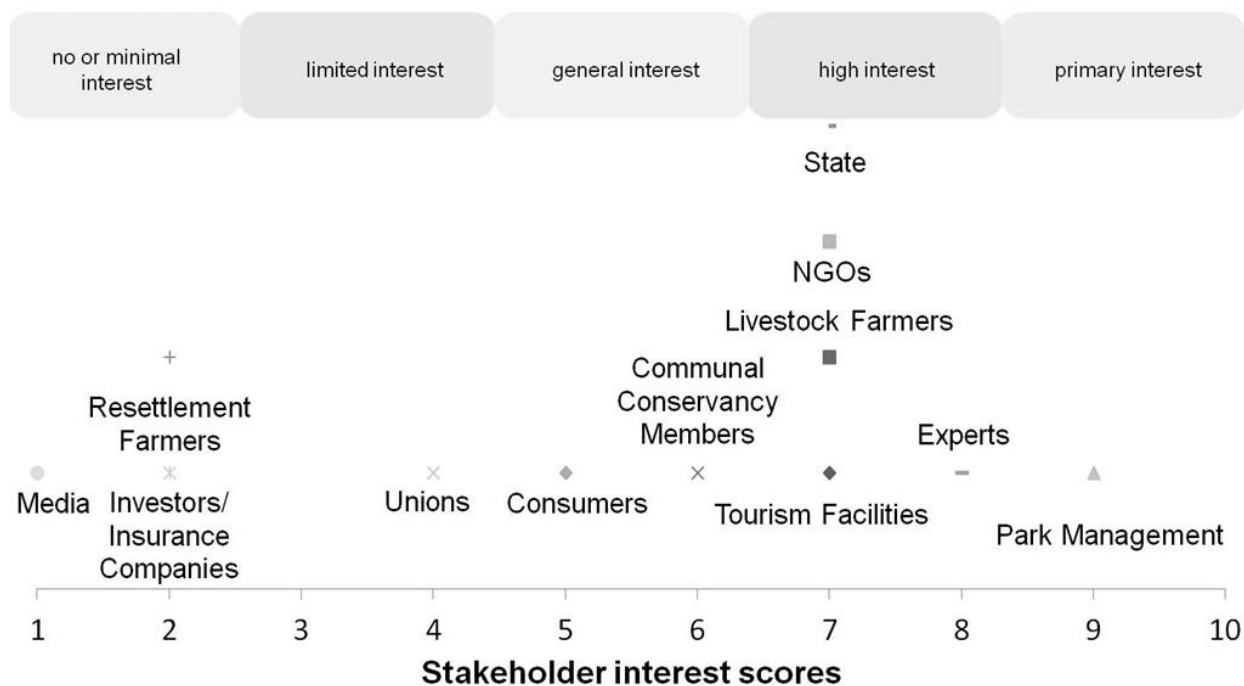


Figure 4.5 Median interest scores for the different stakeholder groups. Here stakeholder groups were categorised on a 1-10 scale ranging from 1 = *no or minimal interest* to 10 = *primary interest* to being incorporated into an expanded protected area landscape around Etosha National Park (ENP).

- **Power**

Ratings for stakeholder power are listed in Appendix 4 and are depicted in the spider web diagrams (Figure 4.6.1 and 4.6.2). The majority of the power rests with private land owners directly adjacent to ENP, since under freehold title they are entitled to use their land as they deem fit. Land managers (i.e. those in charge of properties but who do not own or have any financial shares in the establishment), and private landowners not directly bordering the park, the government and park management all fall in to the medium range of power. As secondary stakeholders, investors and insurance companies, unions and NGOs had low power scores. Primary stakeholders, with low power scores were the communal conservancy and the resettlement farmers since they do not own the land they are managing and have neither the resources nor, in most cases, the ability to mobilise them to decisively determine outcomes regarding protected area expansion.

Salience

Stakeholder salience was calculated using a combination of the attributes; 'position', 'interest' and 'power'. The median value of each stakeholder group's attribute estimates are presented in Table 4.5. Key stakeholder groups in the EPAN were identified as those with the highest scores; ENP management ($S = 15.2$), tourism facilities ($S = 13.3$) and the state ($S = 13.3$). Also of importance were livestock farmers ($S = 12.1$), experts ($S = 11.8$) and NGOs ($S = 11.8$). Visually depicted, the majority of stakeholder groups scored high on the x and y axes where position and interest intercept, but due to their lower 'power' scores their placement on the z axis shortened their distance from the starting point, lowering their salience. Primary stakeholders such as

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communal conservancy members, who expressed interest and support for the concept of an EPAN, had lower salience estimates than other primary stakeholders also directly neighbouring the park (Figure 4.7).

The cumulative values for position, interest and power for each group was also calculated, drawing out those groups in which respondents mostly scored *highly supportive* of the concept, *primarily interested* therein and where they have *higher power* to influence the outcome thereof (Appendix 5). This table illustrates that ENP management and scientific/research experts were the most supportive of the concept; livestock farmers, as a group, and ENP management, perceived themselves as having primary interests in an EPAN; while livestock farmers and the state, cumulatively, had the highest power scores. Livestock farmers mostly (63%) scored as moderately supportive, indifferent and slightly opposing the concept, while half of the group had a general to high interest therein and the rest scored as having a high to primary interest.

The group with the highest salience, ENP management ($S = 15.3$), directs the processes of the park and any future expansion. The state had the second highest score ($S = 13.3$). Both the state and ENP management are responsible for protected area planning and implementation and in effect, they should be responsible for conducting a stakeholder analysis, instead of being a subject thereof. Tourism facilities are thus viewed as having the highest salience, effectively ($S = 13.3$).

Table 4.5 Median stakeholder attribute values and calculated salience values of respondents involved in the expansion of the protected area network around Etosha National Park.

Stakeholder group	Attributes			Saliency
	position	interest	power	$S = \sqrt{(a^2 + b^2 + c^2)}$
Livestock farmers (n=8)	4	7	9	12.1
Tourism facilities (n=12)	8	7	8	13.3
Communal conservancy:				
- #Khoadi-//Hoas (n=12)	4	5.5	4	7.9
- Ehi Rovipuka (n=12)	5	2	4	6.7
Resettlement farmers (n=12)	4	2	3	5.4
ENP management (n=5)	10	9	7	15.2
State (n=4)	8	7	8	13.3
Experts (n=2)	2	10	6	11.8
NGOs (n=6)	9	7	3	11.8
Unions (n=2)	5	1	1	5.2
Consumers (n=4)	8	5	2	9.6
Insurance/investors (n=2)	6	2	2	6.6
Media (n=2)	4	4	2	6.0

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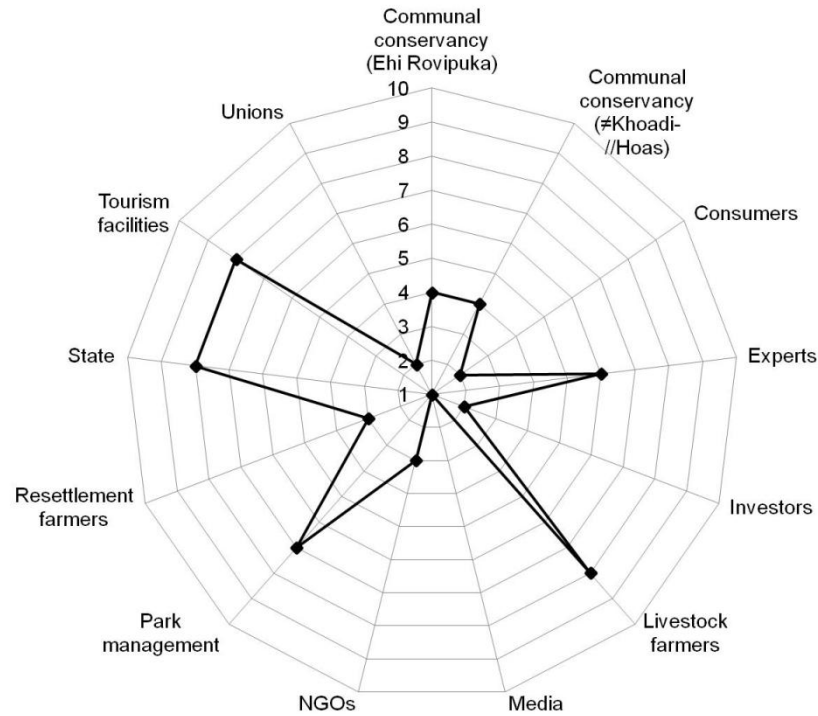


Figure 4.6.1 Spider web diagram of median power scores of all stakeholder groups (primary and secondary), in view of their ability to influence an expanded protected area, and their inclusion therein. (Power scores: 1-3 = *low* (neither the resources nor the ability to mobilise the resources), 4 – 7 = *medium* (either the resources or the ability to mobilise them), and 8 -10 = *high* (both the resources and the ability to mobilise the resources)).

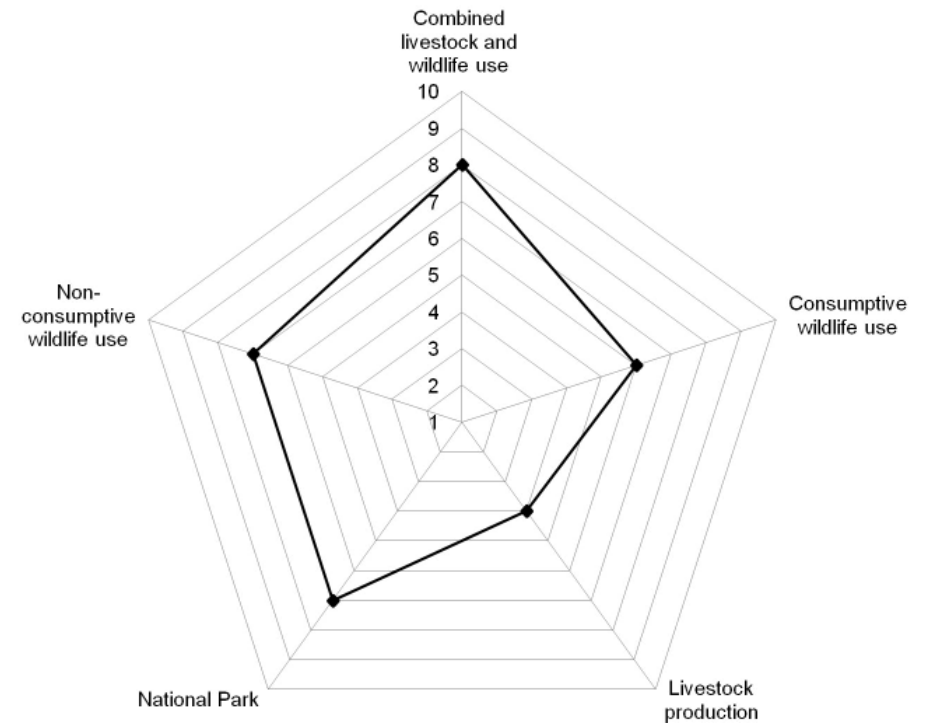


Figure 4.6.2 Spider web diagram of median power scores of only the primary stakeholder groups (i.e. livestock farmers, communal conservancy members, ENP management, resettlement farmers and tourism facilities) in view of their ability to influence an expanded protected area, and their inclusion therein. (Power scores: 1-3 = *low*, 4 – 7 = *medium* and 8 - 10 = *high* rankings of stakeholder power).

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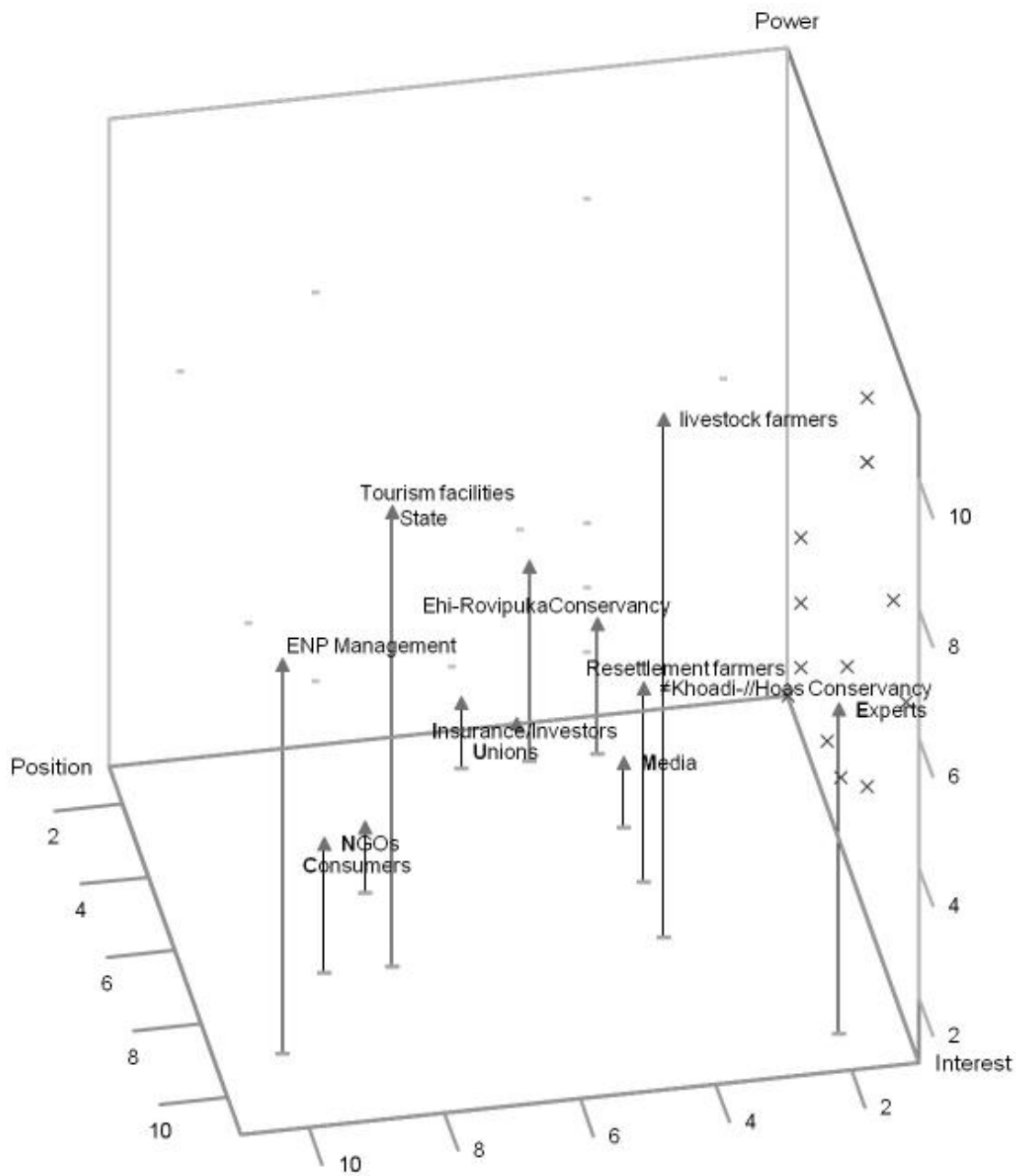


Figure 4.7 Scatter plot in a 3-dimensional co-ordinate system of stakeholder salience. The median position scores of all stakeholder groups were plotted on the x axis, the median interest scores on the y axis and the median power scores on the z axis.

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Discussion

The expansion of the protected area network in Namibia has not yet integrated stakeholder analysis into the formal processes of designation, planning or management. Stakeholder analysis was therefore used to identify and categorise stakeholder groups surrounding ENP and those involved in the extension of the current protected area system. Using secondary data sources, participant observation and semi-structured interview surveys, stakeholder attributes of position, interest and power were assessed. These attributes were then used to calculate stakeholder salience, an indication of how to prioritise stakeholder claims and perceptions when moving forward with the planning and implementation of an integrated conservation landscape. The positions and interest of the various stakeholder groups, concerning the concept of being brought into this conservation landscape and their perceived costs and benefits of being located next to the ENP provides the foundation for further stakeholder participation.

Identifying the stakeholders, their interests, positions, power and importance in the protected area planning process, will allow policy makers and decision-makers to interact more effectively with stakeholders and increases support for the concept. A study by Rastogi et al. (2010) demonstrated that this form of stakeholder identification and categorisation is a simple and effective tool to help practitioners, policy makers and resident communities better understand the social dimensions of protected area expansion initiatives. By conducting this analysis prior to implementing an integrated protected area and land use landscape, any potential misunderstandings and/or opposition to the implementation of the project can be identified and acted upon (Suškevičs et al. 2013). The expansion of the protected area network around ENP will more likely succeed if a stakeholder analysis, considering the attributes of position, interest, power and salience, is used to guide its implementation (e.g. Nastran 2015).

Based on their proximity to the national park, private landowners, communal conservancy members and resettlement farmers (allocated usufructuary rights on state land) together with ENP management, were identified as primary stakeholders. Such local residents and local level protected area staff; imperative in the preservation of cultural and natural landscapes (Furze et al. 1996, Borrini-Feyerabend et al. 2004) was also highlighted as important in the joint process of conservation and development by studies in the field of participatory planning (Hannah et al. 1998, Wells and McShane 2004, Treves et al. 2009).

Strong supporters for an integrated conservation landscape surrounding the ENP included scientific and research experts, park management and tourism facilities, particularly those focused on non-consumptive activities (Table 4.4). Supportive stakeholders are ideal collaborators (Varvasovszky and Brugha 2000), particularly when their viewpoints have been incorporated in the initial planning phases and they have a sense of ownership over the project. Other tourism facilities that practiced combined game and livestock production were only moderately supportive of the concept, as was the 'government', consumers and NGOs. These moderately supported, so-called

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'fence-sitters' could be important in generating support for the protected area network if the areas surrounding the ENP are to be incorporated (see Rastogi et al. 2014).

Stakeholder groups that are categorised as neutral and slightly negative included the communal conservancy members, resettlement farmers and the agricultural/farmers unions. Although not 'non-supportive', these stakeholder's reservations need to be considered since they are directly affected by any decisions regarding the conservation landscape. Opposition to the expanded protected area concept is stronger among livestock farmers, on private and communal land, than among other land use types (consumptive and non-consumptive tourism and combination farming). Other studies involving protected areas and their surrounding farmlands also identified farmers as main opponents (Stoll-Kleemann 2001a, Arnberger and Schoissenger 2012, Nastran 2015).

Some livestock farmers and tourism managers had low position scores but were scored as having a 'general' to 'high interest' in their properties becoming incorporated into an integrated landscape. In other words, they oppose the expansion of the protected area network but are interested in being incorporated therein. In assessing their stated interest it became clear that this conflict in opinion is linked to the benefits derived from ecosystem services (e.g. pasturage, water provision, maintenance of natural habitats) which made them interested in being part of an integrated landscape. This emphasises the importance of considering ecosystem services used by stakeholders in the conservation landscape decision-making process (de Groot et al. 2010, Darvill and Lindo 2016). Regarding perceived disadvantages of being part of the protected area network, diverse opinions were expressed within the same stakeholder groups, some of which were contradictory to their stated advantages. In the communal conservancy stakeholder group, mentioned advantages of being adjacent to the park included consumptive and non-consumptive benefits being derived from an increase in wildlife populations. In the same stakeholder group, increased human-wildlife conflict was considered a disadvantage. This indicates diversity in opinion on the same issue, due to different perceptions surrounding the benefits of living adjacent to a protected area. It is likely that if these respondents who reported disadvantages to being next to ENP, were made direct beneficiaries, through the tourism sector, for example, these particular individuals could turn into neutral or even supportive stakeholders.

Even those opposed to the expansion, such as livestock farmers and the organisations that represent them, need to be included in the decision-making process, and their concerns about being incorporated into the conservation landscape taken into account (Suškevičs et al. 2013, Nastran 2015). Under mobilisation, such opposing individuals may be able to sway group opinions and it is therefore important to identify their concerns and seek ways to address them, thereby reducing or neutralising their opposition. Thus, if protected area actions are actually or potentially hurting them, measures to mitigate such damage needs to be taken. A larger, diverse and connected landscape is more resilient than a smaller, fragmented one (Cumming 2011). This is

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critical in arid southern Africa, where diversified resource dependence and a broader livelihood base provide greater safety nets for more people (Shackleton and Shackleton 2004, O'Farrell et al. 2010). The support and collaboration of (all) key stakeholders is therefore essential for a successful protected area system, supporting a variety of land uses and resources users. Stakeholder dynamics can thus not be overlooked while individual estimates of stakeholder attributes may change over time, depending on the social-ecological situation (Neville et al. 2011, van Assche et al. 2011). It is therefore necessary to update the analysis by reassessing stakeholder attributes when situations change and when new information becomes available (Varvasovszky and Brugha 2000). Stakeholder analyses also need to be transparent and well-planned, since they could be used to manipulate and prioritise certain stakeholder groups (Billgren and Holmén 2008, Reed et al. 2009).

In an EPAN, the roles played by park management and the state, in both the planning and implementation processes, are highly important as indicated by their salience scores. In effect, they should be responsible for conducting a stakeholder analysis, instead of being a subject thereof. Tourism facilities are thus viewed as having the highest stakeholder salience. Nonetheless, the condition of ENP is essentially of common interest, highlighted by the cited benefits that local residents attribute to the park and the ecosystem services it provides and maintains.

Conclusion

In Namibia, the success of protected area planning and management has been attributed to forward-thinking policy that mostly consolidates the opinions of those affected by changes in formal rules and laws. Often, however, stakeholders are selected *ad hoc*. This chapter presents an adjustable method for determining stakeholder salience based on estimates of three attributes; position, interest and power. It is flexible, easy to use and provides a good foundation for further stakeholder collaboration and management. The method provides criteria for classifying stakeholders and assigning numerical values for each stakeholder according to their own perceptions about the protected area and the provision of ecosystem services in the landscape. Land use type affects stakeholder position concerning being incorporated into the protected area system, with livestock farmers mostly opposing the concept. All primary stakeholders cite interest therein, however, with power greatly affecting stakeholder salience since land tenure dictates who may practice what on the various properties surrounding ENP. Active participation with private landowners is therefore important, while the maintenance of a diverse landscape, in terms of land use, potentially fosters resilience. A fundamental component of stakeholder analysis is a discernible, repeatable and explicit process of identifying, categorising and selecting salient stakeholders. Linking those to stakeholder perceptions and institutions concerning natural resource use and protected area management will lead to improved project planning and implementation and the attainment of conservation goals.

Expanding the protected area network in Namibia: Emergent concepts of land use conflicts around the Etosha National Park

Abstract

In Namibia, efforts are being directed toward the incorporation of land surrounding protected areas into an expanded protected area network. This integration of conservation landscapes requires changes in land use practices by the surrounding private and communal properties. Here I provide an assessment of management challenges and land use conflicts based on the premise that these affect landowner decision-making and planning. Using a bottom-up approach, the study collates the perceptions of resident communities, land owners and managers surrounding the Etosha National Park (ENP) in Namibia. It aims to understand management challenges and land use conflicts surrounding ENP (i.e. issues affecting land and natural resource decision-making). By assessing conflicts in land use we can better understand the values attributed to integrated conservation landscapes. These values, in turn, drive decision-making by resident communities regarding land use, and inform landscape planning and management. Interview data were collected on private farms and reserves, a state-owned resettlement farm and two communal conservancies bordering the ENP. Identified though closed-ended questions; conflicts with neighbouring properties and the ENP were explored in relation to land use and land tenure. The land use conflicts and management challenges identified were then further analysed using answers from open-ended questions. The land and natural resource management challenges mentioned were found to be related to primary land use, while conflicts were directly linked to land tenure (private, communal conservancy or state-owned resettlement farm). Respondents diverged in the types of conflicts experienced. These conflicts emerged around the themes *production*, *wildlife* and *human* related conflicts. Understanding land owner and resource user viewpoints within differing contexts provides insight into the opportunities and constraints that face integrated conservation landscapes.

Keywords:

Grounded theory, conservation landscape, trade-offs, ecosystem service beneficiaries

Introduction

In conservation, protected areas are effective for protecting biodiversity (Chape et al. 2005). Conservation focus is increasing on areas adjacent to protected areas and in understanding whether protected areas and those adjacent to them can be integrated to increase protection of biodiversity and the associated ecosystem services¹⁴ that maintain human-well-being (Palomo 2013). Changes in land use may result in trade-offs between different ecosystem services, with one service increasing and another one decreasing (Willemsen et al. 2013). This may be due to a simultaneous response to the same driver or due to interactions among services (e.g. changes in water quality and agricultural production in response to the addition of nutrients to the soil, Carpenter et al 1998). Trade-offs, and in certain cases, synergies (i.e. situations in which more than one service either increases or decreases, Hughes et al. 2007) can lead to conflicts between land uses.

Previous studies on land use conflicts surrounding protected areas focused on identifying stakeholders, their perceptions, their needs and the main drivers of conflicts (Maikhuri et al. 2000, Stoll-Kleemann 2001a; b, Harich et al. 2013). Although the main issues varied among case studies, most issues are linked to restrictions on resource use, relocation of local communities or human-wildlife conflict (Bagnoli et al. 2008, Hiedanpää 2002, West et al. 2006). Several studies investigate stakeholder perceptions of ecosystem services (Agbenyega et al. 2009, Lamarque et al. 2011, Castro et al. 2011, Petz et al. 2012) but none link these to conflicts nor to protected areas.

In this chapter I attempt to bridge this knowledge gap by assessing the interactions between different land uses surrounding Etosha National Park (ENP) in Namibia. Considerable effort is being invested in the incorporation of land surrounding protected areas into an integrated conservation landscape (see Appendix 6 for a summary of Namibia's proposed approach to achieving this vision). Here I assess the management challenges and land use conflicts as experienced by land and resource users next to ENP. The aim is to assess conflicts so as to better understand the values attributed to integrated conservation landscapes. This is based on the premise that these values drive decision-making by resident communities regarding land use, and inform landscape planning and management.

The Link between Ecosystem Services and Land Use Conflicts

In integrated landscapes, several aspects need to be considered, as depicted in Figure 5.1. Firstly, the ecosystem services, which include provisioning, supporting, regulating and cultural services (MA 2003; 2005), need to be assessed. This assessment, however, needs to account for the social-ecological system (SES) under study and the decision-making context for which the

¹⁴ These refer to the 'benefits' that people obtain from ecosystems; and include provisioning services (e.g. food, freshwater, fibre); cultural services that provide intangible benefits (e.g. recreation, stewardship); regulating services (e.g. flood/drought control and climate regulation); and supporting services (e.g. biodiversity, habitat, soil formation) (Daily 1997, MA 2003, MA 2005)

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ecosystem services are being considered (Fisher et al. 2009). In this study, the context is the expansion of the protected area network around ENP. The ecological, socio-cultural and economic values of ecosystem services (MA 2003, de Groot 2006, de Groot et al. 2010) drive decision-making about land use (Goldman et al. 2008, Pascual et al. 2014, Sitas et al. 2014, Guerry et al. 2015, Ruckelshaus et al. 2015), and shape landscape planning and management (Reed et al. 2009, Wegner and Pascual 2011). Ultimately, these can either act in synergy with land use practices dedicated to biodiversity conservation and the protection of ecosystem services, or lead to trade-offs and conflicts with them.

Trade-offs relate to a single stakeholder or stakeholder group and refer to the process of balancing conflicting objectives, implying a sacrifice or opportunity cost in terms of benefits forgone, since objectives cannot be simultaneously achieved (McShane et al. 2011). Examples of trade-offs include incompatibilities between conservation and development (McShane and Wells 2004, Sandker et al. 2009), between the improvement of local livelihoods and the protection of ecosystem services (Chatre and Agrawal 2009) and differing objectives among biodiversity conservation, the protection of ecosystem services and commodity production (Cheung and Sumaila 2008, Nelson et al. 2009).

Conflicts refer to situations of competition and potential disagreement between resource users over access to and use of natural resources and land (Grimble 1998). Regarding ecosystem services, conflicts are typically classified as land use conflicts, biodiversity conflicts or conservation conflicts; and relating to protected areas, these generally overlap (Kovács et al. 2015). For example, land use conflicts in and around protected areas can also be considered biodiversity conflicts when there are differing interests in certain aspects of biodiversity (White et al. 2009). When participants have different perceptions or interests in conservation goals or practices, and when certain individuals or groups are viewed as asserting their views over those of others, then land use conflicts are also considered as conservation conflicts (Redpath et al. 2013).

My study focuses on land use conflicts and considers trade-offs as those occurring between land users, rather than trade-offs among ecosystem services. Although I examine management challenges (i.e. those affecting decision-making) and issues alluding to trade-offs in ecosystem services, the main focus is on the interaction between land uses. Thus, land use conflicts are defined here as situations where individuals or groups have different stakes or interests in how the land should be used (Havel 1986). Understanding conflicts around ENP will uncover the values attributed to the various ecosystem services. By applying a grounded theory approach (Charmaz 2006), perceptions of conflicts are uncovered. These perceptions are then linked to land use and land tenure to provide insight into land use planning and decision-making.

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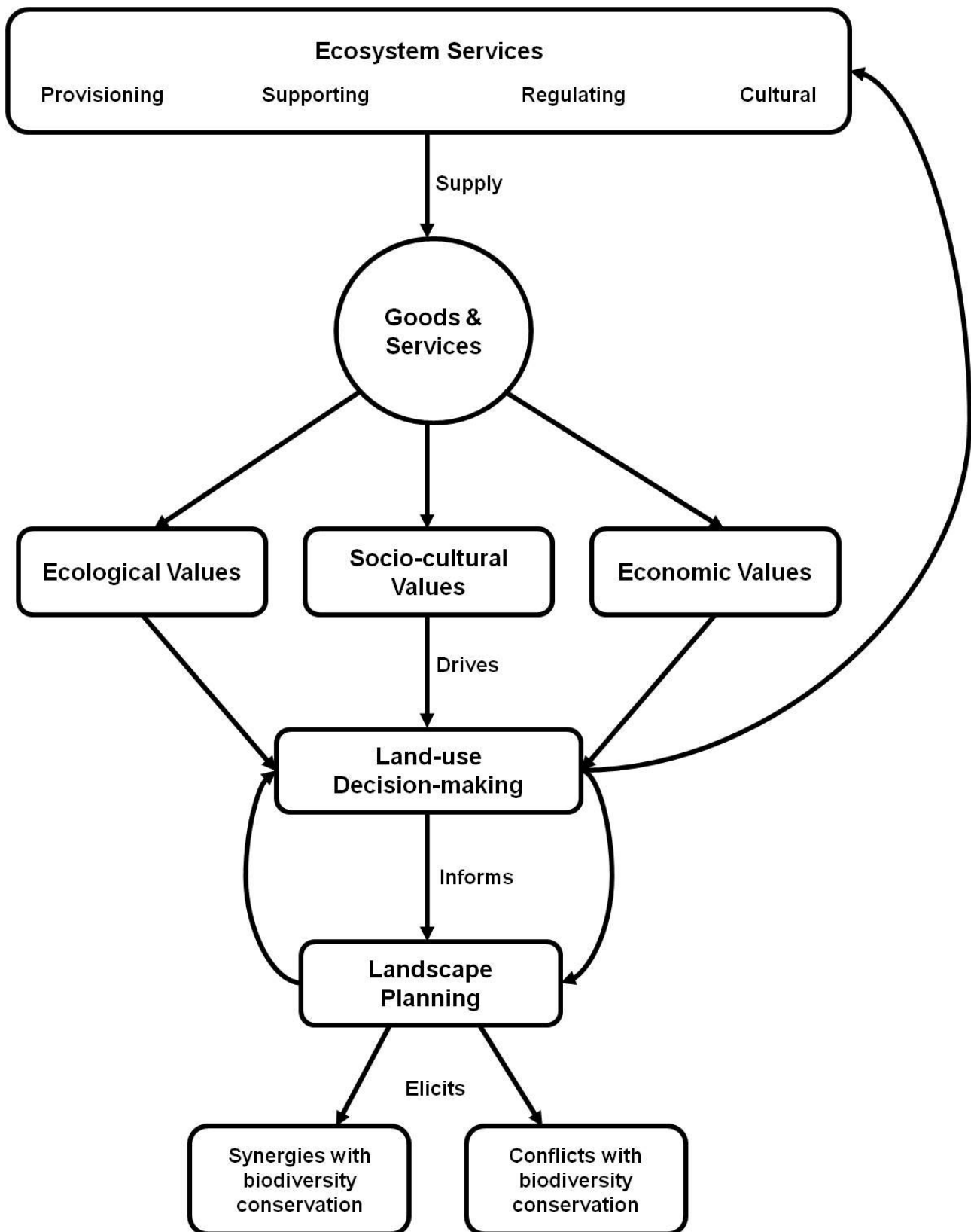


Figure 5.1 The link between ecosystem services and land use conflicts.

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Methods

Study Area

The study region is an arid area. Rainfall in the north-western Kunene region is highly variable and unpredictable (Mendelsohn et al. 2002). Highly seasonal rainfall starts between October and November (average monthly rainfall, 25 mm) and usually peaks between January and February (average monthly rainfall, 65 mm). Annual average precipitation for the study area is 285 mm. Potential average annual evaporation for the region is approximately 2600 mm and most rain water evaporates quickly (Moyo et al. 1993). Generally, rainfall events are brief and intense, leading to floods, causing erosion due to the rapid runoff and the temporary pooling of surface water.

The lack of readily available fresh water is considered a limiting factor for development across Namibia (Jones 2003). On commercial livestock farms and in communal areas, underground water is commonly sourced through pipelines and boreholes and supplied to animals through pumps and troughs or from small dams constructed on ephemeral rivers and streams (Mendelsohn et al. 2006). In wildlife management areas, game usually obtain water from isolated pools during the rainfall season or from artificial waterholes fed by boreholes throughout the rest of the year. The lack of arable soils is another important limiting factor for agriculture and livestock production. Soils are nutrient poor in the study region; they contain low levels of moisture and are easily degraded. The combination of low rainfall and poor soils means that the availability of grazing on rangelands varies spatially and temporally and that the carrying capacity is low, even in years of high rainfall. Carrying capacity measured by large stock unit (LSU, each equivalent to cattle of 360 kg) per hectare is estimated to be between 24 – 40 ha/LSU or 9 – 15 kg live mass of livestock per ha in the Kunene region (IDC 2005). The actual carrying capacities, however, are lower than those estimated due to excessive soil erosion, overgrazing and bush encroachment, particularly in communal rangelands (NNRC 2002).

Pastoral use in the study region has been practiced for an estimated 2000 years (Smith and Jacobson 1995, Vogelsang 2000). Currently, land is used predominately for commercial cattle production, pastoral livestock farming in communal territories and wildlife tourism on both freehold and communal lands. Freehold conservancies refer to privately-owned individual farms that have combined their management activities, in some cases by removing fences between borders. Communal conservancies are state-owned and local communities are entrusted with the management and use of natural resources. Conservancies vary in size, with two extensive conservancies within the study area (≠Khoadi-//Hoas; 332400 ha and Ehi-Rovipuka; 198000 ha). Here, the majority of community members live in small villages, or settlements, and derive their livelihoods from the commonage which is used for grazing, hunting and the harvesting of plant products (e.g. timber, fruit, medicine and fuel wood).

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Apart from the ENP boundary fence, a veterinary cordon fence or 'red line' separates the conservancies in the west and private land in the south from the ENP (Figure 1.2; Berry 1997b). It serves as a physical barrier between the foot-and-mouth free zone south of the cordon fence and the foot-and-mouth protection zones north of the fence (Scoones et al. 2010). The fence dividing resident communities in the study area from the national park is therefore a double fence, consisting of a high game-proof fence separated by a 10m passage from a stock-proof fence on the side of the farms and communities.

Sample Selection

Study sites were deliberately selected as those properties to the south and south west of the ENP. These properties are likely to be the first incorporated into an integrated conservation landscape around the formally protected national park. The study sites vary in land use context and land tenure (i.e. private and communal/state owned). They were identified during an initial round of interviews (February 2013) with park managers, farmers and conservation professionals with knowledge about the area. Interviews were then conducted with landowners and managers on individual farms along the southern border of ENP. Interviews with community members were conducted on the communal conservancies, #Khoadi-//Hoas and Ehi-Rovipuka, and on a government resettlement farm, Seringkop, south-east of the Andersson Gate (Figure 5.2).

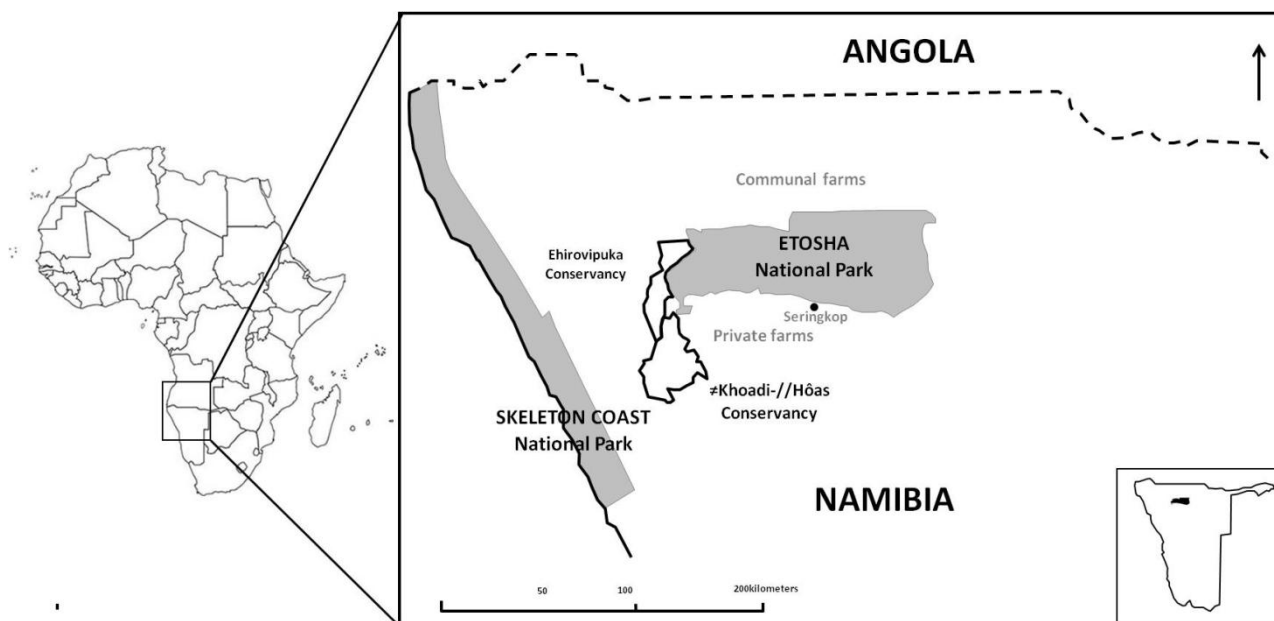


Figure 5.2 Map of the study area.

Individual private landowners (i.e. property owners) or land managers (i.e. those entrusted with primary decision-making authority on the property) were interviewed (n=20) on their properties. For #Khoadi-//Hoas, Ehi-Rovipuka and Seringkop, 12 households in each location were selected via a systematic sampling strategy (Newing et al. 2011). Face-to-face interviews, lasting between 45 minutes to two hours were conducted with the participants in either English or Afrikaans. Interviews were not recorded but I made detailed transcripts.

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Interview Protocol

In congruence with grounded theory development (see Hutchison et al. 2010), the interview questions focused on the research question, which was to evaluate land use conflicts at the borders of ENP so as to assess the potential of having an increased protected area network. Using open-ended questions, respondents were asked about land and resource management issues on their respective properties, their perceptions regarding the causes of these issues, the contributing factors thereof and what they believed to be mitigating circumstances or solutions. The same was asked regarding land and resource conflicts with neighbouring properties and with the ENP. Respondents were then asked to state the main conflict with the ENP, its cause, the contributing factor and perceived solution in closed-ended questions (see Appendix 1 for the interview schedule). Answers to open-ended questions provided qualitative data on management issues and allowed for their perceptions regarding land use conflicts to emerge without influencing their responses (Tashakkori and Teddlie 2003, Creswell 2009). Answers to closed-ended questions allowed for identification of key concepts to be compared to demographic and attribute data collected.

Analyses

During the initial coding phase, also known as open coding (Charmaz 2006), the interview text was 'opened up' by dissecting the data into discrete parts and searching for similarities and differences in the text. This was done using QSR-NVivo (version 10), which allows for the grouping together of conceptually similar data to form relevant nodes, or 'units of meaning' (Hutchison et al. 2010). Codes are then applied to the nodes. For example, the code 'grazing' was applied to nodes of data that expressed general concerns, as cited by respondents, about the availability of grass for livestock or game species. The continual sorting of the data allows for themes to emerge.

To interpret the relationships between evolving themes, axial and selective coding was applied (Corbin and Strauss 2008). These two stages were done manually with the different themes printed on cards. During axial coding, the goal is to understand categories in relationship to other categories (Walker and Myrick 2006). For example; grazing conflicts in relation to water conflicts and the causes and contributing factors of these conflicts. Lastly, selective coding refers to the 'process of integrating and refining the theory' (Corbin and Strauss 2008, p. 143). Here you select a core category, in this case *conflicts*, and then relate all other categories to the core, as well as to the other categories. The relationships explored included those between land tenure and the type of conflict. Fundamental to grounded theory is the emergence of an explanatory theory from the data so that the findings can be considered 'grounded' in the data (Glaser and Strauss 1967). I thus attempted to develop an explanatory theory that identifies several variables and relationships within the landscape surrounding ENP.

The relationship between perceptions of management challenges, (dependent variable) and 1) primary land use and 2) land tenure (independent variables) were examined using attribute data

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and the answers to closed-ended questions. The link between perceptions of land use conflicts with neighbours and with the ENP were also considered to be dependent variables and similarly examined against the same independent variables. Associations between 1) primary land use and 2) land tenure and perceived land use conflicts were tested using chi-square analysis ($p < 0.01$, IBM SPSS Statistics version 23). The answers to the closed-ended questions and an assessment of the relationships to land use and land tenure allowed for a more in-depth analysis of open-ended data.

Results

Types of Conflicts

Three categories of conflict were identified using open coding; namely *production*, *human* and *wildlife*. These represented the main challenges faced by those living adjacent to ENP and are explained below. Quantitative data from answers to closed-ended questions are included to give an indication of how frequently these issues were mentioned by respondents.

Production

These were management challenges related to the use of natural vegetation and water. Due to the high spatial and temporal variability of rainfall, animals (domestic and game) migrate to find food and water. In the study region, underground water reserves are used by livestock and game and as a source of drinking water in most households. During periods of drought or low rainfall, water is pumped from boreholes using windmills or diesel/petrol water pumps. Water provision was the most mentioned production-related challenge (71%, Table 5.1), probably because the interviews were conducted during a drought year. The availability and quality of grazing for livestock was mentioned in 18% of cases and the perception of grassland overexploitation in 20%. Hence, 38% of respondents had issues related to the feeding of their animals. The veterinary cordon fence was viewed by 23% of respondents as a financial disincentive due to costs associated with a mandatory 21 day quarantine¹⁵ primarily in place to prevent the spread of foot-and-mouth disease. The re-enforcement of fences and the costs incurred to maintain them were mentioned by 29% of respondents. This implies that half the respondents (52%) considered the fence as a cause of onsite management challenges. In terms of land use conflicts related to production and directly linked to neighbours and the ENP, the placement of water reservoirs and artificial water points was viewed by 18% of respondents as a land use conflict. Artificial water holes are believed to affect herbivore behavioural patterns, particularly when no surface water is available (see Smit et al. 2007). This can lead to some animals (domestic and game) breaching fences between properties, in some cases damaging infrastructure. The foraging by game in areas intended for livestock and by livestock in areas intended for game was cited as a challenge by 14% and 13% of respondents respectively. Of production conflicts, the transfer of disease between game animals and livestock was a concern for 43% of farmers and land managers.

¹⁵ The VCF divides the northern foot-and-mouth disease prone area from the south which is disease free. All animals north of the VCF, including the first two rows of farms directly adjacent to the fence, have to undergo a 21 days quarantine period before slaughtering or transporting (Kruger and Lammerts-Imbuwa 2008).

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Table 5.1 Emergent concepts of conflict based on participant responses to open-ended questions regarding a) management challenges onsite and b) conflicts with neighbouring properties and the Etosha National Park. The frequency of responses and the percentage out of all the interview schedules are included.

	Frequency (n=56)	%
a) Onsite land and natural resource management challenges		
Production		
water	40	71
- concern over drought and the provision of water (i.e. the need to pump water)		
grazing	10	18
- concerns over the availability and quality of grazing		
disease	13	23
- the veterinary cordon fence is viewed as a financial incentive		
Wildlife		
predation	28	50
- increasing predator populations kill of livestock/game numbers		
Boundary Fence		
- the costs incurred in maintaining and re-enforcing the park fence is being borne by land owners or communities	16	23
b) Conflicts with neighbouring properties and the Etosha National Park		
Production		
water	10	18
- the strategic placement of artificial water points attract wildlife		
grazing	26	46
- game animals eat the grass intended for livestock	8	14
- livestock eat the grass intended for game species	7	13
- overexploitation of grasslands/overgrazing	11	20
disease	24	43
- transfer of disease between game and livestock at water points		
Wildlife		
- increasing predator populations kill of livestock/game numbers	41	73
- elephants cause damage to infrastructure	11	19
- other animals cause damage to infrastructure	8	14
Boundary Fence		
- the lack of maintenance and the general condition of the park fence is considered a major contributing factor to the movement of wildlife between properties	36	64

Wildlife

Although also affecting production challenges, the concept of *wildlife* as a management challenge and a cause of conflict was removed from the *production* category and placed into its own category, thereby identifying it as a theme. This was due to its additional effect on resident communities, as opposed to water, grazing and disease that affect (mostly) livestock or other game species and do not pose a direct threat to human livelihoods. Firstly, as an onsite management challenge, predation of livestock was viewed by 50% of respondents as an issue, mostly due to perceptions of increasing predator populations. This was despite many farmers explicitly accounting for losses in annual herd numbers caused by diseases and predators in their integrated management approaches. Thus, even with expected losses due to predation, 73% of respondents

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still cited both large (e.g. lion [*Panthera leo*], leopard [*P. pardus*]) and medium-sized predators (caracal [*Caracal caraca*], black-backed jackal [*Canis mesomelas*], spotted hyena [*Crocuta crocuta*]) as a cause of conflict. Furthermore, the damage caused by animals to the ENP fence and to water reservoirs, pumps and other structures, mostly by elephants (*Loxodonta africana* [19%]), and other mammal species, including warthog (*Phacochoerus africanus*), gemsbok (*Oryx gazella*) and livestock (14%) was cited as a major conflict. Infrastructure damage caused by animals was thus cited by 33% of respondents. Fence damage, in particular, caused by wildfires and a general lack of maintenance indicates that the condition of the fence was viewed by 64% of people interviewed as a cause of conflict.

Human

Under this theme, onsite management issues largely constituted labour issues and thus onsite management issues were not included in this analysis. Of conflicts with the ENP, a third of respondents (30%) mentioned poor management regarding the condition of the park fence, the placement of artificial water points and the failure to assist with problem animals breaching the park boundary. Respondents ascribed a lack of communication and poor relations between themselves and the park or their neighbours in 23% of cases, while 16% felt that the conversion of farms to tourism and wildlife management areas were increasingly isolating them in the landscape. Another third of respondents (30%) considered human encroachment and increasing population numbers in the study area as a conflict, with 35% of these citing elite capture as a cause of conflict within their communities. Theft and poaching was mentioned by 5 respondents (9%) as were the lack of training and limited knowledge regarding traditional farming practices.

Relationship between Conflicts and Land Use/Tenure

The relationship between land use and land tenure and participant responses (n=56) to closed-ended questions regarding the type of management challenges and land use conflicts experienced a) onsite, b) with neighbouring properties and c) with the ENP are shown in Table 5.2. Primary land use varied and the only relevant classification applicable here was whether the respondent had livestock (n=29, 52%) or not (n=27, 48%). Land tenure was classified as private tenure, communal conservancy, and state-owned 'resettlement' farm. Values in the table refer to the frequencies observed and the values in parentheses are the expected frequencies based on chi-square tests. The management issues experienced were significantly related to primary land use, i.e. whether or not livestock were kept ($X^2=13.89$; $p<0.001$). As can be expected, a high proportion of those respondents with livestock (n=17, 59%) cited wild animals (i.e. predators) as being the reason for management issues. Other challenges included production challenges relating to poor or insufficient grazing, lack of water, and disease transfer. Even respondents without livestock mentioned wildlife as a management conflict (n=7, 26%).

Apart from their management challenges, interviewees were also asked about the conflicts they experienced with their neighbours and with ENP. This refers to situations where respondents

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have different goals or objectives for land use and in relation to those of their neighbour (e.g. livestock production vs. ecotourism) or with ENP (e.g. trophy hunting vs. biodiversity conservation). When questioned about these conflicts with neighbours and ENP, however, primary land use had no bearing on the perceptions of respondents ($\chi^2=2.26$; $p=0.52$) and ($\chi^2=10.71$; $p=0.01$), respectively. This implies that the type of conflict that respondents experienced with their neighbours and with the national park was not related to livestock production. The types of conflicts experienced with neighbours were, however, related to land tenure type ($\chi^2=28.05$; $p<0.001$). Mostly private landholders ($n=9$, 45%) considered wildlife as a conflict with neighbours, while the majority of interviewees (43%), mostly those from the communal conservancies (59%), cited having no conflicts with neighbours.

When it came to conflicts with ENP, again land tenure significantly affected the perception of respondents ($\chi^2=25.72$; $p<0.001$), with most respondents saying that the conflicts experienced were related to wildlife (68%). Just over half of the individuals interviewed agreed to being incorporated into an expanded protected area network around ENP (55%) and these perceptions were not significantly related to primary land use ($\chi^2=7.41$; $p=0.02$) or to land tenure ($\chi^2=3.17$; $p=0.53$). There were no significant differences between approaches to management challenges and land use ($\chi^2=0.77$; $p=0.68$) or land tenure ($\chi^2=10.52$; $p=0.03$).

Relationships between Concepts and Land Tenure and Use

Relationships between dependent variables (conflicts) and independent variables (land use and land tenure) were examined using selective coding. Respondents were grouped into those who supported the protected area landscape and those that opposed it (Table 5.3). These groups were further divided among those who practiced livestock farming and those who did not, since this distinction was shown to have a significant relationship between the land and natural resource management issues as experienced by respondents ($\chi^2=13.89$; $p<0.001$ Table 5.2). These were then grouped according to whether or not they experienced any conflict with either neighbouring properties or ENP. Those that did or did not experience any conflict, were grouped according to land tenure, since this has a significant relationship between the types of conflict, i.e. *production*, *human* and *wildlife*, experienced with neighbours ($\chi^2=28.05$; $p<0.001$) and with ENP ($\chi^2=25.72$; $p<0.001$).

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Table 5.2 The relationship between categories of conflict and land use/land tenure.

Variable	Land use		X^2	p	private	Land tenure		X^2	p
	livestock	no livestock				communal conservancy	communal resettlement		
a) Land management issues			13.89	<0.001				8.86	0.06
production	11 (10)	8 (9)			5 (7)	10 (8)	4 (4)		
human	1 (7)	12 (6)			8 (5)	1 (6)	4 (3)		
wildlife	17 (12)	7 (12)			7 (9)	13 (10)	4 (5)		
b) Land management conflicts with neighbours			2.26	0.52				28.05	<0.001
production	5 (4)	2 (3)			3 (3)	4 (3)	0 (2)		
human	6 (6)	5 (5)			2 (4)	1 (5)	8 (2)		
wildlife	8 (7)	6 (7)			9 (5)	5 (6)	0 (3)		
none	10 (12)	14 (12)			6 (9)	14 (10)	4 (5)		
c) Land management conflicts with Etosha National Park			10.71	0.01				25.72	<0.001
production	4 (3)	1 (2)			0 (2)	3 (2)	2 (1)		
human	0 (3)	6 (3)			5 (2)	0 (3)	1 (1)		
wildlife	23 (20)	15 (18)			8 (14)	21 (16)	9 (8)		
none	2 (4)	5 (3)			7 (3)	0 (3)	0 (2)		
Approaches to conflicts			0.77	0.68				10.52	0.03
proactive	10 (11)	12 (11)			11 (8)	7 (9)	4 (5)		
reactive	14 (13)	12 (13)			4 (9)	16 (11)	6 (6)		
both	5 (4)	3 (4)			5 (3)	1 (3)	2 (2)		
Perception of being incorporated into an expanded protected area network			7.41	0.02				3.17	0.53
for	11 (16)	20 (15)			13 (11)	11 (13)	7 (7)		
against	15 (11)	6 (10)			6 (8)	10 (9)	5 (5)		
unsure	3 (2)	1 (2)			1 (1)	3 (2)	0 (1)		

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When assessing the relationship between those who opposed the expansion and their potential incorporation into the conservation landscape, it appeared that most of those who had livestock and did experience conflict (n=26, split equally between conflicts with neighbours and with ENP) cited the type of conflict as *wildlife* (n=19). Three respondents considered the conflicts to be *production* related, while the remaining four perceived it as *human* conflicts. Those opposing integration and who had no livestock, yet cited conflict with ENP (n=6), all had trouble with *wildlife*. Conversely, respondents who supported the concept, did have livestock and did mention conflict with neighbours (n=5) cited the types of conflict as *human* (n=2), *wildlife* (n=1) and *production* (n=2). Similarly, those who mentioned conflict with ENP (n=7), mostly considered conflict to involve *wildlife* (n=5) and to a lesser extent *production* (n=2). The remaining group, those supportive of an EPAN and their inclusion therein and who did not have livestock (n=27), a group similar in size to the group in opposition and who had livestock, also mostly mentioned *wildlife* as the main conflict (n=12). The group of private landowners, who were supportive and had no livestock (i.e. had tourism facilities), cited the main conflict with the ENP as involving a *human* component.

The relationship between the emergent concepts of *production*, *wildlife* and *human*, and what the respondents considered the contributing factors to these conflicts to be, was assessed using selective coding (Figure 5.3). The findings are descriptive, however, and there is no link between the contributing factors as cited, and that of land use or land tenure.

Table 5.3 Respondents' viewpoint on being incorporated into a protected area landscape around Etosha National Park (ENP). Expressed as a percentage of the total respondents (n=56)

land tenure	yes 55				no 38			
	livestock 35%		no livestock 65%		livestock 71%		no livestock 29%	
	with ENP		with neighbours		with ENP		with neighbours	
	yes	no	yes	no	yes	no	yes	no
private	n=1	n=0	n=0	n=1	n=7	n=5	n=9	n=4
communal	n=3	n=0	n=3	n=4	n=4	n=0	n=1	n=3
resettlement	n=3	n=0	n=2	n=1	n=4	n=0	n=2	n=2

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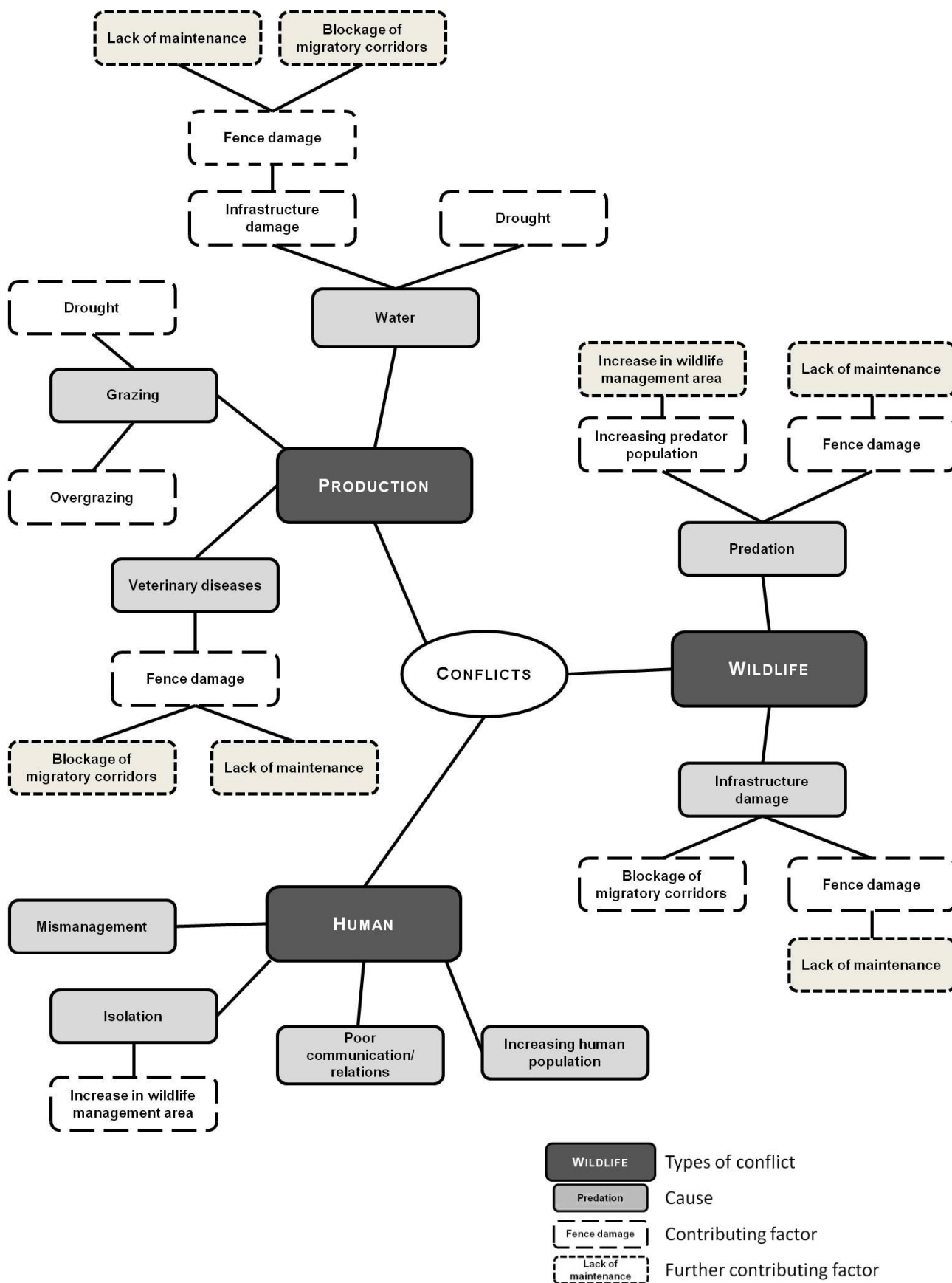


Figure 5.3 Diagram summarising the contributing factors to the conflicts between participants and neighbouring properties and the Etosha National Park.

Discussion

Communities had many opinions and perceptions about management challenges and land use conflicts around ENP. People with livestock thought differently from people without, worrying about predators, the main source of conflict between them and neighbouring properties, or the national park. Most respondents cited worrying about the lack of surface water, as interviews were in a drought year. The lack of grazing was also considered a challenge. Pasturage, in the form of arid grasslands is used jointly by livestock and game species across most of the study area. The resultant livestock produced, for both subsistence and commercial farmers, are an important source of income and protein, as are the game species kept in wildlife management areas for hunting and the game meat industry.

In contrast to onsite challenges, the types of conflicts experienced with neighbouring properties and with ENP, however, were not significantly related to land use. Many respondents cited not having any conflicts at all, potentially due to the extensive property sizes characteristic of the study region (see Sweet and Burke 2000). Where conflict was cited, it was linked to land tenure, since situations of competition and potential disagreement were linked to conditions of access to land and natural resources rather than what the land and its resources were used for. Even where neighbouring properties practiced similar land uses (e.g. livestock production), conflicts were related to land tenure. Here land tenure refers to the 'set of institutions and policies that determine how land and its resulting resources are assessed, who can benefit from these resources, for how long and under what conditions' (Robinson et al. 2014, p. 282).

Similarly, between the ENP and its neighbours, perceptions of land use conflicts were linked not to whether the respondent had livestock or not, but rather to whether they owned the land or only had usufructuary rights over its resources. My results therefore indicate that property rights are a significantly stronger predictor of land use conflict than primary land use. This is consistent with other studies focused on protected areas, ecosystem services and land tenure systems where the perception of conflicts, primary land use and the manner in which ecosystem services are valued were related to long-standing land tenure (Holland et al. 2014, Robinson et al. 2014, Hausner et al. 2015).

Like other countries in southern Africa, land ownership is central to the rural development and biodiversity challenges currently being faced in Namibia (Krugmann 2001). For at least two thirds of Namibia's population, land is a vital asset since it is a crucial source of capital and the resource base from which they earn a living. Land in Namibia has multiple uses and users and often these uses are incompatible (Mendelsohn et al. 2002). This is particularly true among areas dedicated to state protected areas, freehold commercial farms and communal farms. Land practices within each tenure arrangement differ vastly, with freehold farms dedicated largely to commercial livestock production and, to a lesser extent, tourism while large numbers of pastoralists on communal farms

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in the north herd cattle and they rear small livestock (i.e. goats and sheep) in the south (Mendelsohn et al. 2002, 2006, Bethune and Ruppel 2013).

Due to socio-economic changes since 1990, when Namibia gained independence, more and more private landowners have converted their cattle farms to wildlife management areas and game reserves (see Barnes et al. 2002). Concurrently, the Government of Namibia initiated a land reform programme by acquiring farms on a willing-buyer-willing-seller basis, and allocating these to previously disadvantaged Namibians (Werner and Odendaal 2010). These land use transformations have led to changing conditions of land use; where contiguous pieces of farmland have been purchased by the state, and awarded to communities in the form of conservancies (Nesongano and Kalunduka 2006, Clover and Eriksen 2009, Marchant 2010). The idea is that traditional land use practices, including pastoralism, should occur alongside nature conservation (Jones 2003). This has resulted in a mosaic of land uses; comprising protected areas, rangelands, conservancies, livestock farms and game reserves. Multifunctional landscapes in arid environments have been shown to meet multiple objectives associated with biodiversity conservation, agricultural activities and human well-being (O'Farrell et al. 2009; 2010). The results described in this chapter however, show that concerning perceived conflicts, land tenure is more important.

Selective coding highlighted wildlife and a general lack of maintenance by park management as the two main drivers of conflict. Important here is to acknowledge that this perception was not related to primary land use, but rather to whether the land belonged to the respondent (freehold) or belonged to the state (communal). The general lack of maintenance of the park fence links back to the emergent conflict theme, *human*. Here, most respondents discussed the general condition of the ENP fence. Other studies show that as a barrier in the landscape, fences have large effects on animal movements, foraging routes and home range use (Bailey et al. 1996, Johnson et al. 2002). Not only are fences barriers to movement but they also create an edge effect and can have cascading effects on animal behaviour (Hayward and Kerley 2009, Vanak et al. 2010). Conversely, fences play a positive role in that they protect large mammals from illegal hunting and help reduce human-wildlife conflict (Grant et al. 2008, Slowtow 2012).

According to the respondents, elephants damage not only the park fence, allowing predators thoroughfare to neighbouring properties and community settlements, but they also damage water reservoirs, kraals and other infrastructure, continually frustrating resident communities who have to repair the damages at their own cost. Smaller mammals burrow under the fence in search of water and grass, creating holes that livestock and antelope such as gemsbok, enlarge. This therefore links the *human* conflict of poor management to that of *wildlife* conflicts. Similarly, the placement of artificial water points, both by park management and neighbouring properties, was mentioned as a *human* conflict. It was made explicit, however, that this mishandling of park duties was not only due

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to incompetence (although that certainly was the impression of some respondents) but rather because of an insufficient and poorly trained workforce.

Artificial waterholes in wildlife management areas can cause more harm than good (Fensham and Fairfax 2008). Although placement of artificial water points can be a provision of water for wildlife during drought, often they are established for game-viewing purposes. They have been shown to have negative ecological effects, such as a cause of overpopulation of elephant and impala herds in Kruger National Park, South Africa (Fensham and Fairfax 2008). This has led to the significant damage of indigenous tree stands, overgrazing and trampling around water points. In the present context and according to the study subjects, water points strategically established in ENP are to attract animals and hence visitors to certain areas, but result in altering both animal movements and the healthy functioning of the ecosystem (e.g. the reoccurrence of anthrax in and around ENP, Lindeque and Turnbull 1994).

Conclusions

In Namibia, protected areas are being incorporated into the wider landscape in which they occur. The intention is that these landscapes are collectively managed in a sustainable, efficient and equitable manner. To achieve this, a need lies in understanding stakeholders and their perceptions and motivations surrounding land use, and, above all, an understanding of current and potential conflicts and trade-offs arising from land and natural resource use. Only then can we attempt to understand how the SES under study will sustain ecosystem services and how the various functions and services provided is likely to affect the well-being of people in the conservation landscape.

Three main concepts of conflict emerged from seemingly different land uses, namely commercial and subsistence livestock farmers, tourism facilities and wildlife management areas. The themes represent land and management issues and attendant conflicts that are generally manifest within the farms and conservancies surrounding the protected area. These were conflicts related to *production* output, *wildlife* conflicts and conflicts of a *human* nature. In terms of *production*, a lack of suitable grazing and incurring drought was mentioned by respondents as a contributing factor or driving force of conflict across the different land uses. This implies that pasturage and underground water provide multiple ecosystem services since the respondents obtain various benefits from these resources within the same landscape and assign different values to their multiple services. In an EPAN, the integrated conservation landscape may potentially yield increases in pasturage as a provisioning service, improve regulating services for long term ecological resilience, for example flood control, or foster other benefits amassed due to land use practices being compatible with conservation, such as non-consumptive tourism. Since people's perceptions of conflict changes, the benefits perceived with changing land uses could shift (Berkes et al. 2000, Agrawal 2007, Díaz et al. 2011).

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Changes in land use planning and management can be in synergy with protected areas or they can cause new conflicts to arise, particularly if the changes are in direct conflict with other land uses. Overall, land use decision-making depends on an individual's perceptions of conflict and the cause-and-effect relationships expected (Kahneman 2003). The present study shows that this decision-making is affected not by primary land use, but by land tenure.

Expanding the protected area network in Namibia: An institutional analysis

Abstract

Protected areas and their surrounding landscapes are becoming increasingly integrated. Management of such integrated landscapes entails a shift from state control over protected areas to multiple-actor governance of the landscape. This requires an understanding of the institutional context, since institutions, i.e. the rights, rules and relationships regulating resource use; serve as an interface between the social and ecological components of a system. Here, I assessed the institutional aspects of an expanded protected area network around Etosha National Park in Namibia. Current policies associated with land and natural resource management are studied, guided by the literature on common pool resource governance. A wide variety of issues were incorporated in the analysis, including ecological and stakeholder attributes, rules-in-use and the patterns of interactions between these. Data were obtained from semi-structured interviews. Six distinct resource governance systems were identified, each variably focused on wildlife as a resource and each governed by different institutions that shape the behaviour of stakeholders. Patterns of interaction exist between the various policies regulating governance systems, which together condition access to and use of land. Potential outcomes of interacting policies include a recently tabled Bill which provides an integrated framework for an expanded protected area network in Namibia. Although the Bill is still in draft format, I conclude that the potential obstructions to it being passed are attributable to the land tenure system in place and reluctance on behalf of the state to fully devolve rights over resources to land owners and resident communities.

Keywords:

Policy, conservation landscape, land use, natural resources governance

Introduction

Globally, human-driven pressures on protected areas and adjacent ecosystems are increasingly acknowledged (Chape et al. 2005). The planet's vulnerability to these changes is emphasised, as are the multiple values we accrue to natural systems and the benefits they provide humanity (Costanza et al. 1997, Daily 1997, Daily et al. 1997, Naughton-Treves et al. 2005). Solutions to counteract these changes involve the expansion of protected areas by integrating conservation areas with adjacent multifunctional working landscapes; actively reconnecting the conservation landscape (Hannah et al. 2002, Harrington et al. 2010). This requires the inclusion of

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a broad range of actors, who collectively manage ecosystems and who share the benefits, as well as the costs of living in the conservation landscape (Ervin et al. 2010). In southern Africa, working landscapes comprise complex rangelands variably dedicated to production, development and biodiversity conservation, increasingly under pressure due to growing human populations (Vitousek 1997, MA 2003; 2005, Reed et al. 2015).

In Namibia, an expanded protected area network will improve ecosystem protection while contributing to human well-being and land reform (Ashley and Barnes 1996, Barnard et al. 1998, Jones 2004). Such an integrated approach to protected area governance will require an understanding of the institutional context, since institutions, i.e. the rights, rules and relationships regulating resource use, serve as an interface between the social and ecological components of systems (Bromley 1992, Schlager and Ostrom 1992). It is at this interface that institutions create incentives for social behaviour (North 1990, Ostrom 1990; 1999, Rudd 2004) which generates observable patterns of behaviour (Scott 2014) which in turn actualize policy outcomes (Polski and Ostrom 1999). Thus in order to evaluate, design or reform policy, a need lies in systematically analysing existing institutional arrangements.

Land use changes have occurred in Namibian rangelands that involve landowners converting from cattle farming to wildlife management (Lange et al. 1997, Barnes and Jones 2009). This is attributable to legislation passed in the 1960s that afforded private landowners ownership over certain wildlife species (Long and Jones 2004), changing their perspective on the value of having wildlife species on their properties (Barnard 1998). Policies implemented in the 1990s afforded similar rights to communities, with the formation of communal conservancies (NACSO 2013). As legally registered areas with a constituted management body collectively run by communities, communal conservancies provide resident communities with resource use rights and access to benefits from tourism and hunting, rights previously afforded only to private landowners (Weaver and Petersen 2008). Changing land use policy has generally favoured pro-conservation practices, with many landowners and resident communities gradually moving away from livestock production toward the consumptive and non-consumptive use of natural resources (Boudreaux 2010). Due to biophysical and socio-economic conditions (i.e. aridity, unpredictable rainfall and sparse human populations), the opportunity costs of alternative land uses, such as agriculture, are minimal (Child 1988, Roe et al. 2009, see Chapter 3). Institutional structures have also enabled cooperation between the private sector and communal conservancies, further encouraging land use practices dependent on the natural resource base (Child and Weaver 2006).

To safeguard natural resources, efforts are being made by the state to formalise the expansion of the protected area system by integrating pro-conservation land use practices and protected areas into conservation landscapes (Brown et al. 2005). The goal of such landscapes is to encourage biodiversity protection while providing socio-economic benefits to resident communities (Zimmermann et al. 2014). To achieve this, stakeholders involved in the social-ecological system

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(SES) need to self-organise and co-manage the land and its resources (Ostrom 1990). Multifunctional landscapes thus require governance systems able to accommodate the complexity of social-ecological contexts (Cox et al. 2010, Persha et al. 2011, Nagendra and Ostrom 2012). To foster strong collaboration in these landscapes, an understanding of the multi-level and multi-scale governance institutions is needed. I argue that to formulate appropriate policies, it is important to assess the institutional challenges of bringing different land uses together in an integrated conservation landscape. To provide insight into natural resource management, I use the ecosystem services approach (Turner et al. 2003, Wallace 2007, Fisher et al. 2009, Wesselink et al. 2011) since it recognises the complex interactions occurring across integrated landscapes (Turner and Daily 2008, Fisher et al. 2009, see Chapter 2).

The aim of this chapter is to use a commons-literature perspective to examine the institutional arrangements currently at play in the Namibian protected area landscape, particularly surrounding the Etosha National Park (ENP). Institutional arrangements, including property rights, policy reforms and land use practices, have led to integrated landscapes that encourage joint biodiversity conservation and human development (see Chapter 3). I thus examine the ENP and surrounding farms and conservancies, applying the Institutional Analysis and Development Framework (IADF, Ostrom 2005) to identify the institutional attributes that have contributed to the current governance institutions. I focus the discussion around ecosystem services, asking how institutional attributes have interacted with each other to facilitate the current integrated landscape and how these have contributed to the joint management of the landscape where different ecosystem services are valued differently by different stakeholders.

Conceptualisation of Ecosystem Services and Institutions

The present landscape, comprising ENP and surrounding rangelands, provides several ecological functions and processes, all with several possible uses (e.g. grasslands for pasturage, to sustain livestock, wildlife and maintain biodiversity). In order to plan and manage this increasingly integrated landscape, the types of ecosystem services appropriated (namely provisioning, supporting, regulating or cultural) needs to be considered (MA 2003, de Groot 2006, de Groot et al. 2010). The institutions and decision-making context for which the ecosystem services are being considered needs to be assessed (Fisher et al. 2009), since the values attributed to ecosystem services drive land use decision-making (Goldman et al. 2008, Pascual et al. 2014, Sitas et al. 2014, Guerry et al. 2015, Ruckelshaus et al. 2015) and influences landscape planning (Reed et al. 2009, Wegner and Pascual 2011). Although a great deal of the literature is dedicated to the role of communities in SESs (Berkes et al. 2003), little is known about the involvement of local institutions in decision-making and conservation planning pertaining to landscape management (Pimbert et al. 1997, Pretty and Smith 2004, Reed 2008, Andrade and Rhodes 2012).

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Applying the ecosystem services approach to a consideration of conservation landscapes facilitates a more critical focus on natural resource governance and stakeholder participation by directing attention to the human-nature interaction (Wesselink et al. 2011). Ecosystem services are construed in various decision-making processes embedded in institutions, from day-to-day operational choices, to collective decisions to constitutional resolutions (Ostrom 2005). Ecosystem services differ in terms of whether there are governance systems in place to regulate their use and whether access to the ecosystem service can be determined (Primmer and Furman 2012). Furthermore, ecosystem services dependent on larger landscapes to function are governed by land use planning while particular ecosystem services are at times governed by specific policy instruments (Primmer and Furman 2012). Identifying the institutions at play in any particular context allows for an understanding of what has produced the current management system and provides an indication of which institutions will condition future recommendations (Primmer et al. 2015).

The relevance of using the ecosystems services approach is summarised in Figure 6.1. The laws regulating the rights of different actors in the conservation landscape are considered formal institutions (North 1990, Ostrom 2005). To influence these institutions, people's rights need to be recognised since such legal principles condition the (re)allocation of benefits (Primmer et al. 2015). Together with these formal regulations (e.g. land use rights), informal practices (e.g. traditional grazing systems) need to be identified and their sustainability assessed since they shape ecosystem services governance (Norgaard 2010). By understanding current formal regulations and informal practices, more effective governance approaches can be designed and implemented since people's values and needs pertaining to ecosystem services are included (Bennett and Dearden 2014). This leads to informed decision-making and potentially to adaptive co-governance since the inclusion of actors and their ecosystem services needs in policy design enables collective action (Opdam et al. 2015). Here, co-learning, the incorporation of traditional knowledge, innovations and an acknowledgement of people's rights lends itself to more equitable benefit-sharing (Primmer and Furman 2012), since an understanding of institutions has ensured that the affected parties are involved. The contribution to integrated conservation and development, informed decision-making, adaptive co-governance and equitable benefit-sharing meets the challenges of ecosystem services governance (Primmer et al. 2015). This is relevant to my study since multiple ecosystem services need to serve multiple actors in the conservation landscape.

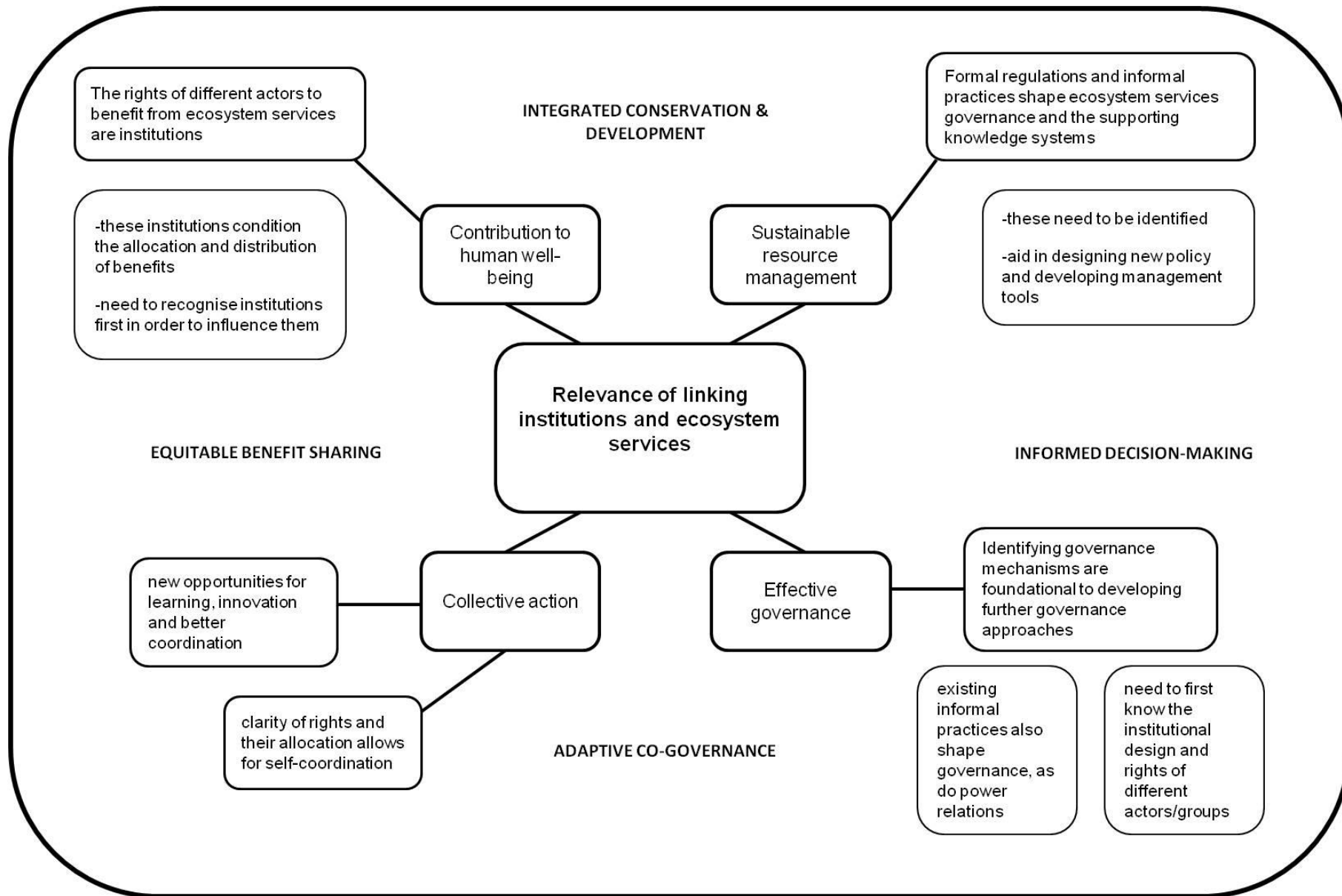


Figure 6.1 Diagram depicting the relevance of using the ecosystems services approach in institutional analysis.

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The Institutional Analysis and Development Framework (IADF)

The Institutional Analysis and Development Framework (IADF) serves as a multidisciplinary tool used to frame policy research on common pool resources (Ostrom 1990; 2005; 2010, Ostrom et al. 1994). The IADF has been applied in a variety of fields, including the study of governance systems (Poteete et al. 2010) and serves the purpose of my research in that it can be applied to the analysis of public and privately owned resources that depend on cooperation between individuals if long-term sustainability is to be achieved (Rudd 2004). The framework is also highly adaptable and enables the analysis of divergent outcomes (Ratner et al. 2013). The general elements of the framework are depicted in Figure 6.2. Ostrom (2005, p. 15) proposed that the unit of analysis be the 'action arena', i.e. the social space where 'participants with diverse preferences interact, exchange goods and services, solve problems, dominate one another, or fight (among the many things that individuals do in action arenas)'. The contextual variables that frame (and constrain) the action arena need to be specified. These include variables associated with the physical and material world in which the actors interact (i.e. the biophysical conditions), the attributes of the community (i.e. socio-economic factors) and the rules-in-use (i.e. institutions) that govern their behaviour.

Constrained by a set of exogenous variables, namely the ecological, social and institutional setting, actors in the action arena need to consider the costs and benefits of various behaviours and act according to the perceived incentives of these costs and benefits (Scott 2014). These incentives, in turn, depend on the underlying values and preferences of actors as well as the threat of material or social sanctions (Rudd 2004). Together, the patterns of interaction, which refer to the structural characteristics of the action arena and the conduct of actors in the resulting structure (Polski and Ostrom 1999), lead to outcomes that can be evaluated according to socially relevant criteria. Lastly, insights about outcomes also flow logically from well-founded observations about patterns of interactions (Polski and Ostrom 1999). These outcomes then dynamically feed back to both the action arena and to the contextual variables shaping the action arena (Ostrom et al. 1994).

In this Chapter, I focus on the key institutional attributes associated with an expanded protected area network in Namibia. The ENP and surrounding territories is moving toward a conservation landscape where multiple land uses are being practised by a variety of actors. By applying the IADF (Ostrom 1990; 2005; 2010, Ostrom et al. 1994), I provide insight into institutional factors currently affecting rangeland management. The framework also guides the analysis of patterns of interaction of stakeholders involved in land and resource use, enabling the prediction of the potential outcomes of these interactions. This serves as an analysis of the performance of the policy system governing protected area expansion and allows for a comparison with alternative policies.

Methods

Study Area

The study area comprised ENP, its surrounding farms to the south and south west of the park, two communal conservancies on its western boundary and a state-owned resettlement farm, Seringkop (Figure 6.3). The area is arid and rainfall is highly variable and unpredictable (Mendelsohn et al. 2002). The resultant lack of readily available fresh water is considered a limiting factor for development across Namibia (Jones 2003). Underground water is commonly sourced through pipelines and boreholes on commercial and communal livestock farms and then supplied to animals through pumps and troughs or from small dams constructed on ephemeral rivers and streams (Mendelsohn et al. 2006). Wildlife usually obtain water from isolated pools during the rainfall season or from artificial waterholes fed by boreholes throughout the rest of the year. The lack of arable soils is another important limiting factor for agriculture and livestock production. Soils are nutrient poor and are easily degraded. The combination of low rainfall and poor soils means that the availability of grazing on rangelands varies spatially and temporally and that the carrying capacity is low, even in years of high rainfall (IDC 2005). Large areas of the arid landscape are inaccessible due to the mountainous topography, rendering agriculture infeasible in most cases (Mendelsohn 2006). Primary land use involves the protected area, hunting and tourism enterprises, sedentary livestock farming at low stocking rates and semi-nomadic pastoralism (Mendelsohn 2006).

Apart from the ENP boundary fence, a veterinary cordon fence or 'red line' separates the conservancies in the west and private land in the south from the ENP (Figure 1.2; Berry 1997b). It serves as a physical barrier between the foot-and-mouth free zone south of the cordon fence and the foot-and-mouth protection zones north of the fence (Scoones et al. 2010). The fence dividing resident communities in the study area from the ENP is therefore a double fence, consisting of a high game-proof fence separated by a 10m passage from a stock-proof fence on the side of the farms and communities.

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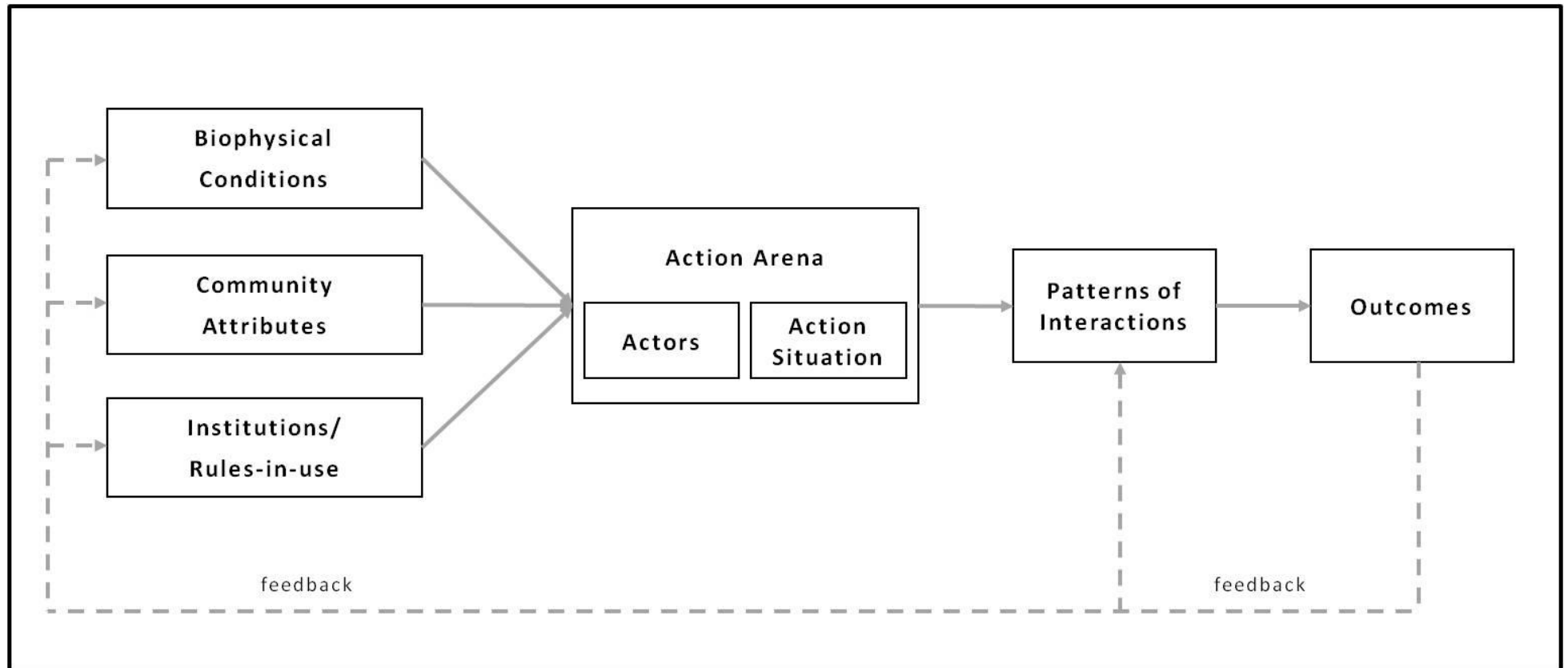


Figure 6.2 General elements of the Institutional and Development Framework (IDF), as adapted from Ostrom et al. (1994).

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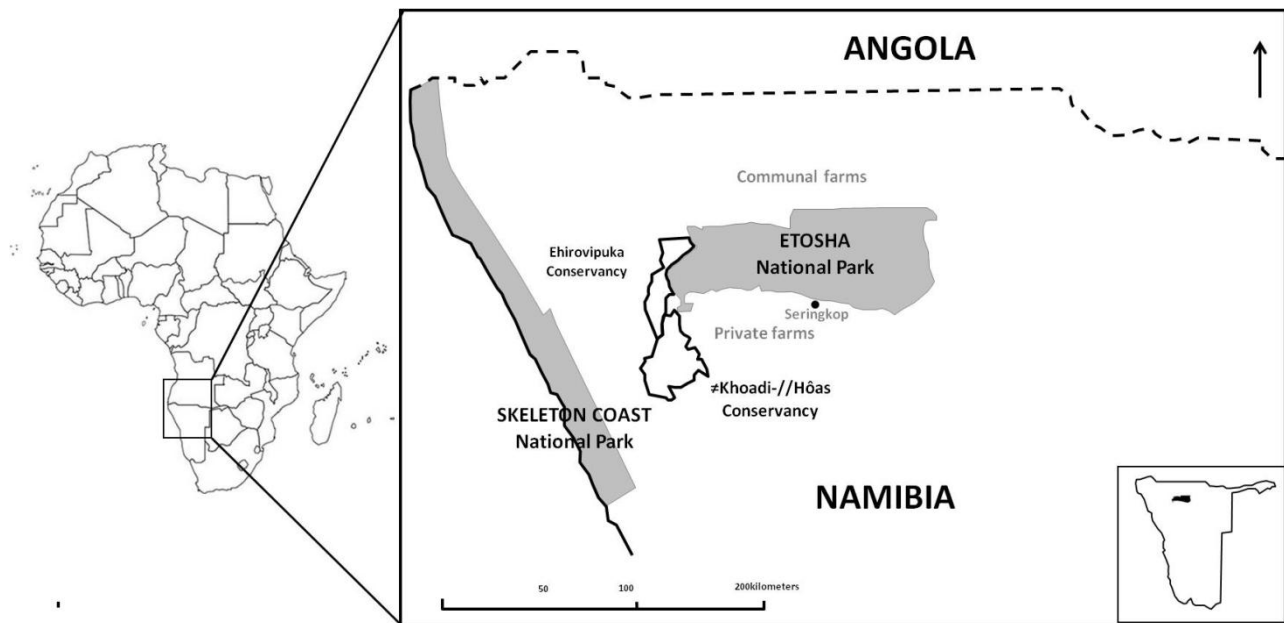


Figure 6.3 Map of the study area.

Sample Selection

Prior to commencing fieldwork, the stakeholder selection process and the interview schedule were piloted with key experts based in the area. These respondents were not included in the sample. Based on assessments made during this pilot study, interviews (Appendix 7) were then conducted with land owners and managers (n=20), senior and junior level Ministry of Environment and Tourism (MET) officials (n=4), senior-level ENP management and game rangers (n=8) and NGO staff (n=2). Representatives from the Directorate of Veterinary Services, the Regional Land Board and the Traditional Authority, based in Outjo, were also included (n=3). Interviews also took place in the #Khoadi-//Hoas (n=12) and Ehi-Rovipuka (n=12) Conservancies and on the Seringkop Resettlement Farm (n=12) south of the park. These study sites were deliberately selected as those properties to the south and south west of the ENP, as this landscape is likely to be the first incorporated into an expanded protected area network around the formally protected ENP.

Field data were collected in two phases, from April to May 2013 and July to August 2015. The analysis was based on qualitative data sourced from semi-structured face-to-face interviews. Data on perceptions regarding land and resource use policy were collected during individual interviews, community meetings, focus groups and feedback sessions held at #Khoadi-//Hoas and Ehi-Rovipuka conservancies, and on the Seringkop resettlement farm. In the heavily populated communities, instead of individual interviews, 12 households were selected via a systematic sampling strategy (Newing et al. 2011).

Face-to-face interviews were conducted and detailed transcripts made. To ensure anonymity, codes were used for respondents quoted or mentioned in the text (placed in parentheses). Additionally, an analysis of primary and secondary documents related to land and natural resource policy was incorporated (Appendix 7), together with the insight from the literature review (Chapter

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3) and preceding data Chapters 4 (stakeholder analysis) and 5 (conflict analysis). I attempted to triangulate the data by incorporating feedback from practitioners in the field and experts on policy matters in Namibia throughout the data collection and analysis phase.

Interview Protocol

The interview protocol started off with a discussion surrounding the observed outcomes of the current land and resource use policy (Ostrom 1990; 2005, Ostrom et al. 1994, Polski and Ostrom 1999). This set the scene for the interview and helped respondents to identify the biophysical conditions, community attributes and institutional factors that shape the patterns of interactions regarding the use of ecosystem services in and around the ENP. Questions focused on the study objectives, which was to evaluate current institutional aspects shaping land and resource use at the borders of ENP so as to assess the effect policy reforms will have on a potential protected area landscape.

To ascertain the biophysical conditions shaping the action arena, respondents were asked about land and resource management issues and conflicts, their perceptions regarding the causes of these issues and conflicts, the contributing factors thereof and what they believed to be mitigating circumstances or solutions (Chapter 5). To develop a preliminary understanding of community attributes, experts with prior experience of working in and around ENP and protected areas in Namibia were consulted. Secondary data were also collected on demographics in the area, the biogeographical setting, the socio-economic setting of stakeholders, and different land uses practiced in the area (Chapter 4). To better understand the institutions or rules-in-use that govern the action arena and shapes the behaviour of actors therein, respondents were questioned on the minimal but necessary set of rules that are required to explain the observed policy-related actions, interactions and outcomes. These included the formal laws and policies in place to govern actions and interactions in the action arena as well as the level at which these are enforced, namely at the local 'operating' level, the 'collective-choice' community level or at the 'constitutional', central government level (Ostrom 2005). The management strategies applied in each land use was determined by asking questions related to the recurring patterns of behaviour surrounding land use, resource use, agricultural markets, tourism industry etc. Questions were also asked about the observed outcomes of land and resource use policies 'on the ground' (*de facto* norms) compared to what is set out in the policies (*de jure* rules), which of these outcomes are satisfactory, which are not and which outcomes are most important.

Data Analysis

Interview protocols were translated, transcribed and analysed, with codes and categories being derived according to the research questions. Previous results from Chapter 4 and 5 were used to analyse the biophysical conditions and community attributes that affect the action arena. For the institutional analysis, codes were assigned to words, phrases and sentences (Charmaz 2006) that referred to respondents' perceptions on rules-in-use or institutions shaping land and resource use

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and how these rules affect the management thereof. The governance structures present in the study area were identified and then compared. According to similarities and differences in the mentioned interactions and outcomes, categories were developed from codes, giving inference to the different resource governance systems and institutional dimensions present in the study area. There are three tenure regimes in Namibia that condition land and natural resource use and management (Bethune and Ruppel 2013). The interactions between these resource tenure regimes were assessed since this interplay is what influences the capacities of those involved in the landscape (Petursson et al. 2013). The relationship between the institutional arrangements is then discussed as it gives an indication of the overall suitability of an integrated conservation landscape (Petursson et al. 2013). I then assessed the policy objectives of each governance system to gain insight into the policy reform necessary for a conservation landscape surrounding ENP. To summarise, the IADF was used to describe the political-economic-social activity surrounding an expanded protected area network around ENP, based on stakeholder consultation, secondary data and the results from previous chapters. This was done by describing the physical and material attributes of rangeland management, then the community attributes of the actors and lastly the rules-in-use governing land and resource use. By integrating these ecological, social and institutional variables, the action arena was described, i.e. where the policy action is and the actors involved therein. I then analysed the patterns of interaction and resultant outcomes.

Results

Biophysical Conditions

The land and natural resource management challenges mentioned by respondents were related to primary land use (i.e. whether respondents had livestock or not). Where land use was dedicated to livestock production, management challenges were different on white-owned private farms as compared to black-owned and/or communally farmed areas (see Chapter 1). White-owned farms are typically bigger in size (between 6000-8000 ha) and more established due in part to decades of experimentation, access to research findings and expensive advisory services. These farms were typically well fenced and subdivided into several paddocks to allow for rotational grazing. Livestock in both the commercial and communal areas were raised under extensive ranching conditions, relying on natural pasture. On commercial farms, this was occasionally supplemented by protein and/or mineral licks. Although stocking rates were more conservative on commercial farms as compared to the communal areas, fire had mostly been excluded from the system and, except on the combination livestock and game farms; very few browsing animals were present. As a result, a large proportion of the study area had become bush infested, declining grazing potential. Several of the respondents had turned to charcoal production to combat bush encroachment.

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Black-owned farms were less established and had more issues with water and grazing availability as a result of poor infrastructure (e.g. boreholes, fences etc.) and larger herd sizes. In communal areas (conservancies and resettlement farm), despite the larger properties, more people were sharing the commonage and resource overuse as well as large-scale damage of infrastructure was prevalent. Although almost all respondents cited problems with the availability of surface water and complications involved in attaining underground water; and most livestock farmers considered the availability of grazing a challenge, the situation was worse on black-owned and communal (state-owned) properties. This then made the perceived land use conflicts with neighbouring properties or with the ENP worse, since black and communal farmers were already battling management challenges onsite. Therefore, conflicts experienced with neighbours and the ENP depended on land tenure (private, communal conservancy or state-owned resettlement farm) and not the land use.

Community Attributes

For the community attributes component, stakeholder analysis was used to categorise the stakeholders according to proximity to the national park, land tenure and land use type. Four primary stakeholder groups were identified, namely livestock farmers, communal conservancy members, resettlement farmers and tourism/hunting enterprises (Table 6.1, also see Chapter 4). Overall, stakeholders are not homogenous and differences exist within and between the groups in terms of interest in and support toward an expanded protected area network as well as power to enforce change.

The livelihoods of half of the respondents (n=29, 52%), directly depended on livestock production. Contributing an estimated 4% to the country's gross domestic product (GDP) through an export-orientated production base, livestock production is considered a crucial component to Namibia's agricultural economy¹⁶ (NSA 2016). Livestock practices differ, however, between commercial and communal land tenure systems. In the study area, the predominately white-owned private (commercial) farms were well developed and livestock production was observed to be capital-intensive. Production systems on communal land were labour-intensive and based on traditional herding practices. The objectives of communal farmers were subsistence-based and more diverse than commercial farmers. The outputs and objectives of communal livestock farmers included draft power (to plough fields and collect water), milk production, manure for crops, meat for consumption, cash income and capital storage. Livestock was also kept for socio-cultural reasons, to show prestige and to partake in the local gift economy.

Population density differed vastly in the study area (1 person per km² in both conservancies as compared to 1 person per 10km² on private land) with more people sharing the commonage in the conservancies. Here production per hectare was considered more important than production per

¹⁶ In total, agriculture contributes 9.5% to Namibia's GDP (Namibia Statistics Agency www.nsa.org.na Accessed on 21 November 2016).

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head and communal livestock owners met their diverse objectives through herd maximisation, rather than turnover.

On the resettlement farm, respondents had lived most of their lives in the ENP and were descendants of nomadic hunter-gatherers who traditionally did not practice pastoralism (Dieckmann 2013). At the time of the study, very few (>10%) of households kept livestock on Seringkop. Livestock ownership is strongly skewed, with a small number of people owning large herds and the majority owning few animals or none at all.

On private land not dedicated to livestock production, landowners operated hunting enterprises, for meat and/or sport hunting, or managed their properties for tourism purposes, including accommodation and safari tours. The hunting and tourism industry is a major contributor to the country's GDP, accounting for 14.5% (NSA 2016). To the south of ENP, large tracts of land, comprising several former cattle ranches, have been purchased by tourism companies and have been converted to game reserves. Close to the park gate, several small allotments have also been purchased and converted to lodges.

Table 6.1 Community attributes of the four primary stakeholder groups.

Respondents (n=56)	nr	title	average farm size (ha)	length of occupancy (years)	markets	resources used
Livestock farmers	29	private (n=8)	6756	>30	local regional	water pasturage
		communal (n=15)		15-18	(subsistence)	
		resettlement (n=6)		6		
Communal conservancy members*	9	state	≠Khoadi- //Hôas 332400 (total)	18	(subsistence)	water wildlife plant resources
			Ehi Rovipuka 198000 (total)	15		
Resettlement farmers*	6	state (99 year leasehold)	5364	6	(subsistence)	water
Tourism/hunting enterprises	12	private	11670	5-10	international	water pasturage wildlife

*Those communal conservancy and resettlement farm respondents *without* livestock.

Institutions or Rules-in-use

Together with the respondents, six distinct land and natural resource management strategies were identified based on categories that emerged from the interview data (Table 6.2). The table summarises the categories identified and shows the governance systems applicable in the study area, as dependent on land tenure and the level of organization, i.e. local, community or constitutional. The property rights system conditions land and natural resource governance and stipulates the management approach applied in each category (Bethune and Ruppel 2013, Zimmermann et al. 2014). These are then related to the various institutional dimensions as

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identified by respondents, key experts and secondary data. These land and natural resource systems are described below.

Rules-in-use in Etosha National Park

ENP is governed by the Ministry of Environment and Tourism (MET) and operates according to the Nature Conservation Ordinance (No. 4 of 1975). This serves as the primary legislation for the proclamation of protected areas and the conservation and use of wildlife in Namibia. The Ordinance was viewed as being *'outdated and a weak framework for the management of the park'* (m6). It makes no mention of ecosystem management, apart from stipulating that water installations be positioned and constructed where park management deems suitable for the maintenance of ENP. It instructs that game may be removed to protect grazing and that no emergency grazing is permitted in the ENP. This refers to privately owned livestock being allowed to graze in a protected area during times of drought. No other mention is made of any other ecosystem service or function and the word biodiversity does not feature in the document. The park is managed under the classical 'fortress' approach and no consumptive resource use is allowed within its boundaries.

A Chief Control Warden oversees both the ENP and another Namibian park, Skeleton Coast National Park (SNP), 400 km away. The ENP is divided into two sections, each the responsibility of a Chief Warden and three wardens. In the western section, bordering the study area, two of the wardens are responsible for law enforcement, and the remaining Warden is responsible for all routine management issues. The wardens have teams of several rangers and scouts assigned to specific areas. The size of the park (22 270 km²) and the length of the perimeter fence (approximately 800 km), however, makes law enforcement and maintenance difficult.

All tourism aspects are the responsibility of Namibia Wildlife Resorts (NWR), a key agency in implementing the government's strategic plans for developing tourism facilities in protected areas. All wildlife management issues outside ENP are the responsibility of the Directorate of Regional Services, based in Outjo, approximately 100 km away.

Falling under the MET's Directorate of Parks and Wildlife Management, the Chief Control Warden has no formal interaction with the Regional Services. Since their domains do not technically overlap, the ENP is treated as an *'island'* (r2). The absence of a general policy framework has led to a situation where the Directorates in charge of the different divisions within the MET are left in a *'largely passive mode in that [they] react to initiatives advanced by the private sector and NGO community on an ad hoc basis'* (n2). A proposed Parks and Wildlife Management Bill (2009) attempts to address this, but the Bill is based on a review of various individual policies instead of an overarching strategic policy framework. There is also an atmosphere of *'misunderstanding and mistrust'* (r1) and an apparent desire to *'control the wildlife sector from a centralised base'* (r1).

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Table 6.2 Land and natural resource governance systems applied in and around Etosha National Park (ENP).

Land tenure	Governance system	Organisation	Institutional Dimensions				
			Level	Policy	Governance approach	Access	Capacity
State protected area	National Park	Ministry of Environment and Tourism	Central Government	Nature Conservation Ordinance of 1975	Biodiversity conservation priority Strict Protectionism Law Enforcement	No access	Poor capacity Modestly equipped Good infrastructure
Communal land	Communal Conservancy	Community	Local Government (Communal Land Board and Traditional Authority) Regional (Regional Land Board)	Policy on Wildlife Management, Utilisation and Tourism in Communal Areas 1995	Sustainable natural resource management	Difficult to exclude non-members	Poor capacity Fairly equipped but a lack of support
				Nature Conservation Amendment Act 1996	Economic instruments to enable partnerships with the private sector		
Commercial land	Livestock farmers	Private individuals	Citizen (Title deed holder)	Agricultural (Commercial) Reform Act 1995	Title deed holder free to manage land and its resources as they see fit, depending approval by Land Board	No access	Good capacity Well equipped Good facilities and infrastructure
	Tourism/Hunting enterprises	Private individuals	Citizen (Title deed holder)	National Tourism Policy 2008	All tourism needs to be economically, socially and ecologically sustainable Provides framework for public-private partnerships	No access	Good capacity Well equipped Good facilities and infrastructure
	Freehold conservancy	Private individuals	Citizen (Title deed holder)	Agricultural (Commercial) Reform Act 1995	Title deed holder free to manage land and its resources as they see fit, depending approval by Land Board	No access (collaborative agreements regarding who may enter)	Good capacity Well equipped Good facilities and infrastructure
				Policy on Establishment of Conservancies in Namibia 1992	Makes provision for establishment of conservancies, a group of farms on which neighbouring landowners have pooled their resources for the purpose of conserving and utilising		
	Resettlement farms	Community	Local Government (Traditional Authority)	National Land Policy 1998 Communal Land Reform Act 2002	Unitary land system Provides for the establishment of Communal Land Boards	Difficult to exclude non-members	Poor capacity Fairly equipped Modest infrastructure

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Rules-in-use in Communal Conservancies

The Nature Conservation Amendment Act (No. 5 of 1996) made provision for the establishment of conservancies in communal areas. Here, conservancies are used as the means by which limited rights to manage and benefit from wildlife and tourism are given to a specified group of people living in communal areas. In both commercial and communal cases, conservancies have legal status through a representative committee and a constitution. The MET awards such legal status once the duly constituted committee has fulfilled a series of requirements. The goal is for these conservancies to become self-sustainable and to be in a position to manage wildlife and tourism initiatives themselves.

The MET has two policy documents dealing with the promotion of wildlife management and tourism activities by communities. These are the Policy on Wildlife Management, Utilisation and Tourism in Communal Areas of 1995, and the Promotion of Community-based Tourism, both dealing with objectives and strategies for promoting sustainable wildlife management and tourism activities in communal areas.

The Traditional Authorities Act (No. 25 of 2000) recognises Traditional Authorities (TAs) as legal entities. It provides for the establishment of such authorities and their designations, elections, appointments and recognition of traditional leaders, to define their powers, duties and functions. The primary functions of the TAs are to supervise and ensure the observance of the customary law of that community by its members. According to the law, TAs have to ensure that the members of their traditional community use the natural resources at their disposal on a sustainable basis and in a manner that conserves the environment and maintains the ecosystems for the benefit of all persons of Namibia. They must be fully involved in the planning of land use and development for their areas and aware of sustainable resource management and how this is to be implemented.

The Communal Land Reform Act (No. 5 of 2002) provides for the establishment of Communal Land Boards. The function of these boards is to exercise control over the allocation of customary land rights by TAs. They oversee the entire system of granting, recording and cancelling rights over access to resources. The Act describes the conditions under which the commonage in the communal areas may be used for grazing and includes kinds and numbers of livestock and sections of the commonage which may be used for grazing in rotation. These rights may be withdrawn if conditions are not adhered to. Together with the TAs, they have a profound influence on what type of land use and in which manner it is exercised in the communal areas.

It was observed, however, that traditional authorities are being usurped by either regional councils or the Land Boards. Several key informants, especially those from the non-governmental sector were of the opinion that traditional authorities have been reduced to *'mere ceremonial figure heads with no real power over their communities'* (m1). Traditional authorities were viewed by

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some communal conservancy and resettlement farm respondents as ‘puppets of SWAPO¹⁷....whose function is to get votes and ensure election victory’ (c2-3).

Rules-in-use on Private livestock farms

The National Land Policy of 1998 provides for multiple forms of land rights ranging from customary grants, leaseholds, freeholds, licenses, certificates or permits and state ownership. Under this policy, a person with freehold tenure has absolute title to land, including the rights of use, control and disposal, guaranteed and backed by the state. The land may be owned by groups but more often it is owned by individuals. Tenure rights allocated according to this policy and consequent legislation currently include all renewable natural resources on the land, conditional on sustainable use, regular monitoring by the state and subject to details of sectorial policy and legislation.

The Agricultural (Commercial) Land Reform Act (No. 6 of 1995) makes provision for the acquisition of agricultural land by the state for the purposes of land reform and for the allocation of such land to Namibian citizens who do not own or have the use of any or adequate agricultural land. The only reference in the Act which deals with responsible land use stipulates that the practice of sound methods of good husbandry be of beneficial use for agricultural purposes.

Rules-in-use in Tourism and Hunting Enterprises

Through the Nature Conservation Ordinance (No. 4 of 1975), freehold farmers (i.e. including the above livestock producers) have ownership over huntable game¹⁸. This is only applicable if they have a certain size farm, a certain type of fencing, apply for the relevant permits and comply to the monitoring of game numbers by the MET. They are able, as identified land owners, to use protected (i.e. less common, but valuable species¹⁹ and specially protected species²⁰) through a permit system. The legislation also allows trophy hunting to take place on commercial farms under certain conditions. Freehold farmers may buy and sell game on their land.

The 1975 Ordinance also forms the legislative basis for the establishment of private game parks and private nature reserves. It stipulates that an area can be declared a private game park or a private nature reserve upon the written application of the landowner. Private ownership rights over the land pre-exist at the time of the declaration such that the game park or nature reserve remains privately owned. The additional rights specify that only the owner of the land may at any time hunt any game or other wild animal or bird, except protected and specially protected game. All other persons must obtain written approval from the MET, which shall not be granted without the written permission of the landowner.

¹⁷ South West Africa People’s Organisation – the ruling party in Namibia

¹⁸ This includes oryx (*Oryx gazelle*), springbok (*Antidorcas marsupialis*), kudu (*Tragelaphus strepsiceros*), African buffalo (*Syncerus caffer*) and warthog (*Phacochoerus africanus*).

¹⁹ Such as roan antelope (*Hippotragus equines*), sable (*H. Niger*), eland (*Taurotragus oryx*), red hartebeest (*Alcelaphus caama*).

²⁰ Namely globally significant species such as elephant (*Loxodonta Africana*) and rhinoceros (*Diceros bicornis*).

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As mentioned, the consumptive use of game is subject to a permit requirement, and the monitoring of game numbers by the MET. Declaration of an area as a private game park does not exempt the private landowner from this requirement. However, many practices and procedures regarding permits have no real effect on the use of wildlife since there is no effective follow-up of the permits issued and what happens on private land after the permit has been issued. The legislative framework currently in place, and which governs the conversion of private farms to game reserves or any form of wildlife-based land use is highly restrictive. The legislation does not fully devolve the rights over wildlife to landowners. Although they may benefit from wildlife by hunting game species, landowners do not fully own the species occurring on their properties and see no benefit to sustainably manage their farms to encourage growth in wildlife populations. *'Right now, nothing makes me want to manage [my farm] in such a way to include different types of game' (f3). 'Because I do not own the lion, nothing stops me from shooting it' (f8).*

The National Tourism Policy of 2008 promotes the development of tourism through a strong and competitive private sector, with government providing an enabling environment that supports enterprise development, encourages responsible tourism and regulates the industry where appropriate. The policy supports sport hunting as an important segment of the market, but aims to ensure that trophy hunting and non-hunting tourism do not take place simultaneously in the same areas. It also aims to promote broad-based black economic empowerment in the industry and to spread the benefits of tourism more equitably. One means to achieve this is through partnerships between the private sector, communities and individuals from within the previously disadvantaged sections of society.

Rules-in-use in Freehold conservancies

A freehold conservancy refers to a group of farms on which neighbouring landowners have pooled their resources for the purpose of conserving and utilising wildlife on their combined properties. Under the proposed Parks and Wildlife Management Bill of 2009, conditions are laid out for the establishment of conservancies, wildlife farms and game fenced areas. Conservancies may be formed by any group of persons residing on a single piece or contiguous pieces of land that allows free movement of wildlife.

The MET may enter into agreements with the owners of freehold land or the representatives of conservancies to have such land declared as any of the categories of protected area if such agreements and declarations enhance the coverage of biodiversity and ecosystems in protected areas. It was, however noted that "the preferential allocation of permits to use wildlife to farmers with perimeter game fencing, rather than to those farmers whose land is part of larger, open, co-managed conservancies" (Zimmermann et al. 2014, p.26) hampers the development and expansion of pro-conservation land use to its full potential.

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Rules-in-use on Resettlement farms

The aim of this Communal Land Reform Act (2002) is to maximize social, economic and ecological benefits through the use of land and natural resources. In line with the strategy to promote group tenure through a Regional Land Board in the communal tenure areas, similar to those mentioned above in communal conservancies, land redistribution efforts and the resettlement program try to develop under-utilised communal areas where this is environmentally sustainable. The administration of land and resources on resettlement farms is the responsibility of Land Boards and TAs, as discussed for communal areas.

Patterns of Interaction in the Action Arena

Before evaluating current policy outcomes, the patterns of interaction, which refer to the structural characteristics of the action arena and the conduct of stakeholders in the resulting structure (Polski and Ostrom 1999), need to be described according to socially relevant criteria. Of particular relevance to this is the National Land Tenure Policy (2002) which serves as the guiding tool for all tenure rights. Land tenure, in turn, influences governance objectives by stipulating what may be used by whom. The Nature Conservation Ordinance (No. 4 of 1975), despite being outdated, dictates the use of natural resources in these different land tenure systems. Although the Parks and Wildlife Management Bill has remained in a draft stage for nearly a decade, it will eventually provide the necessary framework to deal with the creation of conservation landscapes across all tenure systems. Currently, conservancies and tourism enterprises surrounding ENP use and conserve natural resources and do not offer the same level of protection as the state protected area. These areas could potentially serve as a *'buffer area for wildlife, allowing movement for migratory species between ENP and SNP and a transition zone between ENP and livestock farmers (f16)*. But since *'[they] do not operate under a coordinated management framework and are separated by a fence, this is not possible' (e2)*.

Interaction is also evident in the Nature Conservation Amendment Act (No. 5 of 1996) which makes provision for the establishment of conservancies. Together with the Traditional Authorities Act of 2000 and the Communal Land Reform Act of 2002, access to land and resources has contributed significantly to the human well-being of communal conservancy members and the conservation status in the study area (NACSO 2014). The formation of conservancies and the resultant increase in wildlife populations has also led to a perceived increase in human-wildlife conflict, however, with conservancies increasingly having to deal with these conflicts. The benefits of living with wildlife are mostly accrued at the community level and not at the household level where the impacts of human-wildlife conflict are most acutely felt (see Jones 2012). If the costs of human-wildlife conflict continue to outweigh the benefits people receive through conservancies, this could lead to resident communities becoming less supportive of the community-based conservation approach currently enforced in the country. Although the National Policy on Human-Wildlife Conflict was passed in 2009, human-wildlife conflict remains a major concern, with

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conservancy members mentioning the lack of support from their TAs and from Regional Services. *'Either they do not have transport to come from Outjo and help us, or they say we should call Otjivasandu [the ENP ranger station] and ask the rangers to fire shots into the air, to scare off the elephants. They [ENP rangers at Otjivasandu], never have transport either...'* (c2-14).

Confounding the human-wildlife conflict issue in communal areas is the lack of water and suitable grazing for livestock. Community conservation is based on the premise that traditional land use practices, including pastoralism, should occur alongside nature conservation. TAs and Communal Land Boards allocate customary land rights, thus controlling access to pasturage and water. Respondents cited that the TAs are not present in the community and that *'they moved to Outjo [a municipal area approximately 120km away] when their [cattle] herds grew big enough on our grass. We are left here to look after their goats ... while our animals don't have grass'* (c1-9). The lack of rights over common pool resources means that some communal conservancy members lose out on benefiting since *'certain areas are allocated for [use by] wealthier people who live elsewhere'* (c1-7). Mendelsohn et al. (2011) contends that much of the loss of access to resources by communities has occurred because the state and TAs have been able to privatise commonage land at their discretion.

In terms of private landowners, patterns of interaction occur not only at a formal institutional level, but also informally at an operational level. Tourism and hunting enterprises are encouraged and supported by the National Policy on Tourism to use wildlife in a competitive, sustainable and equitable manner. Respondents from the tourism and hunting sector, however, mentioned *'increasingly being shunned by neighbouring livestock farmers, particularly after the occurrence of a livestock predation event in the area by lions'* (h2).

The *'fence issue'* was mentioned by both communal conservancy members and private landowners (c1-2, c2-2, c2-4, h2, r1). Maintenance of the game proof fence is the responsibility of the Directorate of Parks and Wildlife Management, hence ENP management. The veterinary cordon fence itself, i.e. the stock-proof fence, needs to be maintained by the Directorate of Veterinary Services. This was corroborated by respondents from ENP management, the Directorate of Parks and Wildlife Management and the Directorate of Veterinary Services (e5, m2, v1). On several occasions in the field, employees were seen repairing the fence, but as mentioned by an ENP employee, *'the effort is never coordinated between the two Directorates of the MET'* (e5). Also, *'even if we did fix both fences together, at the same time, we do not have enough manpower to constantly repair the damage caused by animals'* (e1). Furthermore, the placement of the veterinary cordon fence means that tourism enterprises south of the ENP are prohibited from re-introducing buffalo on their properties (Lindsey 2011). Many consider the presence of buffalo as a lucrative economic opportunity as they will then be able to attract visitors by offering *'the Big Five'* (i.e. not only lion, elephant, rhinoceros and leopard) at their establishments (t1, t2).

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Policy Outcomes

The drafting of the Parks and Wildlife Management Bill, which encapsulates all the resource governance systems applied in the study area, will formalise the creation of conservation landscapes across all tenure systems. Another policy outcome relevant to an expanded protected area network has been the National Policy on Human-Wildlife Conflict which was passed in 2009. This is an in-depth, integrated and well-structured policy that was formulated together with stakeholders. The policy is coordinated, yet flexible, delegating decision-making regarding problem animals to the regional and local level. Lastly, the National Policy on Tourism is also relevant to an expanded protected area network in that it encourages the competitive, sustainable and equitable use of land and natural resources.

Discussion

Different policies determine the management approaches used in the different land and natural resource governance systems. This means that policy implementation pertaining to natural resource management is occurring in isolation. At present, ENP and its surrounding properties all manage their resources for different purposes and based on different values. The national park, a state protected area, is managed for the joint purpose of biodiversity conservation and to generate income from tourism. The park is fenced and access is strictly controlled. The free movement of wildlife is prohibited by a poorly-maintained double fence. Although the legislation stipulates that valuable game species and specially protected species (elephant and rhinoceros) are the property of the state, in effect, the porous fence means that wildlife leave the park regularly. The opposite is also true with livestock from the communal conservancies regularly grazing inside the national park.

In communal conservancies, the goal is to maintain the commonage for the benefit of all residents. Here communities depend on water for human consumption, livestock and to maintain wildlife species, even those that breach the fence and endanger human lives, damage property and kill livestock. As stipulated by legislation, people use the land for agro-pastoralism and for cultural purposes, with the general objective being to collectively manage natural resources. This is hampered by inequitable benefit distribution which is supposed to be avoided by the TAs and Communal Land Boards who oversee resource allocation and management. Since they are responsible for the daily decisions that collectively determine the state of the environment in a conservancy, it has been suggested that their role be reassessed since they are largely failing. Also, because those dependent on livestock production in these areas attain diverse benefits from livestock (i.e. drought power, milk, hides, cultural benefits etc), and because they only sell their livestock to meet cash needs, they are more affected by drought, over-grazing and predation. Since they do not regularly go to market to lessen herd sizes, they are more adversely affected by these events.

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Private livestock farmers, on the other hand, focus on herd turnover, are more capital-intensive, and can afford insurance schemes to offset losses due to drought or predation. These farmers have absolute title to land, conditional to regular monitoring and various sectorial policies, such as those governing livestock vaccination and the export of beef. Dependent on water and pasturage, private livestock farmers are becoming increasingly isolated in the landscape, increasingly operating their farms as closed-systems. This has resulted in less water and less suitable grazing due to increasing bush encroachment.

Hunting and tourism enterprises are variably dedicated to conservation. Most of these properties used to be livestock ranches and current management still depends on water and pasturage for wildlife, in addition to the free movement of game species. These properties benefit from the porous fence, since valuable game species and specially protected species attract visitors and as long as they comply to permit requirements, landowners may benefit from these species. Policies are restrictive however, especially those pertaining to game fences and monitoring by the state. Many respondents continue practicing livestock production, yet regularly benefit from game species on their land, although they do not formally register as game reserves or wildlife management areas. The same goes for freehold conservancies where individual landowners have opted to drop perimeter fences and manage their properties as contiguous units.

Lastly, on resettlement farms, although they are conditioned by the same legislation as private (commercial) farms, emergent farmers still have a long way to go before they can efficiently partake in markets and start generating profits.

These resource governance systems are conditioned by various policies, based mostly on land tenure (Jones 2008, Zimmermann et al. 2014). Incidences of competition and potential disagreement between land and resource users can be linked to conditions of access to land and natural resources rather than how land and resources are used. Similarly, between the ENP and its neighbours, perceptions of land use conflicts were linked not to whether the respondent had livestock or not, but rather to whether they owned the land or only had usufructuary rights over its resources, such as in communal conservancies and on the resettlement farm.

The rationale for an expanded protected area network should therefore facilitate a better fit of these different governance approaches and prioritise a landscape approach to management. A multiplicity of governance types implies that checks and balances are in place since a diverse and more inclusive group of stakeholders are invested in trying to ensure sustainable outcomes of an integrated landscape. The research shows that respondents across the landscape mentioned that a lack of grazing and the poor availability of water contribute to land use conflicts with neighbours and affects the manner in which they govern their land. The challenge lies in assessing whether an expanded protected area network regime or approach to landscape management might offer a better overall fit with the ecosystem services attributes at stake, namely underground water

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provision and pasturage. An expanded protected area network focused on the conservation of ecosystem services needs to allow for multiple land uses, as well as multiple landowners. Those involved in the landscape might need to consider eliminating internal fences and entering multi-tenure systems where land and natural resource management is attained through written agreements based on a shared vision of the landscape.

The conflicts mentioned relating to livestock production issues and human-wildlife conflict could also be avoided by applying an integrated landscape approach across the different governance systems. This would demand cooperative mechanisms that the proposed Parks and Wildlife Management Bill of 2009 makes provision for. Under the Bill, conditions are made for 'protected landscapes' (Jones 2012, Zimmermann et al. 2014). These areas maintain the diversity of landscapes, habitats and species diversity whilst supporting economic growth within local communities amongst a variety of different land uses (Draft Parks and Wildlife Management Bill of 2009). According to the Bill, the state is compelled to maintain a network of protected areas that represent Namibia's biological diversity, landscapes and ecosystems. Also, this network has to be managed for the perpetual protection of such biodiversity, landscapes, seascapes or ecosystems for the benefit of current and future generations (Draft Parks and Wildlife Management Bill of 2009). Zimmermann et al. (2014) contend that this approach, which emphasises cooperation among different stakeholders, and views entire ecological systems as the units of conservation, rather than individually owned properties, has firmly taken root among all stakeholders in conservation in Namibia.

The question is why the Draft Bill has taken so long to come into operation. A possible hindrance to the passage of the Bill is that land rights devolve from tenure, and as a result, not all policies are equally applicable to all land in Namibia (Watson and Odendaal 2009). Simply put, land tenure dictates who has access to use land and natural resources. If private landowners choose to use their land for livestock production and comply with sectorial policy on that regard, no policy, however well drafted, can force them to convert to wildlife production. And why should they, if a mosaic of land uses in a landscape, especially in arid rangelands, is considered more resilient (O'Farrell et al. 2009; 2010, Cumming 2011)? Another possible hindrance lies in the reluctance of the state to fully devolve rights over wildlife to private game farm owners and resident communities (Watson and Odendaal 2009, Zimmermann et al. 2014). Current legislation prescribes the circumstances when specially protected and protected game may be used and by whom. These may only be hunted under the virtue of a permit issued by the MET, with permit allocations being based upon sustainable off-take quotas (Weaver and Peterson 2008). Together with the poor involvement of the state and the ENP in actively promoting the implementation of an expanded protected area network in the study area, this implies that the interest of an integrated conservation landscape is mostly directed by the private sector and private landowners. The reluctance to implement an integrated protected area network could thus be attributable to the state pursuing a

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'back to the barriers' protected area governance approach, recentralisation and the alienation of local level stakeholders' interests (Hutton et al. 2005, Ribot et al. 2006).

Conclusion

I analysed the current land and natural resource governance systems in and around ENP. The systems are conditioned by land tenure and to a lesser extent, land use. Although institutional interplay is evident, pertaining mostly to the use of wildlife, the consideration of ecosystem services is largely overlooked. Wildlife itself is considered a renewable resource and stipulations are made for the sustainable use thereof. Across the governance systems, however, the effectiveness of land and natural resource policies is undermined due to the bureaucracy involved in their implementation and enforcement. The current governance approaches, as isolated institutional approaches in the landscape, do not provide a suitable fit to the ecosystem services attributes of the study area. An integrated approach, as proposed by the Parks and Wildlife Management Bill of 2009 could provide an enhanced fit. Despite the slow passage of the Bill, other initiatives have embraced an integrated approach to incorporating different land uses compatible with biodiversity conservation and under different land tenure. Examples of this are encapsulated in other 'protected landscape conservation areas', such as the Greater Waterberg Landscape, the Greater Fish River Canyon Landscape and the Windhoek Green Belt Landscape, amongst others (Goudie and Viles 2014).

Hindering the passage of the Bill, it appears, is an apparent disinterest by the state to devolve rights over wildlife to landowners and a lack of compliance by livestock farmers to be part of an integrated conservation landscape. This and other issues relating to land tenure and reform are beyond the realms of ecosystem services governance and an expanded protected area network is unlikely to solve these. Also, the top down, private-sector driven approach to formalizing conservation landscapes runs the risk of excluding resident communities and could result in institutional misfit. Rather, the focus should be on identifying the issues that are on a landscape scale, such as management of water catchments, and constructing governance structures that directly fit these. An analysis of social networks and how information is disseminated could provide insight into the possibility of multi-stakeholder forums in the landscape, while an understanding of traditional and Western methods of governance could foster mixed-method approaches.

Conclusion

Protected areas provide a wide range of social, economic and ecological benefits. More than conserving nature, protected areas help us navigate some of today's most pressing issues, including water security, human well-being and climate change. Protected areas are increasingly threatened by development, human encroachment, habitat conversion for agricultural purposes and other human intrusions such as poaching and unregulated recreation. At the same time, we are realising the important contribution of protected areas to ensuring ecological integrity and the importance of achieving conservation goals alongside human development needs.

Considered a pioneer in this regard, Namibia has been increasing the percentage of its landmass dedicated to protected areas and has fostered impressive wildlife population recoveries, including that of the desert-adapted elephant (*Loxodonta africana*) and lion (*Panthera leo*) (NACSO 2015). Simultaneously, it has provided access to land and resources to nearly 200 000 people over the past 25 years (NACSO 2015). This success is attributable to policy reforms in the 1970s and 1990s and to other social, economic and ecological factors. Together these factors contributed to a move away from livestock production and the excessive, uncontrolled hunting of game species, towards the creation of conservancies and private game reserves. As both human and animal populations continue to grow, it has become essential to reassess the different land use categories surrounding protected areas in Namibia. This is not only to ensure sustainability of protected areas but also to safeguard the livelihoods of those dependent on the services that these natural areas provide. An assessment of protected area landscapes needs to include relevant stakeholders and a consideration of the institutions influencing the decision-making context for resource use and landscape planning. This will provide insight into current conflicts and cooperation between the different management approaches since the values attributed to ecosystem services drive land use decision-making and influence landscape planning. It has been suggested that instead of managing protected areas, conservancies and private game reserves as separate entities, they be integrated into conservation landscapes (NACSO 2013).

I used Etosha National Park (ENP) and its surrounding farmlands, conservancies and game reserves as a case study. I evaluated land use conflicts at the border of the ENP, since current conflicts need to be understood and resolved before commencement of an expanded protected area network (EPAN). In order to avoid a top-down, centralised approach to the expansion, relevant stakeholders needed to be identified, and their importance in the decision-making process assessed. In addition, the current land and resource management approaches needed to be considered to provide insight into what was conditioning these governance systems so that an integrated approach to an EPAN could be considered. In particular, my study aimed to answer the following research questions:

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1. What factors contribute to the successful integrated management of protected area landscapes in Namibia?
2. How well does the stakeholder analysis method work to identify stakeholders and their key interests in protected area landscapes?
3. What are the land use challenges and conflicts in the ENP landscape, as experienced by resident communities?
4. What are the affect of institutions on outcomes in the ENP landscape, based on Ostrom's (1990) institutional analysis and development framework?

The literature on integrated conservation and development highlights the need to move away from the disaggregated narrow framing of environmental and social problems toward a systems-based, multi-dimensional approach that incorporates ecological and social dimensions (Gilek et al. 2015). The literature also stresses the need to take a landscape approach when trying to jointly overcome conservation and development challenges (Phillips 2002, Sayer 2009, DeFries and Rosenzweig 2010) with particular emphasis being placed on the importance of including the human or 'social' component in such considerations (McShane and Newby 2004, Chan et al. 2007, WRI 2008, Lawrence 2010, McShane et al. 2011). To achieve sustainable outcomes in these coupled social-ecological systems (SES) in the landscape, multiple individuals must collectively interact with each other, negotiating and self-organising in response to social norms (Ostrom 1990). Also emphasised is the need for improved communication and collaboration among resource users, land managers, policy makers, conservation practitioners and scientists (Daily et al. 2009, de Groot et al. 2010, Briske 2012, Bestelmeyer and Briske 2012, Ban et al. 2013).

The research was therefore approached in an integrated manner, and I considered natural resources and the beneficiaries of their services as embedded in complex SESs. This approach linked the social and ecological systems in the study area, providing a more comprehensive ecological understanding and awareness of the human system, so as to offer insight into a more suitable governance framework (Berkes et al. 2003, Walker et al. 2004, Chapin et al. 2010). Since natural resources are both being used and conserved, I integrated the ecosystem services approach (Turner and Daily 2008) with Ostrom's (2007; 2009) SESF. This enabled me to analytically describe the interactions between the ecological and social systems, providing deeper insight into the system under study. (Chapter 2).

Further, I argued that in order to assess the interactions occurring in a SES, the broader political, social, economic and ecological settings had to be considered (Tsing 2005, Blaikie 2006, McGinnis and Ostrom 2014). The Namibian settings were therefore assessed in a literature review on community-based conservation and the factors that have made these projects mostly successful (Research question 1, Chapter 3). Assessing such interactions is challenging, however, since communities are inherently complex (Agrawal and Gibson 2001) and the particular context in

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which they are embedded affects how costs and benefits are appropriated (West 2006, Scanlon and Kull 2009).

Simply considering context and the complexity of communities is not enough, however and certainly not sufficient to grapple with the joint goals of conservation and development (Barrett 2010, Balmford et al. 2012). Moreover, despite the wide acceptance of people-centred landscape approaches to ecosystem management, the social and institutional concepts lack sufficient coverage in practice (Berkes and Folke 1998, Davidson 2010, Sayer et al. 2013). This undermines the critical need to include resident communities in the planning and implementation of conservation landscapes. It has been shown that in order to plan and manage integrated landscapes; ecosystem services need to be assessed, particularly in dryland ecosystems (MA 2003; 2005). This assessment however depends on the SES under study and the decision-making context for which the ecosystem services are being considered (Fisher et al. 2009). I chose to consider land use related conflicts, i.e. the situations of competition and potential disagreement in land use practices between resource users (Grimble 1998).

Previous studies on land use conflicts surrounding protected areas focused on identifying stakeholders, their perceptions, needs or the main drivers of conflicts (Maikhuri et al. 2000, Stoll-Kleemann 2001a, Harich et al. 2013). Several studies investigate stakeholder perceptions of ecosystem services (Agbenyega et al. 2009, Lamarque et al. 2011, Castro et al. 2011, Petz et al. 2012) but do not link these to conflicts nor is there a connection to protected areas. Specifically, regarding natural resources, Ostrom (1990) argues that in order to match access and use of collective resources to local environment conditions, it is imperative to include local resource units and users in the effort to set rules and regulations. Since there are conflicting interests in collective natural resource governance which are experienced and understood from a variety of legitimate perspectives (see Koontz and Johnson 2004, Norton 2005, Miller et al. 2011, Robinson 2011) it is important to understand the different perspectives of the participants involved in natural resource management (Röling and Jiggins 1997, Rist et al. 2006, Reed et al. 2009, Jones-Walters and Cil 2011).

For this reason, I first identified and categorised the various stakeholder groups and analysed their importance to the protected area network decision-making process by looking at factors such as *position*, *interest* and *power* (Research question 2, Chapter 4). I then assessed land use management issues and conflicts in the study area based on the perceptions of land owners and resource users. Perceptions toward these land use conflicts were also linked to land use and tenure (Research question 3, Chapter 5). Current land and natural resource governance structures were assessed by applying the Institutional Analysis and Development Framework (Ostrom 1990; 2005; 2010, Ostrom et al. 1994) to the various institutions that condition these governance systems (Research question 4, Chapter 6).

Chapter 7

Synthesis of Findings

Firstly, by incorporating the ecosystem services approach (Turner and Daily 2008) into the social-ecological systems framework (Ostrom 2007; 2009), better insight is gained in understanding the linkage between the ecological and social systems. Changes in the broader social-economic-political setting have led to an increase in wildlife management areas and an increase in wildlife populations (see Barnes et al. 2002). A literature review on the political, economic, social and ecological setting that has contributed to these land use changes and the current institutions regulating environmental governance helped identify and understand the drivers of land use change. As mentioned, these drivers relate to crucial interactions within and across the political, economic, social and ecological dimensions and are attributable to policy reforms. Policy reforms involved the devolution of use rights over wildlife at the local level and the implementation of 82 conservancies 1998 (28 983 km², NACSO 2014). The literature review also highlighted that biophysical and socio-economic conditions resulted in minimal opportunity costs of alternative land uses, while existing institutional structures allow for cooperation between the private sector and communal conservancies. Although the successes observed are context specific, the policy reforms and the approach to benefit-sharing and private sector involvement can be emulated in other countries with arid rangelands. Also important is a well-designed project that understands, includes and engages local institutions, enhances the marketable use of the natural resource and ensures the equitable allocation of benefits attained from the resource.

In Chapters 4 – 6, I honed in on the ENP case study. Understanding land owner and resource user viewpoints within their differing contexts provides insight into the opportunities and constraints that face ecosystem service conservation efforts in multifunctional landscapes and the potential for an integrated approach. In attempting such an integrated approach, however, a need lies in first understanding the interface between the ecological and social systems in protected area governance. Since there is a lack of methods to assess the social processes that influence conservation decisions, I opted for a stakeholder analysis (Chapter 4) to integrate local participants involved in the expanded protected area network, and to estimate their importance in the decision-making process. To achieve this, I identified and categorised important stakeholder groups, and quantitatively and qualitatively assessed their relative salience to the protected area decision-making process.

Based on the premise that land use conflicts and management challenges inform decision-making and planning, I assessed these based on a grounded theory approach. The management challenges mentioned (Chapter 5) are significantly linked to primary land use while land use conflicts depend on land tenure. Respondents diverged in the types of conflicts experienced and these related to *production*, *wildlife* and *human* conflicts.

Lastly, I assessed the institutional aspects of a protected area landscape around the ENP. Six distinct land and natural resource governance systems were identified, each variably focused on

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wildlife as a resource. The Nature Conservation Ordinance No. 4 of 1975 and the National Land Policy of 1998 condition access to and use of land. The Parks and Wildlife Management Bill was proposed in 2009 and could potentially provide an integrated framework for an expanded protected area network around ENP. The Bill has, however, been in draft format for nearly a decade. Based on my findings, I conclude that the potential obstructions are attributable to the land tenure system and reluctance on behalf of the state to fully devolve rights over resources to land owners and resident communities.

Limitations of Study

The total size of the ENP (22 270km²) and the length of its perimeter fence (800km), made it logistically impractical, primarily due to time and financial constraints, to cover the entire periphery of the park. Additionally, the northern border is heavily populated, mostly by communal farmers and separated from the ENP by an electrified fence. A concerted effort was made however, to sample relevant stakeholders on the southern and western border where the EPAN will be initiated. This stakeholder analysis approach was more time-consuming and costly than most rapid rural appraisal or participatory rural appraisal approaches (Newing et al. 2011), but did provide more in-depth information, more precision and a deeper understanding of social relations among stakeholders. It is acknowledged, that although the 'snowball technique' was used to identify relevant stakeholders to be included in the study, not all stakeholders were reached. The analysis was also only a snapshot in time with the heterogeneity inherent in communities impossible to grasp entirely.

Despite these limitations, the 12 stakeholder groups currently dealing with land use conflicts on the borders of ENP have been identified. They have been categorised in terms of their interest in the EPAN concept and their relative support or opposition thereof. It has been shown that support for the concept is dependent on land use, while the conflicts experienced relate to *production*, *wildlife* and *human* challenges. These are linked to land tenure, while the causes of these conflicts, as perceived by the participants, are linked to lack of pasturage, poor water supply and the poor maintenance of the ENP fence.

References

- Achterkamp, M. C. And J. F. J. Vos. 2008. Investigating the use of the stakeholder notion in project management literature, a meta-analysis. *International Journal of Project Management* 26: 749-757.
- Adams, W. M., and D. Hulme. 2001. Conservation and communities: Changing narratives, policies and practices in African conservation. In D. Hulme and M. Murphree, editors. *African wildlife and livelihoods: The promise and performance of community conservation*, 9-23. James Currey. Oxford, UK.
- Adams, W. M., and J. Hutton. 2007. People, parks and poverty: Political ecology and biodiversity conservation. *Conservation and Society* 5: 147-183.
- Adams, J. S. and T. O. McShane. 1996. *The myth of wild Africa: Conservation without illusion*. University of California Press. Berkeley, CA.
- Adams, W. M., and M. Mulligan. 2003. *Decolonizing nature: Strategies for conservation in a post-colonial era*. Earthscan. London, UK.
- Adhikari, B. D, and J. C. Lovett. 2006. Institutions and collective action: Does heterogeneity matter in community-based resource management. *Journal of Development Studies* 42: 426-445.
- Agbenyega, O., P. J. Burgess, M. Cook, and J. Morris. 2009. Application of an ecosystem function framework to perceptions of community woodlands. *Land Use Policy* 26: 551-557.
- Agrawal, A. 2001. Common property institutions and sustainable governance of resources. *World Development* 29: 1649-1672.
- Agrawal, A. 2007. Forests, governance, and sustainability: Common property theory and its contributions. *International Journal of the Commons* 1: 111-136.
- Agrawal, A., and C. C. Gibson. 1999. Enchantment and disenchantment: The role of community in natural resource conservation. *World Development* 27: 629-649.
- Agrawal, A., and C. C. Gibson. 2001. The role of community in natural resource conservation. In A. Agrawal and C. C. Gibson, editors. *Communities and the environment: Ethnicity, gender, and the state in community-based conservation*, 1-31. Rutgers University Press. New Brunswick, NJ
- Agrawal, A., and K. Redford. 2006. *Poverty, development, and biodiversity conservation: Shooting in the dark?* Wildlife Conservation Society. New York, NY.
- Agrawal, A., and J. Ribot. 1999. Accountability in decentralization: A framework with South Asian and African cases. *Journal of Developing Areas* 33: 473-502.
- Anderies, J. M., M. A. Janssen, and E. Ostrom. 2004. A framework to analyze the robustness of social-ecological systems from an institutional perspective. *Ecology and Society* 9: 18.
- Andrade, G. S. M., and J. R. Rhodes. 2012. Protected areas and local communities: An inevitable partnership toward successful conservation strategies? *Ecology and Society* 17: 14.
- Andriof, J., and S. Waddock. 2002. Unfolding stakeholder engagement. In J. Andriof, S. Waddock, S. Husted and S. Sutherland Rahman, editors. *Unfolding stakeholder thinking. Theory, responsibility and engagement*, 19-42. Greenleaf Publishing. Sheffield, UK.

- Angula, M., and R. Sherbourne. 2003. Agricultural employment in Namibia: Not the engine of wage employment growth. Institute for Public Policy Research, Briefing Paper. Windhoek, Namibia.
- Arnberger, A., and R. Schoissengeier. 2012. The other side of the border: Austrian local residents' attitudes towards the neighbouring Czech Šumava National Park. *Journal for Nature Conservation* 20: 135-143.
- Arntzen, J., T. Setlhogile, and J. Barnes. 2007. Rural livelihoods, poverty reduction and food security in southern Africa: Is CBNRM the answer? USAID. Washington, DC. [<https://rmportal.net/library/content/frame/rural-livelihoods-poverty-reduction-and-food-security-in-southern-africa-is-cbnrm-the-answer/view>] (Accessed on September 2015).
- Ashley, C. 2000. The impacts of tourism on rural livelihoods: Namibia's experience. Working Paper No. 128. Overseas Development Institute, London. [<http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/2754.pdf>] (Accessed on September 2015).
- Ashley, C., and J. Barnes. 1996. Wildlife use for economic gain: The potential for wildlife to contribute to development in Namibia. DEA Research Discussion Paper No. 12. Directorate of Environmental Affairs, Ministry of Environment and Tourism. Windhoek, Namibia.
- Aswani, S., and P. Weiant. 2004. Scientific evaluation in women's participatory management: Monitoring marine invertebrate refugia in the Solomon Islands. *Human Organization* 63: 301-319.
- Bagnoli, P., G. Timo, and E. Kovács. 2008. People and biodiversity policies, impacts, issues and strategies for policy action. Organisation for Economic Co-operation and Development (OECD). Paris, France. [<http://www.oecd.org/env/resources/peopleandbiodiversitypoliciesimpactsissuesandstrategiesforpolicyaction.htm>] (Accessed on June 2015).
- Bailey, D., J. Gross, E. Laca, L. Rittenhouse, M. Coughenour, D. Swift, and P. Sims. 1996. Mechanisms that result in large herbivore grazing distribution patterns. *Journal of Range Management* 49: 386-400.
- Baland, J-M., and J-P Platteau. 1996. Halting degradation of natural resources: Is there a role for rural communities?. Food and Agriculture Organisation of the United Nations. Rome, Italy.
- Balmford, A., R. Green, and B. Phalan. 2012. What conservationists need to know about farming. *Proceedings of the Royal Society B: Biological Sciences* 279: 2714-2724.
- Ban, N., C. Picard, and A. Vincent. 2008. Moving toward spatial solutions in marine conservation with indigenous communities. *Ecology and Society* 13: 32.
- Ban, N. C., M. Mills, J. Tam, C. C. Hicks, S. Klain, N. Stoeckl, M. C. Bottrill, J. Levine, R. L. Pressey, T. Satterfield, and K. M. A. Chan. 2013. A social-ecological approach to conservation planning: Embedding social considerations. *Frontiers in Ecology and the Environment* 11: 194-202.
- Bandyopadhyay, S., P. Shyamsundar, L. Wang, and M. N. Humavindu. 2004. Do households gain from community-based natural resource management? An evaluation of community conservancies in Namibia. DEA Research Discussion Paper No. 68. Directorate of Environmental Affairs. Windhoek, Namibia.
- Bandyopadhyay, S., J. C. Guzman, and S. Lendelvo. 2010. Communal conservancies and household welfare in Namibia. DEA Research Discussion Paper No. 82. Directorate of Environmental Affairs. Windhoek, Namibia.
- Barnard, P. 1998. Biological diversity in Namibia: A country study. Namibian National Biodiversity Task Force. Windhoek, Namibia.

- Barnard, P., C. J. Brown, A. M. Jarvis, A. Robertson, and L. van Rooyen. 1998. Extending the Namibian protected area network to safeguard hotspots of endemism and diversity. *Biodiversity and Conservation* 7: 531-547.
- Barnes, J., and B. Jones. 2009. Game ranching in Namibia. In H. Suich, B. Child and A. Spenceley, editors. *Evolution and innovation in wildlife conservation: From parks and game ranches to transfrontier conservation areas*, 113-126. Earthscan. London, UK.
- Barnes, J. I., J. Macgregor, and L. C. Weaver. 2002. Economic efficiency and incentives for change within Namibia's community wildlife use initiatives. *World Development* 30: 667-681.
- Barrett, C.B. 2010. Measuring food insecurity. *Science* 327: 825-828.
- Barrett, C. B., and P. Arcese. 1995. Are integrated conservation-development projects (ICDPs) sustainable? On the conservation of large mammals in sub-Saharan Africa. *World Development* 23: 1073-1084.
- Barrett, C. B., K. Brandon, C. Gibson, and H. Gjertsen H. 2001. Conserving tropical biodiversity amid weak institutions. *Bioscience* 51: 497-502.
- Barry, A., G. Born, and G. Weszkalnys. 2008. Logics of interdisciplinarity. *Economy and Society* 37: 20-49.
- Basurto, X., S. Gelcich, and E. Ostrom. 2013. The social-ecological system framework as a knowledge classificatory system for benthic small-scale fisheries. *Global Environmental Change* 23: 1366-1380.
- Baur, I., and C. R. Binder. 2013. Adapting to socioeconomic developments by changing rules in the governance of common property pastures in the Swiss Alps. *Ecology and Society* 18: 60.
- Bennett, N. J., and P. Dearden. 2014. From measuring outcomes to providing inputs: Governance, management, and local development for more effective marine protected areas. *Marine Policy* 50: 96-111.
- Bennett, E. M., G. D. Peterson, and L. J. Gordon. 2009. Understanding relationships among multiple ecosystem services. *Ecology Letters* 12: 1394-1404.
- Berkes, F. 2004. Rethinking community-based conservation. *Conservation Biology* 18: 621-630.
- Berkes, F. 2007. Community-based conservation in a globalized world. *Proceedings of the National Academy of Sciences* 104: 15188-15193.
- Berkes, F., and C. Folke. 1998. *Linking social and ecological systems: Management practices and social mechanisms for building resilience*. Cambridge University Press. Cambridge, UK.
- Berkes, F., J. Colding, and C. Folke. 2000. Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications* 10: 1251-1262.
- Berkes, F., J. Colding, and C. Folke. 2003. *Navigating social-ecological systems: Building resilience for complexity and change*. Cambridge University Press. Cambridge, UK.
- Berry, H. H. 1997a. Historical review of the Etosha region and its subsequent administration as a national park. *Madoqua* 20: 3-12.
- Berry, H. H. 1997b. Aspects of wildebeest (*Connochaetes taurinus*) ecology in Etosha National park: A synthesis for future management. *Madoqua* 20:137-148.
- Bestelmeyer, B. T., and D. D. Briske. 2012. Grand challenges for resilience-based management of rangelands. *Rangeland Ecology and Management* 65: 654-663.

- Bethune, S., and O. C. Ruppel. 2013. Land and agricultural laws and policies relevant for environmental protection in Namibia. In O. C. Ruppel and K. Ruppel-Schlichting, editors. *Environmental law and policy in Namibia: Towards making Africa the tree of life*, 157-170. Orumbonde Press. Windhoek, Namibia.
- Billgren, C., and H. Holmén. 2008. Approaching reality: Comparing stakeholder analysis and cultural theory in the context of natural resource management. *Land Use Policy* 25: 550-562.
- Blaikie, P. 2006. Is small really beautiful? Community-based natural resource management in Malawi and Botswana. *World Development* 34: 1942-1957.
- Bond, I. 2001. CAMPFIRE and the incentives for institutional change. In D. Hulme and M. Murphree, editors. *African wildlife and livelihoods: The promise and performance of community conservation*, 227-243. James Curry. Oxford, UK.
- Bond, I., B. Child, D. de la Harpe, B. Jones, J. Barnes, and H. Anderson. 2004. Private land contribution to conservation in southern Africa. In B. Child, editor. *Parks in Transition: Biodiversity, rural development and the bottom line*, 29-62. Earthscan. London, UK.
- Borgerhoff Mulder, M., and P. Coppolillo. 2005. *Conservation: Linking ecology, economics and culture*. Princeton University Press. Princeton, NJ.
- Borrini-Feyerabend, G. 1996. Collaborative management of protected areas: Tailoring the approach to the context. International Conservation Union (IUCN). Gland, Switzerland.
- Borrini-Feyerabend, G., A. Kothari, and G. Oviedo. 2004. Indigenous and local communities and protected areas: Towards equity and enhanced conservation. Guidance on policy and practice for co-managed protected areas and community conserved areas, No. 11. IUCN. Gland, Switzerland.
- Boudreaux, K. C. 2010. Community conservation in Namibia: Devolution as a tool for the legal empowerment of the poor. Working Paper No. 10-64. Mercatus Center, George Mason University, Arlington, VA. [<http://mercatus.org/sites/default/files/publication/wp1064-community-conservation-in-namibia.pdf>] (Accessed on April 2014).
- Boumans, R., R. Costanza, J. Farley, M. A. Wilson, R. Portela, J. Rotmans, F. Villa, and M. Grasso. 2002. Modelling the dynamics of the integrated earth system and the value of global ecosystem services using the GUMBO model. *Ecological Economics* 41: 529-560.
- Boyd, C. S., and T. J. Svejcar. 2009. Managing complex problems in rangeland ecosystems. *Rangeland Ecology and Management* 62: 491-499.
- Brandon, K., K. Redford, and S. Sanderson. 1998. *Parks in peril: People, politics, and protected areas*. Island Press. Covelo, CA.
- Brashares, J. S., C. D. Golden, K. Z. Weinbaum, C. B. Barrett, and G. V. Okello. 2011. Economic and geographical drivers of wildlife consumption in rural Africa. *Proceedings of the National Academy of Sciences* 108: 13931-13936.
- Brechin, S., P. Wilshusen, C. Fortwangler, and P. West. 2003. *Contested nature: Promoting international biodiversity conservation with social justice in the Twenty-first Century*. State University Press of New York. New York, NY.
- Briske, D. D. 2012. Translational science partnerships: Key to environmental stewardship. *BioScience* 62: 449-450.
- Brock, W. B., and S. R. Carpenter. 2007. Panaceas and diversification of environmental policy. *Proceedings of the National Academy of Sciences* 104: 15206-15211.

- Brockington, D. and K. Scholfield. 2010. The work of conservation organisations in sub-Saharan Africa. *Journal of Modern African Studies* 48: 1-33.
- Bromley, D. W. 1992. The commons, common property, and environmental policy. *Environmental and Resource Economics* 2: 1-17.
- Brooks, J. S., M. A. Franzen, M. Borgerhoff Mulder, C. H. Holmes, and M. Grote. 2006. Development as a conservation tool: Evaluating ecological, economic, behavioural, and attitudinal outcomes. *Systematic Review* No. 20. Centre for Evidence-Based Conservation. Birmingham, UK.
- Brooks, J. S., K. A. Waylen, and M. B. Mulder. 2012. How national context, project design, and local community characteristics influence success in community-based conservation projects. *Proceedings of the National Academy of Sciences* 109: 21265-21270.
- Brooks, J., K. Waylen, and M. Borgerhoff Mulder. 2013. Assessing community-based conservation projects: A systematic review and multi-level analysis of attitudinal, behavioural, ecological and economic outcomes. *Environmental Evidence* 2: 1-34.
- Brosius, P. 2004. Seeing natural and cultural communities: Technologies of visualization in conservation. *Workshop on Environmental Politics in Culture, Power and Political Economy*. University of California. Berkeley, CA.
- Brown, K. 2002. Innovations for conservation and development. *Geographical Journal* 168: 6-17.
- Brown, J., and N. Bird. 2011. Sustainable natural resource management in Namibia: Successful community-based wildlife conservation. *Development Progress Report*. Overseas Development Institute. London, UK. [<http://www.odi.org/publications/5185-namibia-environmental-management-wildlife-conservation-development-progress>] (Accessed on April 2014).
- Brown, C., S. Canney, R. Martin, and P. Tarr. 2005. Strengthening the system of national protected areas project in Namibia. Subcontract No. 3: Conservation Needs Assessment, Revised Report, The Environment and Development Group, Oxford, UK. [<http://www.met.gov.na/SPAN/Documents/Conservation%20Needs%20Assessment.pdf>] (Accessed on October 2015).
- Brugha, R., and Z. Varvasovszky. 2000. Stakeholder analysis: A review. *Health Policy and Planning* 15: 239-246.
- Bruner, A. G., R. E. Gullison, R. E. Rice, G. A. B. da Fonseca. 2001. Effectiveness of parks in protecting tropical biodiversity. *Science* 291: 125-127.
- Carpenter, S. R., N. F. Caraco, D. L. Corell, R. W. Howarth, A. N. Sharpley, and V. H. Smith. 1998. Nonpoint pollution of surface waters with phosphorous and nitrogen. *Ecological Applications* 8: 559-568.
- Carpenter, S. R., K. J. Arrow, S. Barrett, R. Biggs, W. A. Brock, A. S. Crépin, G. Engström, C. Folke, T. P. Hughes, N. Kautsky, C.-Z. Li, G. McCarney, K. Meng, K.-G. Mäler, S. Polasky, M. Scheffer, J. Shogren, T. Sterner, J. R. Vincent, B. Walker, A. Xepapadeas, and A. D. Zeeuw. 2012. General resilience to cope with extreme events. *Sustainability* 4: 3248-3259.
- Castro, A. J., B. Martín-López, M. García-Llente, P. A. Aguilera, E. López, and J. Cabello. 2011. Social preferences regarding the delivery of ecosystem services in a semiarid Mediterranean region. *Journal of Arid Environments*. 75: 1201-1208.
- Chabal, P. and J-P. Daloz. 1999. *Africa works: Disorder as political instrument*. James Currey. Oxford, UK.

- Chambers, R. 1997. *Whose reality counts? Putting the first last*. Intermediate Technology Publications. London, UK.
- Chan, K. M. A., R. M. Pringle, J. Ranganathan, C. L. Boggs, Y. L. Chan, P. R. Ehrlich, P. K. Haff, N. E. Heller, K. Al-Khafaji, and D. P. Macmynowski. 2007. When agendas collide: Human welfare and biological conservation. *Conservation Biology* 21: 59-68.
- Chape, S., J. Harrison, M. Spalding, and I. Lysenko. 2005. Measuring the extent and effectiveness of protected areas as an indicator for meeting global biodiversity targets. *Philosophical Transactions of the Royal Society of London Series B: Biological Sciences* 360: 443-455.
- Chapin, M. 2004. Can we protect natural habitats without abusing the people who live in them? *World Watch* 17: 17-31.
- Chapin, F. S., S. R. Carpenter, G. P. Kofinas, C. Folke, N. Abel, W. C. Clark, P. Olsson, D. M. S. Smith, B. Walker, O. R. Young, and F. Berkes. 2010. Ecosystem stewardship: Sustainability strategies for a rapidly changing planet. *Trends in Ecology and Evolution* 25: 241-249.
- Charmaz, K. 2006. *Constructing grounded theory: A practical guide through qualitative analysis. Introducing qualitative methods*. Sage Publications. London, UK.
- Chatre, A., and A. Agrawal. 2009. Trade-offs and synergies between carbon storage and livelihood benefits from forest commons. *Proceedings of the National Academy of Sciences* 106: 17667-17670.
- Cheung, W. W. L., and U. R. Sumaila. 2008. Trade-offs between conservation and socio-economic objectives in managing a tropical marine ecosystem. *Ecological Economics* 66: 193-210.
- Chevalier, J. M., and D. Buckles. 1999. Conflict management: A heterocultural perspective. In D. Buckles, editor. *Conflict and collaboration in natural resource management*, 15-46. International Development Research Centre and World Bank Institute. Washington, DC. [http://www.idrc.ca/acb/showdetl.cfm?&DID=6&Product_ID=389&CATID=15] (Accessed on November 2014).
- Chevalier, J. M., and D. J. Buckles. 2008. *SAS2: A guide to collaborative inquiry and social engagement*. Sage Publications. New Delhi, India.
- Child, B. 1988. *The role of wildlife utilisation in the sustainable development of semi-arid rangelands in Zimbabwe*. PhD Thesis. Worcester College, Oxford University. Oxford, UK.
- Child, B. 2004. The Luangwa Integrated Development Project, Zambia. In C. Fabricius, E. Kock, H. Magome and S. Turner, editors. *Rights, resources and rural development: Community-based natural resource management in southern Africa*, 235-247. Earthscan. London, UK.
- Child, B., and D. B. Weaver. 2006. Marketing hunting and tourism joint ventures in community areas. *Participatory Learning and Action* 55: 37-44.
- Christelis, G., and W. Struckmeier. 2011. *Groundwater in Namibia: An explanation to the hydrogeological map*. Ministry of Agriculture, Water and Rural Development. Windhoek, Namibia.
- Clarke, T., and S. Clegg. 1998. *Changing paradigms: The transformation of management knowledge for the 21st Century*. Harper Collins. London, UK.
- Clarkson, M. B. E. 1995. A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review* 20: 92-117.
- Cleaver, F. 1999. Paradoxes of participation: Questioning participatory approaches to development. *Journal of International Development* 11: 597-612.

- Cleaver, F. 2000. Moral ecological rationality, institutions and the management of common property resources. *Development and Change* 31: 361-383.
- Clover, J., and S. Eriksen. 2009. The effects of land tenure change on sustainability: Human security and environmental change in southern African savannas. *Environmental Science and Policy* 12: 53-70.
- Corbin, J. M., and A. L. Strauss. 2008. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publications, London, UK.
- Costanza, R. 2008. Ecosystem services: multiple classification systems are needed. *Biological Conservation* 141: 350-352.
- Costanza, R., R. d'Arge, R. S. de Groot, S. Farber, M. Grasso, and B. Hannon. 1997. The value of the world's ecosystem services and natural capital. *Nature* 387: 253-260.
- Cox, M. 2014. Applying a social-ecological system framework to the study of the Taos Valley irrigation system. *Human Ecology* 42: 311-324.
- Cox, J. C., E. Ostrom, and J. M. Walker. 2010. Bosses and kings: Asymmetric power in paired common-pool and public good games. Paper presented at the Biennial Social Dilemmas Conference, Rice University, Houston, September 23-25.
- Creswell, J. W. 2009. Mapping the field of mixed methods research. *Journal of Mixed Methods Research* 3: 95-108.
- Cumming, G. S. 2011. *Spatial resilience in social-ecological systems*. Springer. Dordrecht, Netherlands.
- Cumming, G. S., P. Olsson, F. S. Chapin III, and C. S. Holling. 2013. Resilience, experimentation, and scale mismatches in social-ecological landscapes. *Landscape Ecology*, 28: 1139-1150.
- Da Fonseca, G. A. B., C. M. Rodriguez, G. Midgley, J. Busch, L. Hannah, and M. A. Mittermeier. 2007. No forest left behind. *PLoS Biology* 5: 1645-1646.
- Daily, G. C. 1997. *Nature's services: Societal dependence on natural ecosystems*. Island Press. Covelo, CA.
- Daily, G. C., S. Alexander, P. R. Ehrlich, L. Goulder, J. Lubchenco, P. A. Matson, H. A. Mooney, S. Postel, S. H. Schneider, D. Tilman, and G. M. Woodwell. 1997. Ecosystem services: Benefits supplied to human societies by natural ecosystems. *Issues in Ecology* 1: 1-18.
- Daily, G. C., and P. A. Matson. 2008. Ecosystem services: From theory to implementation. *Proceedings of the National Academy of Sciences* 105: 9455-9456.
- Daily, G. C., S. Polasky, J. Goldstein, P. M. Kareiva, H. A. Mooney, L. Pejchar, T. H. Ricketts, J. Salzman, and R. Shallenberger. 2009. Ecosystem services in decision making: Time to deliver. *Frontiers in Ecology and the Environment* 7: 21-28.
- Darvill, R. and Z. Lindo. 2016. The inclusion of stakeholders and cultural ecosystem services in land management trade-off decisions using: An ecosystem services approach. *Landscape Ecology* 31: 533-545.
- Davidson, D. J. 2010. The applicability of the concept of resilience to social systems: Some sources of optimism and nagging doubts. *Society and Natural Resources* 23: 1135-1149.
- Davidson, A., R. Mufati, and U. Ndjavera. 2006. Community-managed tourism small enterprises in Namibia. *Participatory Learning and Action* 55: 45-55.
- de Groot, R. S., 1992. *Functions of nature: Evaluation of nature in environmental planning, management and decision-making*. Wolters Noordhoff BV. Groningen, The Netherlands.

- de Groot, R., 2006. Function-analysis and valuation as a tool to assess land use conflicts in planning for sustainable, multi-functional landscapes. *Landscape and Urban Planning* 75: 175-186.
- de Groot, R. S., M. A. Wilson, and R. M. J. Boumans. 2002. A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics* 41: 393-408.
- de Groot, R. S., R. Alkemade, L. Braat, L. Hein, and L. Willemen. 2010. Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecological Complexity* 7: 260-272.
- DeFries, R., and C. Rosenzweig. 2010. Toward a whole-landscape approach for sustainable land use in the tropics. *Proceedings of the National Academy of Sciences* 107: 19627-19632.
- DeFries, R., A. J. Hansen, A. C. Newton, and M. C. Hansen. 2005. Increasing isolation of protected areas in tropical forests over the past twenty years. *Ecological Applications* 15: 19-26.
- DeFries, R., K. K. Karanth, and S. Pareeth. 2010. Interactions between protected areas and their surroundings in human-dominated tropical landscapes. *Biological Conservation* 143: 2870-2880.
- DeGeorges, P. A., and B. K. Reilly. 2009. The realities of community based natural resource management and biodiversity conservation in sub-Saharan Africa. *Sustainability* 1: 734-788.
- Díaz, S., F. Quétier, D. M. Cáceres, S. F. Trainor, N. PérezHarguindeguy, M. S. Bret-Harte, B. Finegan, M. Peña-Claros, and L. Poorter. 2011. Linking functional diversity and social actor strategies in a framework for interdisciplinary analysis of nature's benefits to society. *Proceedings of the National Academy of Sciences* 108: 895-902.
- Dieckmann, U. 2007. *Hai||om in the Etosha region: A history of colonial settlement, ethnicity and nature conservation*. John Meinert Printing. Windhoek, Namibia.
- Dieckmann, U. 2013. Land, boreholes, and fences: The development of commercial livestock farming in the Outjo District, Namibia. In M. Bollig, M. Schnegg, and H-P Wotzka, editors. *Pastoralism in Africa: Past, present, and future*, 257-288. Berghahn Books. Oxford, UK
- Dougill, A. J., E. D. G. Fraser, J. Holden, K. Hubacek, C. Prell, M. S. Reed, S. Stagl, and L. C. Stringer. 2006. Learning from doing participatory rural research: Lessons from the Peak District National Park. *Journal of Agricultural Economics* 57: 259-275.
- Dressler, W., B. Buscher, M. Schoon, D. Brockington, T. Hayes, C. A. Kull, J. McCarthy, and K. Shrestha. 2010. From hope to crisis and back again? A critical history of the global CBNRM narrative. *Environmental Conservation* 37: 5-15.
- Dry, G. C. 2009. The South African balance sheet for the wildlife ranching industry. Southern African Wildlife Management Association Symposium. Thaba Nchu, South Africa.
- du Toit, R. 1999. 'Savé Valley Conservancy as a model for the conservation of biodiversity in the African semi-rigid savanna. IFC-SMA Programme Conference. Washington, DC.
- Dudley, N. 2008. Guidelines for applying protected area management categories. IUCN, Gland, Switzerland.
- Durbin, J., B. T. B Jones, and M. W Murphree. 1997. Namibian community-based natural resource management programme. Project Evaluation. WWF. Gland, Switzerland.

- Dzingirai, V. 2003. 'CAMPFIRE is not for Ndebele migrants': The impact of excluding outsiders from CAMPFIRE in the Zambezi Valley, Zimbabwe. *Journal of Southern African Studies* 29: 445-459.
- Eden, C., and F. Ackermann. 1998. *Making strategy: The journey of strategic management*. Sage Publications. London, UK.
- Emerton, L. 2001. The nature of benefits and the benefits of nature: Why wildlife conservation has not economically benefited communities in Africa. In D. Hulme and M. W. Murphree, editors. *African wildlife and livelihoods: The promise and performance of community conservation*, 208-226. James Currey. Oxford, UK.
- Epstein, G., J. M. Vogt, S. K. Mincey, M. Cox, and B. Fisher. 2013. Missing ecology: Integrating ecological perspectives with the social-ecological system framework. *International Journal of the Commons* 7: 432-453.
- Ervin, J., K. J. Mulongoy, K. Lawrence, E. Game, D. Sheppard, P. Bridgewater, G. Bennett, S. B. Gidda, and P. Bos. 2010. *Making protected areas relevant: A guide to integrating protected areas into wider landscapes, seascapes and sectoral plans and strategies*. Convention on Biological Diversity, Technical Series No. 44. Montreal, Canada. [<https://www.cbd.int/doc/publications/cbd-ts-44-en.pdf>] (Accessed on November 2015).
- Fabricius, C., E. Koch, H. Magome, and S. Turner. 2004. *Rights, resources and rural development: Community-based natural resource management in southern Africa*. Earthscan. London, UK.
- Falk, T., D. Lohmann, and N. Azebaze, 2016. Congruence of appropriation and provision in collective water provision in Central Namibia. *International Journal of the Commons*. 10: 71-118.
- Fensham, R. J., and R. J. Fairfax. 2008. Water-remoteness for grazing relief in Australian arid-lands. *Biological Conservation* 141: 1447-1460.
- Ferraro, P. J. and Pattanayak, S. K. 2006. Money for nothing? A call for empirical evaluation of biodiversity conservation investments. *PLoS Biology* 4: 482-488.
- Fisher, B., R. K. Turner, and P. Morling. 2009. Defining and classifying ecosystem services for decision making. *Ecological Economics* 68: 643-653.
- Foley, J. A., R. DeFries, G. P. Asner, C. Barford, G. Bonan, S. R. Carpenter, F. S. Chapin, M. T. Coe, G. C. Daily, H. K. Gibbs, J. H. Helkowski, T. Holloway, E. A. Howard, C. J. Kucharik, C. Monfreda, J. A. Patz, I. C. Prentice, N. Ramankutty, and P. K. Snyder. 2005. Global consequences of land use. *Science* 309: 570-574.
- Folke, C., T. Hahn, P. Olsson, and J. Norberg. 2005. Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources* 30: 441-473.
- Forman, R.T. 1995. Some general principles of landscape and regional ecology. *Landscape ecology* 10: 133-142.
- Förster, J., J. Barkmann, R. Fricke, S. Hotes, M. Kleyer, S. Kobbe, D. Kübler, C. Rumbaer, M. Siegmund-Schultze, R. Seppelt, J. Settele, J. H. Spangenberg, V. Tekken, T. Václavík, and H. Wittmer. 2015. Assessing ecosystem services for informing land-use decisions: a problem-oriented approach. *Ecology and Society* 20: 31.
- Freeman, R. E. 1984. *Strategic management: A stakeholder approach*. Basic Books. New York, NY.
- Freeman, R. E. 2010. *Strategic management: A stakeholder approach*. Cambridge University Press. New York, NY.

- Friedman, A. L., and S. Miles. 2002. Developing stakeholder theory. *Journal of Management Studies* 39: 1-21.
- Friedman, A. L., and S. Miles. 2004. Stakeholder theory and communication practice. *Journal of Communication Management* 9: 89-97.
- Friedman, A. L., and S. Miles. 2006. *Stakeholders: Theory and practice*. Oxford University Press. Oxford, UK.
- Fu, B., K. Wang, Y. Lu, S. Liu, K. Ma, L. Chen, and G. Liu. 2004. Entangling the complexity of protected area management: The case of Wolong Biosphere Reserve, southwestern China. *Environmental Management* 33: 788-798.
- Furze, B., T. D. Lacy, and J. Birkhead. 1996. *Culture, conservation and biodiversity: The social dimension of linking local level development and conservation through protected areas*. John Wiley and Sons.
- Gasaway, W. C., K. T. Gasaway, and H. H. Berry. 1996. Persistent low densities of plain's ungulates in Etosha National Park, Namibia: Testing the food regulation hypothesis. *Canadian Journal of Zoology* 74: 1556-1572.
- Gaston, K. J., S. F. Jackson, L. Cantu-Salazar, and G. Cruz. 2008. The ecological performance of protected areas. *Annual Review of Ecology, Evolution, and Systematics* 39: 93-113.
- Gelcich, S., G. Edward-Jones, and M. Kaiser. 2005. Importance of attitudinal differences among artisanal fishers toward co-management and conservation of marine resources. *Conservation Biology* 19: 865-875.
- Gibson, C. C. 1999. *Politicians and poachers: The political economy of wildlife policy in Africa*. Cambridge University Press. Cambridge, UK.
- Gibson, D., 2001. *Wildlife monitoring in north-western Namibia*. WWF. Windhoek, Namibia.
- Gilek, M., M. Karlsson, O. Udovik, and S. Linke. 2015. Science and policy in the governance of Europe's marine environment: The impact of Europeanization, regionalization and the ecosystem approach to management. *Governing Europe's marine environment. Europeanization of regional seas or regionalization of EU policies*.
- Giller, K., C. Leeuwis, J. Andersson, W. Andriessse, A. Brouwer, P. Frost, P. Hebinck, I. Heitkönig, M. K. van Ittersum, N. Koning, R. Ruben, M. Slingerland, H. Udo, T. Veldkamp, C. van de Vijver, M. T. van Wijk, and P. Windmeijer. 2008. Competing claims on natural resources: What role for science? *Ecology and Society* 13: 34.
- Glaser, B. G., and A. L. Strauss. 1967. *The development of grounded theory*. Alden. Chicago, IL.
- Goldman, R. L., H. Tallis, P. Kareiva, and G. C. Daily. 2008. Field evidence that ecosystem service projects support biodiversity and diversify options. *Proceedings of the National Academy of Sciences* 105: 9445-9448.
- Goudie, A. S., and H. A. Viles. 2015. *Landscapes and landforms of Namibia*. Springer. Dordrecht, The Netherlands.
- Grandin, B. E. 1991. The Maasai: Socio-historical context and group ranches. In S. Bekure, P. N. de Leeuw, B. E. Grandin and P. J. H. Neate, editors. *Maasai Herding: An analysis of the livestock production system of Maasai pastoralists in Eastern Kajiado District, Kenya*, 21-39. ILCA Systems. Addis Ababa, Ethiopia.
- Granek, E. F., and M. A. Brown. 2005. Co-management approach to marine conservation in Moheli, Comoros Islands. *Conservation Biology* 19: 1724-1732.

- Grant, C. C., R. Bengis, D. Balfour, M. Peel, W. Davies-Mostert, H. Killian, R. Little, I. Smit, M. E. Garäi, M. Henley, B. Anthony, and P. Hartley. 2008. Controlling the distribution of elephants. In R. J. Scholes and K. G. Mennell, editors. *Elephant management: A scientific assessment for South Africa*, 329-369. Wits University Press. Johannesburg, South Africa.
- Grimble, R. 1998. *Stakeholder methodologies in natural resource management*. Natural Resource Institute. The University of Greenwich. Kent, UK.
- Grimble, R., and K. Wellard. 1997. Stakeholder methodologies in natural resource management: A review of principles, contexts, experiences and opportunities. *Agricultural Systems* 55: 173-119.
- Government of the Republic of Namibia (GRN). 1996a. Nature Conservation Amendment Act. 1333.
- Government of the Republic of Namibia (GRN). 1996b. Nature Conservation Amendment Act. 1446.
- Guerry, A. D., S. Polasky, J. Lubchenco, R. Chaplin-Kramer, G. C. Daily, R. Griffin, M. Ruckelshaus, I. J. Bateman, A. Duraiappah, T. Elmqvist, M. W. Feldman, C. Folke, J. Hoekstra, P. M. Kareiva, B. L. Keeler, S. Li, E. McKenzie, Z. Ouyang, B. Reyers, T. H. Ricketts, J. Rockström, H. Tallis, and B. Vira. 2015. Natural capital and ecosystem services informing decisions: From promise to practice. *Proceedings of the National Academy of Sciences* 112: 7348-7355.
- Gutiérrez, N. L., R. Hilborn, and O. Defeo. 2011. Leadership, social capital and incentives promote successful fisheries. *Nature* 470: 386-390.
- Haines-Young, R. H., and M. Potschin. 2010. The links between biodiversity, ecosystem services and human well-being. In D. G. Raffaelli and C. L. J. Frid, editors. *Ecosystem ecology: A new synthesis*, 110-139. Cambridge University Press. Cambridge, UK.
- Haller, T., M. Galvin, P. Meroka, J. Alca, and A. Alvarez. 2008. Who gains from community conservation?: Intended and unintended costs and benefits of participative approaches in Peru and Tanzania. *The Journal of Environment and Development* 17: 118-144.
- Hannah, L., G. F. Midgley, and D. Millar. 2002. Climate change: Integrated conservation strategies. *Global Ecology and Biogeography* 11: 485-495.
- Hannah, L., B. Rakotosamimanana, J. Ganzhorn, R. A. Mittermeier, S. Olivieri, L. Iyer, S. Rajaobelina, J. Hough, F. Andriamialisoa, I. Bowles, and G. Tilken. 1998. Participatory planning, scientific priorities, and landscape conservation in Madagascar. *Environmental Conservation* 1: 30 - 36.
- Harcourt, A. H., S. A. Parks, and R. Woodroffe. 2001. Human density as an influence on species/area relationships: Double jeopardy for small African reserves? *Biodiversity and Conservation* 19: 1011-1026.
- Harich, F. K., A. C. Treydte, J. Sauerborn, and E. H. Owusu. 2013. People and wildlife: Conflicts arising around the Bia Conservation Area in Ghana. *Journal for Nature Conservation* 21: 342-349.
- Harris, G., S. Thirgood, J. G. C. Hopcraft, J. P. Cromsigt, and J. Berger. 2009. Global decline in aggregated migrations of large terrestrial mammals. *Endangered Species Research* 7: 55-76.
- Harrington, R., C. Anton, T. P. Dawson, F. de Bello, C. K. Feld, J. R. Haslett, T. Kluvankova-Oravská, A. Kontogianni, S. Lavorel, G. W. Luck, M. D. A. Rounsevell, M. J. Samways, J. Settele, M. Skourtos, J. H. Spangenberg, M. Vandewalle, M. Zobel, and P. A. Harrison. 2010. Ecosystem services and biodiversity conservation: Concepts and a glossary. *Biodiversity and Conservation* 19: 2773-2790.

- Hausner, V. H., G. Brown, and E. Læg Reid. 2015. Effects of land tenure and protected areas on ecosystem services and land use preferences in Norway. *Land Use Policy* 49: 446-461.
- Havel, J.J. 1986. Land use conflicts. In B. Dell, A. J. M. Hopkins and B. B. Lamont, editors. *Resilience in Mediterranean-type ecosystems, tasks for vegetation science*, 147-160. Dr W Junk Publishers. Dordrecht, The Netherlands.
- Hayes, T. M. 2006. Parks, people, and forest protection: An institutional assessment of the effectiveness of protected areas. *World Development* 34: 2026-2075.
- Hayward, M., and G. Kerley, 2009. Fencing for conservation: Restriction of evolutionary potential or a riposte to threatening processes? *Biological Conservation* 142: 1-13.
- Hazzah, L., M. Borgerhoff Mulder, and L. Frank. 2009. Lions and warriors: Social factors underlying declining African lion populations and the effect of incentive-based management in Kenya. *Biological Conservation* 142: 2428-2437.
- Heidrich, O., J. Harvey, and N. Tollin. 2009. Stakeholder analysis for industrial waste management systems. *Waste Management* 29: 965-973.
- Hiedanpää, J. 2002. European-wide conservation versus local well-being: The reception of the Natura 2000 Reserve Network in Karvia, SW-Finland. *Landscape and Urban Planning* 61: 113-123.
- Hinkel, J., P. W. G. Bots, and M. Schlüter. 2014. Enhancing the Ostrom social-ecological system framework through formalization. *Ecology and Society* 19:51.
- Hinkel, J., M. E. Cox, M. Schlüter, C. R. Binder, and T. Falk. 2015. A diagnostic procedure for applying the social-ecological systems framework in diverse cases. *Ecology and Society* 20(1): 32.
- Hobley, M. 1996. *Participatory forestry: The process of change in India and Nepal*. Overseas Development Institute. London, UK.
- Holland, M. B., F. de Koning, M. Morales, L. Naughton-Treves, B. E. Robinson, and L. Suárez. 2014. Complex tenure and deforestation: Implications for conservation incentives in the Ecuadorian Amazon. *World Development* 55: 21-36.
- Holmes, G. 2013. What role do private protected areas have in conserving global biodiversity? Sustainability Research Institute Paper, No. 46. School of Earth and Environment, University of Leeds, Leeds, UK. [[http://eprints.whiterose.ac.uk/76968/1/Holmes\(2013\)PPAs.pdf](http://eprints.whiterose.ac.uk/76968/1/Holmes(2013)PPAs.pdf)] (Accessed on October 2015).
- Homewood, K., K. Patti, and T. Pippa. 2009. *Staying Maasai: Livelihoods, conservation and development in east African rangelands*. Springer. New York, NY.
- Honey-Rosés, J., and L. H. Pendleton. 2013. A demand driven research agenda for ecosystem services. *Ecosystem Services* 5: 160-162.
- Horwich, R. H., and J. Lyon. 2007. Community conservation: Practitioners' answer to critics. *Oryx* 41: 376-385.
- Hughes, T. P., M. J. Rodrigues, D. R. Bellwood, D. Ceccarelli, O. Hoegh-Guldberg, L. McCook, N. Moltschanivskyi, M. S. Pratchett, R. S. Steeneck, and B. Willis. 2007. Phase shifts, herbivory, and the resilience of coral reefs to climate change. *Current Biology* 17: 360 – 365.
- Hulme, D., and M. Murphree. 2001. *African wildlife and livelihoods: The promise and performance of community conservation*. James Currey. Oxford, UK.

- Hutchinson, A. J., L. H. Johnston, and J. D. Breckon. 2010. Using QSR-NVivo to facilitate the development of a grounded theory project: An account of a worked example. *International Journal of Social Research Methodology* 13: 283-302.
- Hutton, J. W. M. Adams, and J. C. Murombedzi. 2005. Back to the barriers? Changing narratives in biodiversity conservation. *Forum for Developmental Studies* 2: 341-370.
- International Development Consultancy (IDC). 2005. Study on land productivity and economic farming units. Report for the Ministry of Agriculture, Water and Forestry. Windhoek, Namibia.
- IUCN 2014. The World Database on Protected Areas (WDPA). UNEP World Conservation Monitoring Centre, Cambridge, UK. [www.protectedplanet.net] (Accessed on September 2015).
- Janssen, M. A., J. M. Anderies, and E. Ostrom. 2007. Robustness of social-ecological systems to spatial and temporal variability. *Society and Natural Resources* 20: 307-322.
- Jepsen, A. L., and P. Eskerod. 2009. Stakeholder analysis in projects: Challenges in using current guidelines in the real world. *International Journal of Project Management* 27: 335-343.
- Johnson, C., K. Parker, D. Heard, and M. Gillingham. 2002. Movement parameters of ungulates and scale-specific responses to the environment. *Journal of Animal Ecology* 71: 225-235.
- Jokisch, A. 2009. A buffer for Etosha: The attitudes towards a buffer zone on private farmland at the south-western border of the Etosha National Park (Namibia) and chances for its implementation. Doctoral dissertation. Universität Oldenburg, Germany.
- Jones, B. T. B. 1999. Rights, revenues and resources: The problems and potential of conservancies as community wildlife management institutions in Namibia. *Evaluating Eden Series. Discussion Paper No.2*. International Institute for Environment and Development (IIED). London, UK. [<http://pubs.iied.org/pdfs/7795IIED.pdf>] (Accessed on April 2014).
- Jones, B. T. B. 2001. The evolution of a community-based approach to wildlife management at Kunene, Namibia. In D. Hulme and M. W. Murphree, editors. *African wildlife and livelihoods: The promise and performance of community conservation*, 160-176. James Currey. Oxford, UK.
- Jones, B. T. B. 2003. Conservation and mobile people: Conflicting paradigms and agendas in north-west Namibia. [www.tilcepa.org/CDDocs/Linkages-Stream1/html/NamibiaJones.htm] (accessed April 2014).
- Jones, B. T. B. 2004. CBNRM, poverty reduction and sustainable livelihoods: Developing criteria for evaluating the contribution of CBNRM to poverty reduction and alleviation in southern Africa. CASS/PLAAS. Harare, Zimbabwe and Cape Town, South Africa [<http://www.plaas.org.za/sites/default/files/publications-pdf/CBNRM%2007.pdf>] (Accessed on November 2015).
- Jones B. T. B. 2008. Community wildlife management in southern Africa: A review of current research activity in the region and of recent literature. International Institute for Environment and Development (IIED). London, UK.
- Jones, B. 2012. Recognition and support of ICCAs in Namibia. In A. Kothari, C. Corrigan, H. Jonas, A. Neumann, and H. Shrumm, editors. *Recognising and supporting territories and areas conserved by indigenous peoples and local communities: Global overview and national case studies*. Technical Series no. 64. Secretariat of the Convention on Biological Diversity, ICCA Consortium, Kalpavriksh, and Natural Justice, Montreal, Canada.
- Jones, B. T. B., and A. Mosimane. 2007. Promoting integrated community based natural resource management as a means to combat desertification: The Living in a Finite Environment (LIFE) Project, Namibia. IUCN/USAID FRAME. Washington, DC.

- Jones, B. T. B., and L. C. Weaver. 2009. CBNRM in Namibia: Growth, trends, lessons and constraints. In H. Suich, B. Child and A. Spenceley, editors. *Evolution and innovation in wildlife conservation: Parks and game ranches to transfrontier conservation areas*, 223-241. Earthscan/IUCN. London, UK.
- Jones-Walters, L., and A. Çil. 2011. Biodiversity and stakeholder participation. *Journal for Nature Conservation* 19: 327-329.
- Joppa, L. N., S. R. Loarie, and S. L. Pimm. 2008. On the protection of "Protected Areas". *Proceedings of the National Academy of Sciences* 105: 6673-6678.
- Kahneman, D. 2003. Maps of bounded rationality: Psychology for behavioural economics. *American Economic Review* 93: 1449-1475.
- Kareiva, P., and M. Marvier M. 2012. What is conservation science? *BioScience* 62: 962-969.
- Kellert, S. R., J. N. Mehta, S. A. Ebbin, and L. L. Lichtenfeld. 2000. Community natural resource management: Promise rhetoric and reality. *Society and Natural Resources* 13: 705-715.
- Kinnaird, M. F., and T. G. O'brien. 2012. Effects of private-land use, livestock management, and human tolerance on diversity, distribution, and abundance of large African mammals. *Conservation Biology* 26: 1026-1039.
- Koontz, T. M., and E. M. Johnson. 2004. One size does not fit all: Matching breadth of stakeholder participation to watershed group accomplishments. *Policy Sciences* 37: 185-204.
- Kovács, E., E. Kelemen, Á. Kalóczkai, K. Margóczy, G. Pataki, J. Gébert, G. Málovics, B. Balázs, Á. Roboz, E. Krasznai Kovács, and B. Mihók. 2015. Understanding the links between ecosystem service trade-offs and conflicts in protected areas. *Ecosystem Services* 12: 117-127.
- Kramer, R., C. van Schaik, and J. Johnson. 1997. *Last stand: Protected areas and the defense of tropical biodiversity*. Oxford University Press. New York, NY.
- Krug, W. 2001. Private supply of protected land in southern Africa: A review of markets, approaches, barriers and issues. OECD Working Group on Economic Aspects of Biodiversity, World Bank, Washington, D.C. [<http://earthmind.net/values/docs/private-protected-land-southern-africa.pdf>] (Accessed on April 2014).
- Krugman, H. 2001. Fundamental issues and the threats to sustainable development in Namibia. Research Discussion Paper 46. Directorate of Environmental Affairs. Ministry of Environment and Tourism. Windhoek, Namibia. [<http://www.the-eis.com/data/RDPs/RDP46.pdf>] (Accessed on August 2014).
- Lamarque, P., U. Tappeiner, C. Turner, M. Steinbacher, R. D. Bardgett, U. Szukics, M. Schermer, and S. Lavorel. 2011. Stakeholder perceptions of grassland ecosystem services in relation to knowledge on soil fertility and biodiversity. *Regional Environmental Change* 11: 791-804.
- Lange, G., J. I. Barnes, and D. J. Motinga. 1997. Cattle numbers, biomass, productivity, and land degradation in the commercial farming sector of Namibia, 1915–1995. Directorate of Environmental Affairs, Ministry of Environment and Tourism. Windhoek, Namibia.
- Laven, D.N., N. J. Mitchell, and D. Wang. 2005. Conservation practice at the landscape scale. *George Wright Forum* 22: 5-9.
- Lawrence, A. 2010. *Taking stock of nature*. Cambridge University Press. Cambridge, UK.
- Lawrence, A., K. Paudel, R. Barnes, and Y. Malla. 2006. Adaptive value of participatory biodiversity monitoring in community forestry. *Environmental Conservation* 33: 325-334.

- Living in a Finite Environment (LIFE). 2007. Namibia: Living in a Finite Environment (LIFE) Plus Project. USAID. Washington, DC. [http://pdf.usaid.gov/pdf_docs/Pdach400.pdf] (Accessed on February 2015).
- Likert, R. 1932. A technique for the measurement of attitudes. Columbia University. New York, NY.
- Limburg, K. E., R. V. O'Neill, R. Costanza, and S. Farber. 2002. Complex systems and valuation. *Ecological Economics* 41: 409-420.
- Lindenmayer, D., R. J. Hobbs, R. Montague-Drake, J. Alexandra, A. Bennett, M. Burgman, P. Cale, A. Calhoun, V. Cramer, P. Cullen, D. Driscoll, L. Fahrig, J. Fischer, J. Franklin, Y. Haila, M. Hunter, P. Gibbons, S. Lake, G. Luck, C. MacGregor, S. McIntyre, R. M. Nally, A. Manning, J. Miller, H. Mooney, R. Noss, H. Possingham, D. Saunders, F. Schmiegelow, M. Scott, D. Simberloff, T. Sisk, G. Tabor, B. Walker, J. Wiens, J. Woinarski, and E. Zavaleta. 2008. A checklist for ecological management of landscapes for conservation. *Ecology Letters* 11: 78-91.
- Lindeque, P. M. and P. C. B. Turnbull. 1994. Ecology and epidemiology of anthrax in the Etosha National Park, Namibia. *Onderstepoort Journal of Veterinary Research* 61: 71-83.
- Lindsey, P. A., R. Alexander, L. G. Frank, A. Mathieson, and S. S. Romanach. 2006. Potential of trophy hunting to create incentives for wildlife conservation in Africa where alternative wildlife-based land uses may not be viable. *Animal Conservation* 9:283-291.
- Lindsey, P. A., P. Roulet, and S. S. Romanach. 2007. Economic and conservation significance of the trophy hunting industry in sub-Saharan Africa. *Biological Conservation* 134: 455-469.
- Lindsey, P. A., C. P. Havemann, R. Lines, L. Palazy, A. E. Price, T. A. Retief, T. Rhebergen, and C. van der Waal. 2013. Determinants of persistence and tolerance of carnivores on Namibian ranches: Implications for conservation on Southern African private lands. *PLoS ONE* 8: 1-14.
- Liu, J., T. Dietz, S. R. Carpenter, M. Alberti, C. Folke, E. Moran, A. N. Pell, P. Deadman, T. Kratz, J. Lubchenco, E. Ostrom, Z. Ouyang, W. Provencher, C. L. Redman, S. H. Schneider, and W. W. Taylor. 2007. Complexity of coupled human and natural systems. *Science* 317: 1513-1516.
- Locke, H. and P. Dearden 2005. Rethinking protected area categories and the new paradigm. *Environmental Conservation* 32: 1-10.
- Long, S. A. and B. T. B. Jones. 2004. Contextualising CBNRM in Namibia. In S. A. Long, editor. *Livelihoods and CBNRM in Namibia: The findings of the WILD Project. Final Technical Report of the Wildlife Integration for Livelihood Diversification Project.* Ministry of Environment and Tourism. Windhoek, Namibia.
- Lund, J., and T. Treue. 2008. Are we getting there? Evidence of decentralized forest management from the Tanzanian Miombo woodlands. *World Development* 36: 2780-2800.
- Millennium Ecosystem Assessment (MA). 2003. *Millennium ecosystem assessment, ecosystems and human well-being: A framework for assessment.* Island Press. Washington, DC.
- Millennium Ecosystem Assessment (MA). 2005. *Ecosystems and human well-being: Synthesis.* Island Press. Washington, DC.
- Madzudzo, E., J. HaBarad, and F. Matose. 2006. Outcomes of community engagement in community-based natural resource management programmes. PLAAS.
- Maikhuri, R. K., S. Nautiyal, K. S. Rao, K. Chandrasekhar, R. Gavali, and K. G. Saxena. 2000. Analysis and resolution of protected area: People conflicts in Nanda Devi Biosphere Reserve, India. *Environmental Conservation* 27: 43-53.

- Mamdani, M. 1996. *Citizen and subject: Contemporary Africa and the legacy of late colonialism*. Princeton University Press, Princeton, NJ.
- Mansuri, G., and V. Rao. 2003. *Evaluating community-based and community-driven development: A critical review of the evidence*. Development Research Group. The World Bank. Washington, DC.
- Marchant, R. 2010. Understanding complexity in savannas: Climate, biodiversity and people. *Current Opinion in Environmental Sustainability* 2: 101-108.
- Margules, C., and R. Pressey. 2000. Systematic conservation planning. *Nature* 405: 243-253.
- Marker, L. L., G. L. Mills, and D. W. MacDonald. 2003. Factors influencing perceptions of conflict and tolerance toward cheetahs on Namibian farmlands. *Conservation Biology* 17: 1290-1298.
- Marks, S., 2001. Back to the future: Some unintended consequences of Zambia's community-based wildlife program (ADMADE). *Africa Today* 48: 121-141.
- Martinez-Harms, M. J., B. A. Bryan, P. Balvanera, E. A. Law, J. R. Rhodes, H. P. Possingham, and K. A. Wilson. 2015. Making decisions for managing ecosystem services. *Biological Conservation* 184:229-238.
- Martino, D. 2001. Buffer zones around protected areas: A brief literature review. *Electronic Green Journal* 1: 15.
- Marzano, M., D. N. Carss, and S. Bell. 2006. Working to make interdisciplinarity work: Investing in communication and interpersonal relationships. *Journal of Agricultural Economics* 57: 185-197.
- Mascia, M. B. 2003. The human dimension of coral reef marine protected areas: recent social science research and its policy implication. *Conservation Biology* 17: 630-632.
- Mathevet, R., and A. Mauchamp. 2005. Evidence-based conservation: Dealing with social issues. *Trends in Ecology and Evolution* 20: 422-423.
- McGinnis, M. D., and E. Ostrom. 2014. Social-ecological system framework: Initial changes and continuing challenges. *Ecology and Society* 19: 30-42.
- McShane, T. O., and S. A. Newby. 2004. Expecting the unattainable: The assumptions behind ICDPs. In T. O. McShane and M. P. Wells, editors. *Getting biodiversity projects to work: Towards more effective conservation and development*, 49-74. Columbia University Press. New York, NY.
- McShane, T., and M. P. Wells. 2004 *Getting Biodiversity Projects to Work: Towards more effective conservation and development*. Columbia University Press. New York, NY.
- McShane, T.O., P. D. Hirsch, T. C. Trung, A. N. Songorwa, A. Kinzig, B. Monteferri, D. Mutekanga, H. V. Thang, J. L. Dammert, M. Pulgar-Vidal, M. Welch-Devine, J. Peter Brosius, P. Coppolillo, and S. O'Connor. 2011. Hard choices: Making trade-offs between biodiversity conservation and human well-being. *Biological Conservation* 144: 966-972.
- Meinzen-Dick, R. 2007. Beyond panaceas in water institutions. *Proceedings of the National Academy of Sciences* 104: 15200-15205.
- Mendelsohn, J. 2006. *Farming systems in Namibia*. Research and Information Services of Namibia (RAISON). Windhoek, Namibia [http://www.environment-namibia.net/tl_files/pdf_documents/selected_publications/Farming%20Systems%20in%20Namibia_Mendelsohn_2006.pdf] (Accessed on December 2015).
- Mendelsohn, J., A. Jarvis, C. Roberts, and T. Robertson. 2002. *Atlas of Namibia: A portrait of the land and its people*. David Philip Publishers. Cape Town, South Africa.

- Mendelsohn, J., A. Jarvis, C. Roberts, and T. Robertson. 2003. *Atlas of Namibia: A portrait of the land and its people*. David Philip Publishers. Cape Town, South Africa.
- Mendelsohn, J., L. Shixwameni, and U. Nakamhela. 2011. An overview of communal land tenure in Namibia: Unlocking its economic potential. Research and Information Services of Namibia (RAISON). Windhoek, Namibia.
[<https://www.bon.com.na/CMSTemplates/Bon/Files/bon.com.na/d2/d2d1748a-1e9f-4b9a-8291-94c8589e52d7.pdf>] (Accessed on August 2015).
- Menzel, S., and J. Teng. 2010. Ecosystem services as a stakeholder-driven concept for conservation science. *Conservation Biology* 24: 907-909.
- Ministry of Environment and Tourism (MET) 2009. National policy on human-wildlife conflict management. Directorate of Parks and Wildlife Management. Windhoek, Namibia
- MET. 2010. State of protected areas in Namibia: A review of progress and challenges. Ministry of Environment and Tourism, Directorate of Parks and Wildlife Management, Windhoek, Namibia.
[<http://www.met.gov.na/Documents/State%20of%20the%20Parks%20Report%20LOW%20RE S!!!.pdf>] (Accessed on February 2015).
- MET 2014. Fifth National Report to the Convention on Biological Diversity (2010-2014). Ministry of Environment and Tourism, Directorate of Parks and Wildlife Management, Windhoek, Namibia.
[<https://www.cbd.int/doc/world/na/na-nr-05-en.pdf>] (Accessed on November 2015).
- MET. 2014. Namibia's second national biodiversity strategy and action plan 2013 – 2022. Ministry of Environment and Tourism, Department of Environmental Affairs, Government of the Republic of Namibia. Windhoek, Namibia.
- Milder, J. C., A. K. Hart, P. Dobie, J. Minai, and C. Zaleski. 2014. Integrated landscape initiatives for African agriculture, development, and conservation: A region-wide assessment. *World Development* 54: 68-80.
- Miller, T. R., B. A. Minter, and L. C. Malan. 2011. The new conservation debate: A descriptive and normative analysis. *Biological Conservation* 144: 948-957.
- Mitchell, R. K., B. R. Agle, and D. J. Wood. 1997. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review* 22: 853-886.
- Mizutani, F., E. Muthiani, P. Kristjanson, and H. Recke. 2005. Impact and value of wildlife in pastoral livestock production systems in Kenya: Possibilities for healthy ecosystem conservation and livestock development for the poor. In S. Osofsky, S. Cleaveland, W. Karesh, M. Kock, P. Nyhus, L. Starr and A. Yang, editors. *Conservation and development interventions at the wildlife/livestock interface: Implications for wildlife, livestock and human health*, 121-132. IUCN. Gland, Switzerland.
- Ministry of Natural Resources and Tourism (MNRT). 2008. Action research into poverty impacts of participatory forest management (ARPIP). Ministry of Natural Resources and Tourism. United Republic of Tanzania.
- Mosimane, A. W. 2007. Conservancies benefitting communities through various activities to alleviate poverty: A synthesis report. CBNRM Report Series. University of Namibia. Windhoek, Namibia.
- Moyo, S., P. O'Keefe, and M. Sill. 1993. *The southern Africa environment*. Earthscan. London, UK.
- Murphree, M. W. 1994. Communities as resource management institutions. *International Institute for Environment and Management Gatekeeper Series*, No 36. London, UK.

- Murphree, M. W. 2000. Boundaries and borders: The question of scale in the theory and practice of common property management. VIIIth biennial conference of the International Association for the Study of Common Property. Bloomington, IN.
- Murphree, M. W. 2000. Boundaries and borders: The question of scale in the theory and practice of common property management. VIIIth biennial conference of the International Association for the Study of Common Property. Bloomington, IN.
- Murphree, M. W. 2002. Protected areas and the commons. *Common Property Resource Digest* 60: 1-3.
- Mushove, P., and C. Vogel. 2005. Heads or tails? Stakeholder analysis as a tool for conservation area management. *Global Environmental Change* 15: 184-198.
- Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca, and J. Kent. 2000. Biodiversity hotspots for conservation priorities. *Nature* 403: 853-858.
- Namibian Association of CBNRM Support Organizations (NACSO). 2004. Namibia's communal conservancies: A review of progress and challenges. Namibian Association of CBNRM Support Organisations. Windhoek, Namibia.
- Namibian Association of CBNRM Support Organizations (NACSO). 2013. Community conservation in Namibia: A review of communal conservancies, community forests and other CBNRM initiatives. 2013 Annual Report. Namibian Association of CBNRM Support Organisations. Windhoek, Namibia. [http://www.nacso.org.na/SOC_2013/index.php] (Accessed on September 2015).
- NACSO. 2014. The state of community conservation in Namibia: A review of communal conservancies, community forests and other CBNRM initiatives. Annual Report 2013, Namibian Association of CBNRM Support Organisations (NACSO), Windhoek, Namibia. [http://www.nacso.org.na/dwnlds/refs/SOC_2013.pdf] (Accessed on April 2015).
- NACSO. 2015. The state of community conservation in Namibia - a review of communal conservancies, community forests and other CBNRM initiatives (2014/15 Annual Report). NACSO, Windhoek. [http://www.nacso.org.na/dwnlds/refs/SOC_2015.pdf] (Accessed on February 2016).
- Namibia Statistics Agency (NSA). 2016. Gross domestic product: Second quarter 2016. [[http://cms.my.na/assets/documents/Second_Quarter_GDP_2016_\(1\).pdf](http://cms.my.na/assets/documents/Second_Quarter_GDP_2016_(1).pdf)] (Accessed on 21 November 2016)
- Nagendra, H. 2007. Drivers of reforestation in human-dominated forests. *Proceedings of the National Academy of Sciences* 104: 15218-15223.
- Nagendra, H., and E. Ostrom, 2012. Polycentric governance of multifunctional forested landscapes. *International Journal of the Commons* 6: 2.
- Nagendra, H., and E. Ostrom. 2014. Applying the social-ecological system framework to the diagnosis of urban lake commons in Bangalore, India. *Ecology and Society* 19: 67.
- Namukonde, N., and R. N. Kachali. 2015. Perceptions and attitudes of local communities towards Kafue National Park, Zambia. *Parks* 21: 25-36.
- Nassl, M., and J. Löffler. 2015. Ecosystem services in coupled social-ecological systems: Closing the cycle of service provision and societal feedback. *Ambio* 44: 737-749.
- Nastran, M. 2014. Stakeholder analysis in a protected natural park: Case study from Slovenia. *Journal of Environmental Planning and Management* 57: 1359-1380.

- Nastran, M. 2015. Why does nobody ask us? Impacts on local perception of a protected area in designation, Slovenia. *Land Use Policy* 46: 38-49.
- Naughton-Treves, L., M. B. Holland, and K. Brandon. 2005. The role of protected areas in conserving biodiversity and sustaining local livelihoods. *Annual Review of Environment and Resources* 30: 219-52.
- Naughton-Treves, L., N. Alvarez-Berr, K. Brandon, A. Bruner, M. B. Holland, C. Ponce, M. Saenz, L. Suarez, and A. Treves. 2006. Expanding protected areas and incorporating human resource use: A study of 15 forest parks in Ecuador and Peru. *Sustainability: Science, Practice, and Policy* 2:2.
- Neely, C., S. Bunning, and A. Wilkes. 2009. Review of evidence on drylands pastoral systems and climate change: Implications and opportunities for mitigation and adaptation. Food and Agriculture Organisation of the United Nations: Rome, Italy. [<http://www.fao.org/3/a-i1135e.pdf>] (Accessed on October 2015).
- Nelson, F. 2010. Democratizing natural resource governance: Searching for institutional change. In F. Nelson, editor. *Community rights, conservation and contested lands: The politics of natural resource governance in Africa*, 310-333. Earthscan. Washington, DC.
- Nelson, F., and A. Agrawal. 2008. Patronage or participation? Community-based natural resource management reform in Sub-Saharan Africa. *Development and Change* 39: 557-585.
- Nelson, E., G. Mendoza, J. Regetz, S. Polasky, H. Tallis, D. R. Cameron, K. M. A. Chan, G. C. Daily, J. Goldstein, P. M. Kareiva, E. Lonsdorf, R. Naidoo, T. H. Ricketts, and M. R. Shaw. 2009. Modeling multiple ecosystem services, biodiversity conservation, commodity production, and tradeoffs at landscape scales. *Frontiers in Ecology and the Environment* 7: 4-11.
- Nesongano, C., and G. Kalunduka. 2006. An institutional framework for land reform in Namibia. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). Natural Resources Management and Rural Development. Windhoek, Namibia. [http://www.met.gov.na/Documents/041_Framework%20for%20land%20reform%20_PTT.pdf] (Accessed on September 2015).
- Neville, B. A., S. J. Bell, and G. J. Whitwell. 2011. Stakeholder salience revisited: Refining, redefining, and refueling an underdeveloped conceptual tool. *Journal of Business Ethics* 102: 357-378.
- Newing, H., C. M. Eagle, R. K. Puri, and C. W. Watson. 2011. *Conducting research in conservation: A social science perspective*. Routledge. Abingdon, UK.
- Newmark, W. D. 2008. Isolation of African protected areas. *Frontiers in Ecology and the Environment* 6: 321-328.
- Namibia Natural Resource Consortium (NNRC). 2002. *Namibia's natural resource sector: A contribution to Vision 2030*. National Planning Commission. Windhoek, Namibia.
- Norgaard, R. B. 2010. Ecosystem services: From eye-opening metaphor to complexity blinder. *Ecological Economics* 69:1219-1227.
- North, D. 1990. *Institutions, institutional change and economic performance*. Cambridge University Press, Cambridge, UK.
- Norton, B. G., 2005. *Sustainability: Philosophy of adaptive ecosystem management*. University of Chicago Press, Chicago, IL.
- Norton-Griffiths, M. 2007. How many wildebeest do you need? *World Economics* 8: 41-64.

- Nott, C. And M. Jacobsohn. 2004. Key issues in Namibia's conservancy movement. In C. Fabricius, E. Koch, H. Magome and S. Turner, editors. Rights, resources and rural development: Community based natural resource management in southern Africa, 194-199. Earthscan. London, UK.
- Namibia Statistics Agency (NSA) 2013. Namibia Population and Housing Census 2011. Government of the Republic of Namibia. [<http://nsa.org.na/microdata1/index.php/catalog/19>] (Accessed on September 2015).
- O'Farrell, P. J., P. M. J. Anderson, S. J. Milton, and W. R. J. Dean. 2009. Human response and adaptation to drought in the arid zone: Lessons from southern Africa. *South African Journal of Science* 105: 34-39.
- O'Farrell, P. J., B. Reyers, D. C. Le Maitre, S. J. Milton, B. Egoh, A. Maherry, C. Colvin, D. Atkinson, W. De Lange, J. N. Blignaut, and R. M. Cowling. 2010. Multi-functional landscapes in semi arid environments: Implications for biodiversity and ecosystem services. *Landscape Ecology* 25:1231-1246.
- Oates, J. F. 1995. The dangers of conservation by rural development: A case study from the forests of Nigeria. *Oryx* 29: 115-122.
- Oates, J. F. 1999. *Myth and reality in the rain forest: How conservation strategies are failing in West Africa*. University of California Press. Berkeley, CA.
- Ogbaharya, D. 2006. A capability theory of CBNRM: The case of Namibia's Communal Conservancy Program. International Conference of the Human Development and Capability Association. Groningen, Netherlands.
- Opdam, P., I. Coninx, A. Dewulf, E. Steingröver, C. Vos, and M. van der Wal, 2015. Framing ecosystem services: Affecting behaviour of actors in collaborative landscape planning? *Land Use Policy* 46:223-231.
- Oppenheim, A. N. 2003. *Questionnaire design interviewing and attitude measurement*. Basic Books. New York, NY.
- Osgood, C. E., P. H. Tannenbaum, and G. J. Suci. 1957 *The measurement of meaning*. University of Illinois Press. Urbana, IL.
- Ostrom, E. 1990. *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press. Cambridge, UK.
- Ostrom, E., J. Burger, C. B. Field, R. B. Norgaard, and D. Policansky. 1999. Revisiting the commons: Local lessons, global challenges. *Science* 284: 278-282.
- Ostrom, E. 2005. *Understanding institutional diversity*. Princeton University Press, Princeton, New Jersey, USA.
- Ostrom, E. 2007. A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences* 104: 15181-15187.
- Ostrom, E. 2009. A general framework for analyzing sustainability of social-ecological systems *Science* 325: 419-422.
- Ostrom, E., R. Gardner, and J. Walker. 1994. *Rules, games and common-pool resources*. University of Michigan Press. Ann Arbor, MI.
- Ostrom, E., J. Burger, C. B. Field, R. B. Norgaard, and D. Policansky. 1999. Revisiting the commons: Local lessons, global challenges. *Science* 284: 278-282.
- Paavola, J. 2007. Institutions and environmental governance: A re-conceptualization. *Ecological Economics* 63: 93-103.

- Paavola, J. and K. Hubacek. 2013. Ecosystem services, governance, and stakeholder participation: An introduction. *Ecology and Society* 18: 42.
- Padgee, A., Y. Kim, and P. J. Daugherty. 2006. What makes community forestry management successful: A meta-study from community forests throughout the world. *Society and Natural Resources* 19: 33-52.
- Palomo, I., B. Martín-López, M. Potschin, R. Haines-Young, and C. Montes. 2013. National parks, buffer zones and surrounding lands: Mapping ecosystem service flows. *Ecosystem Services* 4: 104-116.
- Partelow, S. 2016. Coevolving Ostrom's social-ecological systems (SES) framework and sustainability science: Four key co-benefits. *Sustainability Science* 11: 399-410.
- Pascual, U., J. Phelps, E. Garmendia, K. Brown, E. Corbera, A. Martin, E. Gomez-Baggethun, and R Muradian. 2014. Social equity matters in payments for ecosystem services. *BioScience* 64: 1027-1036.
- Persha, L., A. Agrawal, and A. Chhatre. 2011. Social and ecological synergy: Local rulemaking, forest livelihoods, and biodiversity conservation. *Science* 331: 1606 - 1608.
- Petursson, J. G., P. Vedeld, and A. Vatn. 2013. Going transboundary? An institutional analysis of transboundary protected area management challenges at Mt Elgon, East Africa. *Ecology and Society* 18: 28.
- Petz, K., E. L. Minca, S. E. Werners, and R. Leemans. 2012. Managing the current and future supply of ecosystem services in the Hungarian and Romanian Tisza River Basin. *Regional Environmental Change* 12: 689-700.
- Phillips, A. 2002. Management guidelines for IUCN category V protected areas: Protected landscapes/seascapes. IUCN. Gland, Switzerland.
- Pimbert, M. P., and J. N. Pretty. 1997. Parks, people and professionals: Putting 'participation' into protected-area management. In K. B. Ghimire and M. P. Pimbert, editors. *Social change and conservation. Environmental politics and impacts of national parks and protected areas*, 297-330. Earthscan. London, UK.
- Pimm, S. L., M. Ayres, A. Balmford, G. Branch, K. Brandon, T. Brooks, R. Bustamante, R. Costanza, R. Cowling, L. M. Curran, A. Dobson, S. Farber, G. A. B. da Fonseca, C. Gascon, R. Kitching, J. McNeely, T. Lovejoy, R. A. Mittermeier, N. Myers, J. A. Patz, B. Raffle, D. Rapport, P. Raven, C. Roberts, J. P. Rodriguez, A. B. Rylands, C. Tucker, C. Safina, C. Samper, M. L. J. Stiassny, J. Supriatna, D. H. Wall, and D. Wilcove. 2001. Can we defy nature's end? *Science* 293: 2207-2208.
- Platteau, J. P. 2004. Behind the market stage where real societies exist - Part I: The role of public and private order institutions. *Journal of Development Studies* 30: 533.
- Polski, M. M., and E. Ostrom. 1999. An institutional framework for policy analysis and design. Working Paper W98-27. Indiana University, Bloomington, Indiana, USA. [<https://mason.gmu.edu/~mpolski/documents/PolskiOstromIAD.pdf>] (Accessed on September 2015)
- Poteete, A. R., and E. Ostrom. 2004. Heterogeneity, group size, and collective action: The role of institutions in forest management. *Development and Change* 35: 435-461.
- Poteete, A. R., M. A. Janssen, and E. Ostrom. 2010. *Working together: Collective action, the commons, and multiple methods in practice*. Princeton University Press. Princeton, NJ.

- Prell, C., K. Hubacek, M. S. Reed, T. P. Burt, J. Holden, N. Jin, C. Quinn, and J. Sendzimir. 2007. If you have a hammer everything looks like a nail: Traditional versus participatory model building. *Interdisciplinary Science Reviews* 32: 263-282.
- Prell, C., M. S. Reed, and K. Hubacek. 2009. Stakeholder analysis and social network analysis in natural resource management. *Society and Natural Resources* 22: 501-518.
- Prendergast, J. R., R. M. Quinn, J. H. Lawton, B. C. Eversham, and D. W. Gibbons. 1993. Rare species, the coincidence of diversity hotspots and conservation strategies. *Nature* 365: 335-337.
- Pretty, J. 2003. Social capital and the collective management of resources. *Science* 302: 1912-1914.
- Pretty, J., and D. Smith. 2004. Social capital in biodiversity conservation and management. *Conservation Biology* 18: 631-638.
- Pretty, J. N., I. Guijt, J. Thompson, and I. Scoones. 1995. *Participatory learning and action: A trainer's guide*. International Institute for Environment and Development. London, UK.
- Primmer, E., And E. Furman. 2012. Operationalising ecosystem service approaches for governance: Do measuring, mapping and valuing integrate sector-specific knowledge systems? *Ecosystem Services* 1: 85 - 92.
- Primmer, E., P. Jokinen, M. Blicharska, D. N. Barton, R. Bugter, and M. Potschin. 2015. Governance of ecosystem services: A framework for empirical analysis. *Ecosystem Services* 16: 158-166.
- Rastogi, A., R. Badola, S. Ainul Hussain, and G. M. Hickey. 2010. Assessing the utility of stakeholder analysis to protected areas management: The case of Corbett National Park, India. *Biological Conservation* 143: 2956-2964.
- Rastogi, A., S. Thapliyal, and G. M. Hickey. 2014. Community action and tiger conservation: Assessing the role of social capital. *Society and Natural Resources* 27: 1271-1287.
- Raudsepp-Hearne, C., G. D. Peterson, and E. M. Bennett. 2010. Ecosystem service bundles for analyzing tradeoffs in diverse landscapes. *Proceedings of the National Academy of Sciences* 107: 5242-5247.
- Rechlin, M. A. and D. Taylor. 2008. *Community-based Conservation: Is it more effective, efficient and sustainable?* Technical Report. The Gordon and Betty Moore Foundation. [<http://www.ansab.org/wp-content/uploads/2010/07/moore.pdf>] (Accessed on April 2014).
- Redford, K. H. 1991. The ecologically noble savage. *Orion* 9: 24-29.
- Redford, K. H. 1992. The empty forest. *Bioscience* 42: 412-422.
- Redford, K. H., and S. E. Sanderson. 2000. Extracting humans from nature. *Conservation Biology* 14: 1362-1364.
- Redpath, S. M., J. Young, A. Evely, W. M. Adams, W. J. Sutherland, A. Whitehouse, A. Amar, R. A. Lambert, J. D. C. Linnell, A. Watt, and R. J. Gutiérrez. 2013. Understanding and managing conservation conflicts. *Trends in Ecology and Evolution*. 28: 100-109.
- Reed, M. S. 2008. Stakeholder participation for environmental management: A literature review. *Biological Conservation* 141: 2417-2431.
- Reed, M. S., A. Graves, N. Dandy, H. Posthumus, K. Hubacek, J. Morris. C. Prell, C. H. Quinn, and L. C. Stringer. 2009. Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management* 90: 1933-1949.

- Reed, M. S., L. C. Stringer, A. J. Dougill, J. S. Perkins, J. R. Athlapheng, K. Mulale, and N. Favretto. 2015. Reorienting land degradation towards sustainable land management: Linking sustainable livelihoods with ecosystem services in rangeland systems. *Journal of Environmental Management* 151: 472-485.
- Reid, H. 2002. Contractual national parks: Meeting conservation and development objectives in South Africa and Australia. PhD Thesis. Durrell Institute of Conservation and Ecology, University of Kent. Canterbury, UK.
- Ribot, J. 2004. Waiting for democracy: The politics of choice in natural resource decentralisation. World Resources Institute. Washington, DC. [http://pdf.wri.org/wait_for_democracy.pdf] (Accessed on June 2014).
- Ribot, J. 2006. Choose democracy: Environmentalists' socio-political responsibility. *Global Environmental Change* 16: 115-119
- Ribot, J. C., A. Agrawal, and A. M. Larson. 2006. Recentralizing while decentralizing: How national governments reappropriate forest resources. *World Development* 34:1864-1886.
- Rihoy, E., and B. Maguranyanga. 2007. Devolution and democratisation of natural resource management in Southern Africa: A comparative analysis of CBNRM policy processes in Botswana and Zimbabwe. Centre for Applied Social Sciences and Programme for Land and Agrarian Studies. Harare, Zimbabwe/Cape Town, South Africa. [<http://www.plaas.org.za/sites/default/files/publications-pdf/CBNRM%2018.pdf>] (Accessed on June 2014).
- Robards, M. D., M. L. Schoon, C. L. Meek, and N. L. Engle. 2011. The importance of social drivers in the resilient provision of ecosystem services. *Global Environmental Change* 21: 522-529.
- Robinson, J. G. 2011. Ethical obligations, pragmatism, and sustainability in real world conservation. *Biological Conservation* 144: 958-965.
- Robinson, B. E., M. B. Holland, and L. Naughton-Treves. 2014. Does secure land tenure save forests? A meta-analysis of the relationship between land tenure and tropical deforestation. *Global Environmental Change* 29: 281-293.
- Roe, D., F. Nelson, and C. Sandbrook. 2009. Community management of natural resources in Africa: Impacts, experiences and future directions. *Natural Resource Issues* No. 18, International Institute for Environment and Development (IIED). London, UK. [<http://pubs.iied.org/pdfs/17503IIED.pdf>] (Accessed on April 2014).
- Rozemeijer, N. 2003. CBNRM in Botswana: Revisiting the assumptions after 10 years of implementation. IUCN/SNV Support Programme in Botswana. Gaborone, Botswana.
- Ruckelshaus, M., E. McKenzie, H. Tallis, A. Guerry, G. Daily, P. Kareiva, S. Polasky, T. Ricketts, N. Bhagabati, S. A. Wood, and J. Bernhardt. 2015. Notes from the field: Lessons learned from using ecosystem service approaches to inform real-world decisions. *Ecological Economics* 115:11-21.
- Rudd, M. A. 2004. An institutional framework for designing and monitoring ecosystem-based fisheries management policy experiments. *Ecological Economics* 48: 109 - 124.
- Ruttan, L. M. 2006. Sociocultural heterogeneity and the commons. *Current Anthropology* 47: 843-853.
- Ruttan, L. M. 2008. Economic heterogeneity and the commons: Effects on collective action and collective goods provisioning. *World Development* 36: 969-985.
- Sanderson, E. W., M. Jaiteh, M. A. Levy, K. H. Redford, A. V. Wannebo, and G. Woolmer. 2002. The human footprint and the last of the wild. *Bioscience* 52: 891-904.

- Sandker, M., B. M. Campbell, Z. Nzooh Z, T. Sunderland, V. Amougou, L. Defo, and J. Sayer. 2009. Exploring forest wildlife conservation scenarios in Central Africa. *Biodiversity Conservation* 18: 2875-2892.
- Sarkar, S., and M. Montoya. 2011. Beyond parks and reserves: The ethics and politics of conservation with a case study from Peru. *Biological Conservation* 144: 979-988.
- Sayer, J. A. 2009. Reconciling conservation and development: Are landscapes the answer? *Biotropica* 41: 649-652.
- Sayer, J., T. Sunderland, J. Ghazoul, J-L. Pfund, D. Sheil, E. Meijaard, M. Venter, A. K. Boedhihartono, M. Day, C. Garcia, C. van Oosten, and L. E. Buck. 2013. Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses. *Proceedings of the National Academy of Sciences* 110: 8349-8356.
- Scanlon, L. J., and C. A. Kull. 2009. Untangling the links between wildlife benefits and community-based conservation at Torra Conservancy, Namibia. *Development Southern Africa* 26: 75-93.
- Schlager, E., and E. Ostrom. 1992. Property rights regimes and natural resources: A conceptual analysis. *Land Economics* 68: 249 - 262.
- Schmeer, K. 1999. Guidelines for conducting a stakeholder analysis. A Partnerships for Health Reform Publication. Abt Associates. Bethesda, MD.
- Scoones, I., A. Bishi, N. Mapitse, R. Moerane, M. L. Penrith, R. Sibanda, G. R. Thomson, and W. Wolmer. 2010 Foot-and-mouth disease and market access: Challenges for the beef industry in southern Africa. *Pastoralism* 1: 135-164.
- Scott, W. R. 2014. *Institutions and organizations*. Sage Publication. Thousand Oaks, CA.
- Shackleton, C. M., and S. E. Shackleton 2004. The importance of non-timber forest products in rural livelihood security and as safety nets: A review of evidence from South Africa. *South African Journal of Science* 100: 658-664.
- Shackleton, S., B. Campbell, E. Wollenberg, and D. Edmunds. 2002. *Devolution and CBNRM: Creating space for local people to participate and benefit?* Overseas Development Institute (ODI). London, UK.
- Silva, J., and A. Mosimane. 2012. *Conservation-based rural development in Namibia: A mixed-methods assessment of economic benefits*. Sage Publications. New York, NY.
- Sitas, N., H. Prozesky, K. Esler, and B. Reyers. 2014. Opportunities and challenges for mainstreaming ecosystem services in development planning: Perspectives from a landscape level. *Landscape Ecology* 29: 1315-1331.
- Slotow, R. 2012. Fencing for purpose: A case study of elephants in South Africa. In: M. J. Somers and M. W. Hayward, editors. *Fencing for conservation*, 91-104. Springer. New York, NY.
- Smit, I. P., C. C. Grant, and B. J. Devereux. 2007. Do artificial waterholes influence the way herbivores use the landscape? Herbivore distribution patterns around rivers and artificial surface water sources in a large African savanna park. *Biological Conservation* 136: 85-99.
- Smith, A. B., and L. Jacobson. 1995. Excavations at Geduld and the appearance of early livestock in Namibia. *South African Archaeological Bulletin* 50: 3-14.
- Smith, R. J., R. D. J. Muir, M. J. Walpole, A. Balmford, and N. Leader-Williams. 2003. Governance and the loss of biodiversity. *Nature* 426: 67-70.
- Songorwa, A. N., T. Buhrs, and K. F. D. Hughey. 2000. Community-based wildlife management in Africa: A critical assessment of the literature. *Natural Resources* 40: 603-643.

- Spinage, C. 1998. Social change and conservation misrepresentation in Africa. *Oryx* 32: 265-276.
- Stoll-Kleemann, S. 2001a. Barriers to nature conservation in Germany: A model explaining opposition to protected areas. *Journal of Environmental Psychology* 21: 1-17.
- Stoll-Kleemann, S. 2001b. Opposition to the designation of protected areas in Germany. *Journal of Environmental Management* 44: 109-128.
- Stolton, S., and N. Dudley. 1999. *Partnerships for protection*. Earthscan. London, UK.
- Stolton, S., and N. Dudley. 2010. *Arguments for protected areas: Multiple benefits for conservation and use*. Earthscan, IUCN. Gland, Switzerland.
- Stuart-Hill, G. C., R. Diggle, B. Munali, J. Tagg, and D. Ward. 2005. The event book system: A community-based natural resource monitoring system from Namibia. *Biodiversity and Conservation* 14: 2611-2631.
- Sullivan, S. 2000. Gender, ethnographic myths and community-based conservation in a former Namibian 'homeland'. In D. Hodgson, editor. *Rethinking pastoralism in Africa: Gender, culture and the myth of the patriarchal pastoralist*, 142-164. James Currey. Oxford, UK.
- Sutherland, W., A. Pullin, P. Dolman, and T. Knight. 2004. The need for evidence-based conservation. *Trends in Ecology and Evolution* 19: 305-308.
- Suškevičs, M., K. Tillemann, M. Kūlvik. 2013. Assessing the relevance of stakeholder analysis for national ecological network governance: The case of the Green Network in Estonia. *Journal for Nature Conservation* 21: 206- 213.
- Sweet, J., and A. Burke. 2000. *Country pasture/forage resources profiles*. Directorate of Environmental Affairs. Ministry of Environment and Tourism. Windhoek, Namibia. [<http://www.fao.org/ag/agp/agpc/doc/counprof/namibia.htm>.] (Accessed on June 2014).
- Tallis. H., P. Kareiva, M. Marvier, and A. Chang. 2008. An ecosystem services framework to support both practical conservation and economic development. *Proceedings of the National Academy of Sciences* 105: 9457-9464.
- Tashakkori, A., and C. Teddlie. 2003. *Mixed methodology: Combining qualitative and quantitative approaches*. Sage Publications. Thousand Oaks, CA.
- Taylor, R., and M. W. Murphree. 2007. *Case studies on successful southern African NRM initiatives and their impact on poverty and governance: Masoka and Gairesi case studies Zimbabwe*, IUCN/USAID FRAME. [<https://www.rmportal.net/framelib/zimbabwe-paper-final-draft-v3.pdf>] (Accessed on April 2014). Terborgh 1999
- Thompson, M., S. Serneels, D. Ole Kaelo, and P. Trench. 2009. Maasai Mara - Land privatisation and wildlife decline: Can conservation pay its way? In K. Homewood, P. Kristjanson and P. Trench, editors. *Staying Maasai? Livelihoods, conservation and development in East African Rangelands*, 77-Springer. New York, NY.
- Tole, L. 2010. Reforms from the ground up: A review of community-based forest management in tropical developing countries. *Environmental Management* 45: 1312-1331.
- Tompkins, E. L., and W. N. Adger. 2004. Does adaptive management of natural resources enhance resilience to climatic change? *Ecology and Society* 9: 10.
- Treves, A., L. Andiamampianina, K. Didier, J. Gibson, A. Plumptre, D. Wilkie, and P. Zahler. 2006. A simple, cost-effective method for involving stakeholders in spatial assessments of threats to biodiversity. *Human Dimensions of Wildlife* 11: 43-54.
- Treves, A., R. B. Wallace, and S. White. 2009. Participatory planning of interventions to mitigate human-wildlife conflicts. *Conservation Biology* 23: 1577 - 1587.

- Tsing, A. L. 2005. *Friction: An ethnography of global connection*. Princeton University Press, Princeton.
- Turner, S. 2004. Community-based natural resource management and rural livelihoods. In C. Fabricius, E. Koch, H. Magome and S. Turner, editors. *Rights, resources and rural development: Community-based natural resource management in southern Africa*, 44-65. Earthscan. London, UK.
- Turner, R. K., and G. C. Daily. 2008. The ecosystem services framework and natural capital conservation. *Environmental and Resource Economics* 39: 25-35.
- Turner, S. D., S. Collins, and J. Baumgart. 2002. *Community-based natural resources management: Experiences and lessons linking communities to sustainable resource use in different social, economic and ecological conditions in South Africa*. Research Report 12. Programme for Land and Agrarian Studies. School of Government, University of the Western Cape. Cape Town, South Africa.
- Van Assche, K., R. Beunen, J. Jacobs, and P. Teampau. 2011. Crossing trails in the marshes: Rigidity and flexibility in the governance of the Danube Delta. *Journal of Environmental Planning and Management* 54: 1-22.
- van de Walle, N. 2001. *African economies and the politics of permanent crisis, 1979-1999*. Cambridge University Press. Cambridge, UK.
- van Vuuren, O. 2011. *Groundwater: A Namibian Perspective*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Windhoek, Namibia.
- Vanak, A. T., M. Thaker, and R. Slotow. 2010. Do fences create an edge-effect on the movement patterns of a highly mobile mega-herbivore? *Biological Conservation* 143: 2631-2637.
- Varvasovszky, Z., and R. Brugha. 2000. How to do (or not to do) a stakeholder analysis. *Health Policy and Planning* 15: 338-345.
- Vaughan, C., S. A. Long, J. Katjiua, S. Mulonga, and C. Murphy. 2004. *Wildlife use and livelihoods*. In S. A. Long, editor. *Livelihoods and CBNRM in Namibia: The Findings of the WILD Project*. Final Technical Report of the Wildlife Integration for Livelihood Diversification Project. Ministry of Environment and Tourism. Windhoek, Namibia.
- Vitousek, P. M., H. A. Mooney, J. Lubchenco, and J. M. Melillo. 1997. Human domination of Earth's ecosystems. *Science* 277: 494-499.
- Vogelsang, R. 2000. Archaeological investigations in the Kaokoland: Survey and excavations in 1999 and 2000. *Nyame Akuma*: 54: 25-28.
- Vos, J. F.J., and M. C. Achterkamp. 2006. Stakeholder identification in innovation projects: going beyond classification. *European Journal of Innovation Management* 9: 161-178.
- Walker, D., and F. Myrick. 2006. Grounded theory: An exploration of process and procedure. *Qualitative Health Research* 16: 547-559.
- Walker, B., C. S. Holling, S. Carpenter, and A. Kinzig. 2004. Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society* 9: 5-13.
- Wallace, K.J., 2007. Classification of ecosystem services: problems and solutions. *Biological Conservation* 139 (3-4), 235-246.
- Watson, P., and W. Odendaal. 2009 *Policy and legal review as part of a feasibility assessment for establishing protected landscape conservation areas in Namibia (Nam-Place)*. Ministry of Environment and Tourism (MET) and UNDP. Windhoek, Namibia.

- Watson, J. E. M., N. Dudley, D. B. Segan, and M. Hockings. 2014. The performance and potential of protected areas. *Nature* 515: 67-73.
- Waylen, K. A., A. Fischer, P. K. McGowan, S. J. Thirgood, and E. J. Milner-Gulland. 2010a. The effect of cultural context on the success of community-based conservation interventions. *Conservation Biology* 24: 1119-1129.
- Waylen, K. A., A. Fischer, P. K. McGowan, S. J. Thirgood, and E. J. Milner-Gulland. 2010b. The effect of local cultural context on community-based conservation interventions: Evaluating ecological, economic, attitudinal, and behavioural outcomes. Systematic Review No. 80. Collaboration for Environmental Evidence. Birmingham, UK.
- Weaver, L. C. and T. Peterson. 2008. Namibia communal area conservancies. *Best Practices in Sustainable Hunting 2008*: 48-52.
- Weaver, L. C. and P. Skyer. 2003. Conservancies: Integrating wildlife land-use options into the livelihood, development and conservation strategies of Namibian communities. Paper presented at the Vth World Parks Congress of IUCN to the Animal Health and Development (AHEAD) Forum, Durban, September 8-17.
- Wegner, G., and U. Pascual. 2011. Cost-benefit analysis in the context of ecosystem services for human well-being: A multidisciplinary critique. *Global Environmental Change* 21: 492-504.
- Wehrmann, B. 2008. *Land conflicts: A practical guide to dealing with land disputes*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). Eschborn, Germany.
- Wells, M., and T. O. McShane. 2004. Integrating protected area management with local needs and aspirations. *Ambio* 33: 513-519.
- Werner, W., and W. Odendaal. 2010. *Livelihoods after land reform: Namibia country report*. Section B - Land, Environment and Development Project. Legal Assistance Centre. Windhoek, Namibia. [http://www.lac.org.na/projects/lead/Pdf/livelihoods_report_b.pdf] (Accessed on May 2014).
- Wesselink, A., J. Paavola, O. Fritsch, and O. Renn. 2011. Rationales for public participation in environmental policy and governance: Practitioners' perspectives. *Environment and Planning A* 43: 2688-2704.
- West, P. 2006. *Conservation is our government now: The politics of ecology in Papua New Guinea*. Duke University Press. Durham, NC.
- West, P., J. Igoe, and D. Brockington. 2006. Parks and peoples: The social impact of protected areas. *Annual Review of Anthropology* 35: 251-277.
- White, R. M., A. Fischer, K. Marshall, J. M. J. Travis, T. J. Webb, S. di Falco, S. M. Redpath, and R. van der Wal. 2009. Developing an integrated conceptual framework to understand biodiversity conflicts. *Land Use Policy* 26: 242-253.
- Wilcove, D. S., D. Rothstein, J. Dubow, A. Phillips, and E. Losos. 1998. Quantifying threats to imperiled species in the United States. *BioScience* 48: 607-615.
- Wilhere, G. F. 2002. Adaptive management in habitat conservation plans. *Conservation Biology* 16: 20-29.
- Willemsen, L., E. G. Drakou, M. B. Dunbar, P. Mayaux, and B. N. Egoh. 2013. Safeguarding ecosystem services and livelihoods: Understanding the impact of conservation strategies on benefit flows to society. *Ecosystem Services* 4: 95-103.

- Wilshusen, P. R., S. R. Brechin, C. L. Fortwangler, and P. C. West. 2002. Reinventing a square wheel: Critique of a resurgent “protection paradigm” in international biodiversity conservation. *Society and Natural Resources* 15: 17-40.
- Wittemyer, G., P. Elsen, W. T. Bean, A. Coleman, O. Burton, and J. S. Brashares. 2008. Accelerated human population growth at protected area edges. *Science* 321: 123-126.
- Wollenberg, E., R. Iwan, G. Limberg, M. Moeliono, S. Rhee, and M. Sudana. 2007. Facilitating cooperation during times of chaos: Spontaneous orders and muddling through in Malinau District, Indonesia. *Ecology and Society* 12: 3.
- World Resources Institute (WRI) in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank. 2005. *The wealth of the poor: Managing ecosystems to fight poverty*. World Resources Institute. Washington, DC. [http://pdf.wri.org/wrr05_lores.pdf] (Accessed on April 2014).
- World Resources Institute (WRI) in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank. 2008. *World Resources 2008: Roots of resilience-growing the wealth of the poor*. WRI. Washington, DC. [http://www.wri.org/sites/default/files/pdf/world_resources_2008_roots_of_resilience_front.pdf] (Accessed on April 2014).
- Young, J. C., M. Marzano, R. M. White, D. I. McCracken, S. M. Redpath, D. N. Carss, C. P. Quine, and D. Watt. 2010. The emergence of biodiversity conflicts from biodiversity impacts: Characteristics and management strategies. *Biodiversity and Conservation* 19: 3973-3990.
- Zimmermann, I., , M. Humavindu, and U. Nakamhel. 2014. *The ecological, social and economic implications of private game parks and private nature reserves in Namibia*. Ministry of Environment and Tourism. Winhoek, Namibia. [http://www.the-eis.com/data/literature/Private_Game_Parks_and_Private_Nature_Reserves_in_Namibia.pdf] (Accessed on February 2016).

Number: _____

Code: _____

Appendix 1: Interview Schedule

“Evaluating land use conflicts at the borders of Etosha National Park (ENP), Namibia: A social-ecological approach”

1. Demographic Questions

Name: _____

Property: _____

Tenor (*private, communal, state*): _____ Date: _____

1.1. Capacity (owner, co-owner, manager): _____

1.2. Primary use of land: _____

1.3. Secondary use of land: _____

1.4. Approx length of ownership/management: _____

1.5. Approx size of farm: _____

1.6. Gender? Male Female

1.7. Age <30 30-50 >50

2. Attribute Questions

2.1. Why do you farm on this land/manage this land?

income generation	<input type="checkbox"/>	passion	<input type="checkbox"/>
pressure	<input type="checkbox"/>	contractual obligation	<input type="checkbox"/>
traditional authority	<input type="checkbox"/>	other	<input type="checkbox"/>

2.2. What is your land/area that you manage dedicated to?

profit	<input type="checkbox"/>	conservation	<input type="checkbox"/>
bequest/legacy	<input type="checkbox"/>	state	<input type="checkbox"/>
other	<input type="checkbox"/>		<input type="checkbox"/>

2.3. Would you ever consider changing the focus of land management?

Yes No

If yes, how so?

Yes No

2.4. Would you ever consider diversifying your focus?

If yes, how so?

2.5. What is your role in the system surrounding you (i.e. in the social-ecological system)?

2.6. How would an expanded protected area network around ENP affect you?

2.7. How would YOU affect an expanded protected area network around ENP?

2.8. What do you consider to be the most important ADVANTAGE to farming on the borders of ENP?

2.9. What do you consider to be the most important DISADVANTAGE to farming on the borders of ENP?

2.10. Would you say you oppose or support the concept of an expanded protected area around Etosha National Park?

2.11. Briefly describe the significance of the fence to you as a farmer/land manager?

2.12. What livestock keeping problems, if any, do you encounter?

livestock diseases	<input type="checkbox"/>	poor grazing	<input type="checkbox"/>	poaching	<input type="checkbox"/>
lack of water	<input type="checkbox"/>	wildlife conflicts	<input type="checkbox"/>	lack of markets for livestock and its products	<input type="checkbox"/>
low production	<input type="checkbox"/>	human conflicts	<input type="checkbox"/>	poor policies in place	<input type="checkbox"/>
other problems					<input type="checkbox"/>

2.13. What land and natural resource management problems do you encounter?

wildlife diseases	<input type="checkbox"/>	poor grazing	<input type="checkbox"/>	poaching	<input type="checkbox"/>
lack of water	<input type="checkbox"/>	wildlife conflicts	<input type="checkbox"/>	poor communication/relations	<input type="checkbox"/>
invasive alien spp.	<input type="checkbox"/>	human conflicts	<input type="checkbox"/>	poor policies in place	<input type="checkbox"/>
other problems					<input type="checkbox"/>

2.14. What are the causes of these land and natural resource problems/issues?

2.15. What contributes or worsens these land and natural resource problems/issues?

2.16. How do you solve the problems?

trap/hunt wildlife	<input type="checkbox"/>	provide grazing/feed	<input type="checkbox"/>	poison/remove invasive alien spp.	<input type="checkbox"/>
remove fences	<input type="checkbox"/>	reinforce fences	<input type="checkbox"/>	provide artificial watering holes	<input type="checkbox"/>
seek assistance (elaborate)					<input type="checkbox"/>
other techniques (mention)					<input type="checkbox"/>

2.17. What conflicts do you encounter in your land and natural resource management activities?

water conflicts	<input type="checkbox"/>	declining grazing quality	<input type="checkbox"/>	soil erosion	<input type="checkbox"/>
poaching	<input type="checkbox"/>	farm boundary encroachment	<input type="checkbox"/>	wildlife breaching the fence	<input type="checkbox"/>
other conflicts (mention)					<input type="checkbox"/>

2.18. What resource conflicts do you encounter with neighbouring farmers/communities?

2.19. What are the causes of these land and natural resource conflicts?

2.20. What contributes or worsens these conflicts?

2.21. How do you solve/mitigate these conflicts?

2.22. What resource conflicts do you encounter with ENP?

2.23. What are the causes of these land and natural resource conflicts?

2.24. What contributes or worsens these conflicts?

2.25. How do you solve/mitigate these conflicts?

2.26. What is the main conflict that you encounter with ENP?

water conflict	<input type="checkbox"/>	grazing conflict	<input type="checkbox"/>	soil erosion/trampling	<input type="checkbox"/>
human-wildlife conflict	<input type="checkbox"/>	wildlife-livestock conflict	<input type="checkbox"/>	wildlife-wildlife conflict	<input type="checkbox"/>
other conflicts (mention)					<input type="checkbox"/>

2.27. What is the main cause of this conflict that you encounter with ENP?

drought	<input type="checkbox"/>	declining grazing quality	<input type="checkbox"/>	lack of/no fence maintenance	<input type="checkbox"/>
poor communication	<input type="checkbox"/>	farm boundary encroachment	<input type="checkbox"/>	increasing wildlife numbers	<input type="checkbox"/>
other conflicts (mention)	_____				<input type="checkbox"/>

2.28. What is main contributing factor of this conflict that you encounter with ENP?

infrastructure damage	<input type="checkbox"/>	overgrazing	<input type="checkbox"/>	increase in human population	<input type="checkbox"/>
fence damage	<input type="checkbox"/>	increase in wildlife farms	<input type="checkbox"/>	increasing wildlife numbers	<input type="checkbox"/>
other conflicts (mention)	_____				<input type="checkbox"/>

2.29. How do you solve this conflict with ENP?

trap/hunt wildlife	<input type="checkbox"/>	provide grazing/feed	<input type="checkbox"/>	poison/remove invasive alien spp.	<input type="checkbox"/>
remove fences	<input type="checkbox"/>	reinforce fences	<input type="checkbox"/>	provide artificial watering holes	<input type="checkbox"/>
seek assistance (elaborate)	_____				<input type="checkbox"/>
other techniques (mention)	_____				<input type="checkbox"/>

2.30. What changes do you currently observe in land and natural resource management?

shortage of water	<input type="checkbox"/>	shortage of grazing	<input type="checkbox"/>	declining markets	<input type="checkbox"/>
declining productivity	<input type="checkbox"/>	declining soil productivity	<input type="checkbox"/>	no changes	<input type="checkbox"/>
other changes (mention)	_____				<input type="checkbox"/>

2.31. What do you think are the reasons for these changes?

2.32. How do you think negative changes, if any, can be alleviated or avoided?

2.33. How is the current land management situation as compared to the previous decade?

<input type="checkbox"/> increase (mention scales)	_____
<input type="checkbox"/> decreased (substantiate)	_____
<input type="checkbox"/> there is no difference	_____
<input type="checkbox"/> other (explain)	_____

2.34. How does the government support you in your activities?

<input type="checkbox"/> inputs (mention)	_____
<input type="checkbox"/> expertise (mention)	_____
<input type="checkbox"/> markets (mention)	_____
<input type="checkbox"/> other (explain)	_____

2.35. In your opinion, what should be done to improve land and natural resource management?

<input type="checkbox"/> financial support (subsidies, micro loans)	_____
<input type="checkbox"/> training (on what?)	_____
<input type="checkbox"/> inputs availability (what inputs?)	_____
<input type="checkbox"/> communication/relations (between whom?)	_____
<input type="checkbox"/> removal/reinforcement of fence	_____
<input type="checkbox"/> other (mention)	_____

2.36. How serious do you consider the predator problem to be in this area?

0	1	2	3	4
no problem	slight problem	indifferent	problem	big problem

2.37. How serious do you consider the elephant problem to be in this area?

0	1	2	3	4
no problem	slight problem	indifferent	problem	big problem

3. Network Questions

3.1. What are the relationships between you and other resource users/land managers (e.g. farmers, communal livestock keepers, conservation/hunting managers)

3.2. How important do you consider these relationships (formal and informal) in your community and farming endeavours?

0	1	2	3	4
not important	fairly important	inconsequential	important	very important

3.3. How often do you participate in FORMAL community activities

0	1	2	3	4
never	yearly	monthly	weekly	daily

3.4. How often do you participate in INFORMAL community activities

0	1	2	3	4
never	yearly	monthly	weekly	daily

3.5. What resources do you believe you possess that enable you to exert your influence on the resource users/land managers, communities and ENP rangers and managers?

3.6. Are there any conflicts among land and resource users?

Yes No

If yes, how so?

3.7. How do you resolve these conflicts?

no solution	<input type="checkbox"/>	involve local government	<input type="checkbox"/>	involve farmers union	<input type="checkbox"/>
involve local NGO's	<input type="checkbox"/>	involve elders committees	<input type="checkbox"/>	find solutions together	<input type="checkbox"/>
other ways (mention)					<input type="checkbox"/>

3.8. What actors are involved in the resolution of the conflicts within, among and between sectoral resource users?

traditional authorities	<input type="checkbox"/>	local government	<input type="checkbox"/>	farmers union representatives	<input type="checkbox"/>
NGO's	<input type="checkbox"/>	community elders	<input type="checkbox"/>	community representatives	<input type="checkbox"/>
other ways (mention)					<input type="checkbox"/>

3.9. What are your opinions as regards the ways to do away with these conflicts?

3.10. How does the government assist you with the resolution of these problems and conflicts

3.11. Do you feel there is an effective relationship/open communication between yourself and:

	yes	no
Neighbouring farmers	<input type="checkbox"/>	<input type="checkbox"/>
ENP management	<input type="checkbox"/>	<input type="checkbox"/>
State organisations (<i>councillors, extension officers, governors etc</i>)	<input type="checkbox"/>	<input type="checkbox"/>
Non-governmental organisations	<input type="checkbox"/>	<input type="checkbox"/>

3.12. Who in particular do you consult on matters pertaining to the ENP fence?

Name	Organisation	Frequency	Location	Matter discussed

3.13. Who in particular do you consult on matters pertaining to land use conflicts between farmers bordering the ENP

Name	Organisation	Frequency	Location	Matter discussed

3.14. Who in particular do you consult on matters pertaining to general land and natural resource management in the ENP area?

Name	Organisation	Frequency	Location	Matter discussed

4. Traditional farming questions

4.1. What traditional/customary ways are used in the management of natural resources and the resolution of the conflicts among the resources users

4.2. When did these arrangements and regulations start?

4.3. Are they useful?

4.4. What benefits do you realise from the use of these traditional arrangements?

4.5. What are the strength and weaknesses of these traditional institutions?

4.6. How are they in the present years in comparison with the past years?

4.7. What about their powers in comparison with the government regulations?

increased

decreased

other (elaborate)

4.8. Do you think the traditional regulations are still required today? And why you think so?

5. Other

5.1. Can you provide me a list of people you feel I should interview on the topic?

5.2. Anything else you consider important or that you feel should be considered?

5.3. What do you consider the future of land owners surrounding ENP to be?

5.4. Can you provide me a list of people you feel I should interview on the topic?

5.5. Anything else you consider important or that you feel should be considered?

Thank you

Appendix 2: The 10-point scale used to score stakeholder attributes

The stakeholders were assessed using 10-point scales anchored at the ends, with semantic differentials (Osgood et al. 1957) as opposed to Likert-type scales, which are linguistically anchored and thus highly context specific (Likert 1932). Likert-type scales are based on perceptual judgements and classifications such as 'very important', which must be clearly defined and reduces comparisons across stakeholder groups of different sizes and functions. For example, the way in which individuals valued costs and benefits to being adjacent to the ENP, which represents interest, had a strong cultural and socio-economic component. This potentially influences their perceptions of what it is like to be part of the SES and how they may be affected by changes. The 10-point scale therefore allows for potential comparisons, and having more points increases discrimination and creates a wider distribution since assessors often avoid the extremes in scales with smaller numbers (Oppenheim 2003). As remarked by Heidrich et al. (2009) using 10-point scales creates a fuzzy set for each individual or group evaluated. Across the dimensions of position, interest and power, scores of 4-7 inclusive, are considered as the middle range and those falling outside this range could be viewed as particularly high or low/negative or positive

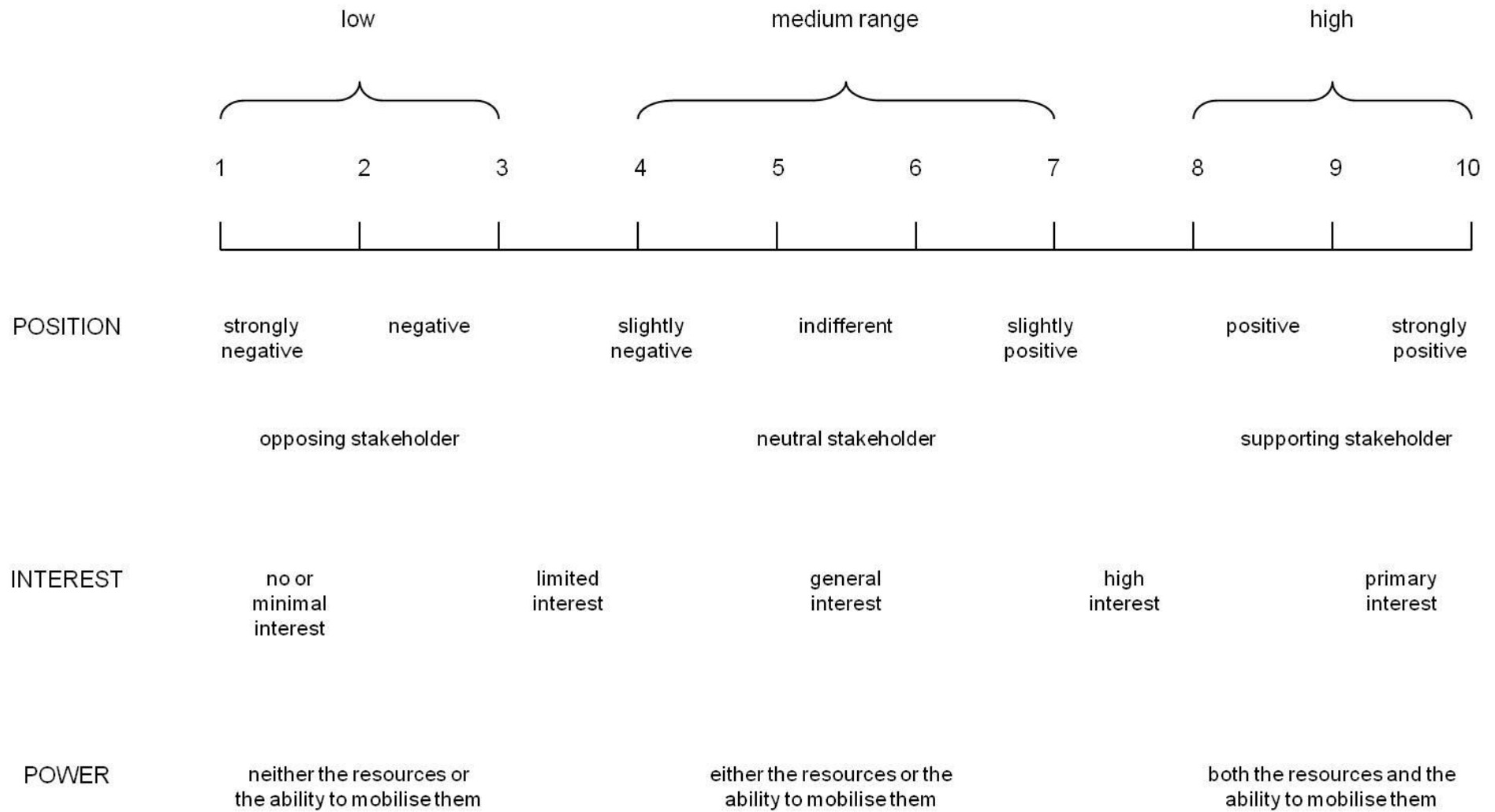


Figure A2. The 10-point scale used to score attributes of position, interest and power

Appendix 3: Stakeholder groups involved in the expansion of the protected area network around Etosha National Park.

Stakeholder	Stakes	Stakeholder effect on expanded protected area network	Expanded protected area network effect on stakeholder
<ul style="list-style-type: none"> • Livestock farmers 	<ul style="list-style-type: none"> - Own/manages land adjacent to the ENP - Livestock production (commercial and subsistence) - Direct neighbour 	<ul style="list-style-type: none"> - Definitive border (hard fence) between protected area and livestock farm - Artificial water points attract game/wildlife from ENP - Livestock attracts predators - Domestic animal diseases - Indirectly affects the system through choices made pertaining to the environment 	<ul style="list-style-type: none"> - Predation - Veterinary cordon fence requires a 21 day quarantine on all livestock headed to the market - Fence damage - Pressure by other neighbours to convert
<ul style="list-style-type: none"> • Tourism facilities e.g. trophy/hunting concessions 	<ul style="list-style-type: none"> - Own/manages land adjacent to the ENP - Provide safe and pleasurable nature/hunting experience (photographic tourism, game safaris, camping accommodation etc. - Direct neighbour 	<ul style="list-style-type: none"> - Provide pro-conservation land use practices - Soft border between the park and neighbouring farms - Refuge for wildlife (e.g. semi-apex predators, small mammals) - Buffer for wildlife diseases - Indirectly affects the system through choices made pertaining to the environment 	<ul style="list-style-type: none"> - Likelihood of increased tourism in the area - Likelihood of increased wildlife in the area - Would be expected to maintain and monitor expanded protected area
<ul style="list-style-type: none"> • Communities (rural) - Conservancies 	<ul style="list-style-type: none"> - Responsible for sustainable use of natural resources and land - Consumers of natural resources - Direct neighbour 	<ul style="list-style-type: none"> - Practice pro-conservation land use alongside traditional livestock production and crop planting/plant harvesting - Soft border between the park and neighbouring farms - Refuge for wildlife (e.g. semi-apex predators, small mammals) - Buffer for wildlife diseases - Provide hunting concessions to private hunters 	<ul style="list-style-type: none"> - Likelihood of increased tourism in the area - Likelihood of increased wildlife in the area - Increase in human-wildlife conflict - Improvement in infrastructure

Table (cont.)

Stakeholder	Stakes	Stakeholder effect on expanded protected area network	Expanded protected area network effect on stakeholder
<ul style="list-style-type: none"> - Resettlement farmers 	<ul style="list-style-type: none"> - Manages land adjacent to ENP - Livestock production (subsistence) - Consumers of natural resources - Direct neighbour 	<ul style="list-style-type: none"> - Definitive border (hard fence) between protected area and livestock farms - Artificial water points attract game/wildlife from ENP - Livestock attracts predators - Domestic animal diseases - Indirectly affects the system through choices made pertaining to the environment 	<ul style="list-style-type: none"> - Predation - Veterinary cordon fence requires a 21 day quarantine on all livestock headed to the market - Fence damage
<ul style="list-style-type: none"> • Government local, regional and national 	<ul style="list-style-type: none"> - Legislation, policy and strategy development - Planning processes and control/enforcement - Administration, financing and surveillance 	<ul style="list-style-type: none"> - Can affect the expansion process directly via legislation, regulation and compliance - Local authority affects the process directly via planning, monitoring and providing subsidies/compensation 	<ul style="list-style-type: none"> - Affected directly by development process, likelihood of conservation success and social stability objectives
<ul style="list-style-type: none"> • Experts, research and professional institutions/associations 	<ul style="list-style-type: none"> - Establish/share best practice in sustainable resource use, conservation and development, hunting and tourism 	<ul style="list-style-type: none"> - Affect the social-ecological system indirectly through provision of guidance, suggestions and support, increased interest in the expansion of protected areas 	<ul style="list-style-type: none"> - No major influence unless advice is needed
<ul style="list-style-type: none"> • Consumers tourists/hunters 	<ul style="list-style-type: none"> - Pays for and makes use of natural products and services (tangible and intangible) 	<ul style="list-style-type: none"> - Can affect the social-ecological system indirectly by over-use/exploitation of resources - Disturb community dynamics and ecosystem services (e.g. pollution) 	<ul style="list-style-type: none"> - Affects human safety and property security - Affected by regulation authority (e.g. permits)
<ul style="list-style-type: none"> • Media 	<ul style="list-style-type: none"> - May highlight conservation/development issues 	<ul style="list-style-type: none"> - Potentially higher effect if urgent claims or effects were ever to become present (e.g. death due to problem animals, poaching, poisoning of problem animals) 	<ul style="list-style-type: none"> - No influence

Table (cont.)

Stakeholder	Stakes	Stakeholder effect on expanded protected area network	Expanded protected area network effect on stakeholder
• NGOs	– Non-elected representation if wildlife, conservation, sectors of the public	– Possible indirect effects via lobbying of safety or planning issues – Become more salient if any urgent claim or effects become present	– No influence other than an example of good practice
• Park Management	– Establishes, manages, monitors expanded protected area	– Direct affect by protecting area under their jurisdiction – Need to build/maintain relationships with other stakeholders	– Directly affected through working procedures – Increased jurisdiction
• Foreign investors/ Insurance Companies	– Provision of funds/ insurance of properties (applicable to private land)	– Indirect effects by withdrawal of support if land managers perceived to be acting unfavourably – Indirect affect due to investigation of environmental and livestock production records (e.g. level of predation/length of quarantine affects premiums)	– Can lose money invested/support if production/ conservation poor – Only affected if environmental liability arises or if conservation effort diminishes
• Farmers/Agricultural Union	– Supports the well-being of farmers, their employees and co-ops	– Potential indirect affect if unions lobby against the loss of jobs, income and safety of livestock farms	– No Influence

Appendix 4: Individual ratings of participants involved in land and natural resource use and management in and around the Etosha National Park (ENP).

Primary Stakeholders								
Tenure	Land use	Stakeholder	Position	Median	Interest	Median	Power	Median
Freehold	Livestock production only (n=6)	P1	3		4		8	
		P2	2		8		10	
		P3	4	4	4	8	8	8.5
		P4	8		8	8		
		P5	4	7	9	8	9	8
		P6	7		9		9	
	Livestock and Tourist facilities (n=2)	P7	7	7	6	6	8	6.5
		P8	7		6	6	5	
	Hunting and Livestock production (n=1)	P9	7	-	9	-	10	-
	Hunting only (n=3)	P10	10	7	9	9	9	8
		P11	9		9	9	7	9
	Hunting and Tourism (n=2)	P12	7		7		10	
		P13	4	4	5	5.5	8	8
		P14	4		6		8	
		P15	10	8	8	7	6	8
	Tourism only (n=6)	P16	10		7		6	
		P17	8	10	5	7	7	7
		P18	10		7		7	
		P19	8		10		9	
		P20	7		6		8	
Communal Conservancy (State)	#Khoadi- //Hôas (n=12)	CCf1	7		5		7	
		CCf2	4		6		5	
		CCf3	7		6		5	
		CCf4	4		7		6	
		CCf5	4		6		4	
		CCf6	4	4	5	6	4	4
		CCu7	7		5		5	
		CCu8	3		4		4	
		CCu9	7		7		5	
		CCu10	2		6		4	
		CCu11	4		4		4	
		CCu12	2		4		4	

Primary Stakeholders (cont.)								
Tenure	Land use	Stakeholder	Position	Median	Interest	Median	Power	Median
Communal Conservancy (State)	Ehi Rovipuka (n=12)	CC2f1	4		3		5	
		CC2f2	4		3		5	
		CC2u3	3		2		4	
		CC2u4	6		2		4	
		CC2f5	5		3		5	
		CC2f6	4	5	2	2	4	4
		CC2f7	5		7		4	
		CC2u8	6		4		4	
		CC2u9	7		2		5	
		CC2f10	5		1		4	
		CC2f11	5		1		3	
		CC2f12	7		2		5	
Resettlement Farms (State)	Seringkop (n=12)	RF1	3		3		3	
		RF2	4		3		3	
		RF3	2		2		2	
		RF4	3		2		3	
		RF5	4		3		2	
		RF6	5	4	2	2	3	3
		RF7	7		7		3	
		RF8	4		4		3	
		RF9	4		2		2	
		RF10	5		1		1	
		RF11	5		1		1	
		RF12	4		2		3	
Protected Area (State)	Etosha National Park Management (n=5)	PM1	10		9		7	
		PM2	9		7		8	
		PM3	10	10	9	9	7	7
		PM4	10		9		9	
		PM5	8		8		7	

Secondary Stakeholders (cont.)

Affiliation to ENP/protected areas	Stakeholder	Position	Median	Interest	Median	Power	Median
State (n=2)	S1	7		6		8	
	S2	8		9	7	8	
	S3	9	8	7		8	8
	S4	8		7		8	
Experts (n=2)	E1	10		8	8	6	
	E2	10	10	8		6	6
NGOs (n=5)	NGO1	7		6		3	
	NGO2	8		6		3	
	NGO3	9		8	7	3	
	NGO4	9		7		3	3
	NGO5	9		7		3	
	NGO6	9		9		3	
Media (n=2)	M1	5		1	1	1	1
	M2	5	5	1		1	
Consumers (n=4)	C1	8		5		2	
	C2	8		4	5	2	
	C3	8	8	6		1	2
	C4	9		5		2	
Investors/Insurance companies (n=2)	I1	6		2	2	2	2
	I2	6	6	2		2	
Union representatives (n=2)	U1	4		4	4	4	4
	U2	4	4	4		4	4

Appendix 5: Assessment of stakeholder attributes, namely cumulative values of position, interest and power of stakeholder groups

stakeholder group	position			interest					power			power level*			
	(% interviewees of total in the stakeholder group)			cumulative value (1*(A)+2*(B)+3(C))/3	position level*	(% interviewees of total in the stakeholder group)			cumulative value (1*(D)+2*(E)+3(F))/3	interest level*	(% interviewees of total in the stakeholder group)			cumulative value (1*(G)+2*(H)+3(I))/3	
	Low A(%)	Med B(%)	High C(%)			Low D(%)	Med E(%)	High F(%)			Low G(%)		Med H(%)		High I(%)
Livestock farmers (n=8)	25	62.5	12.5	62.5	mod	0	50	50	83.3	high	0	12.5	87.5	95.8	high
Tourism facilities (n=16)	0	41.7	58.3	86.1	high	0	58.3	41.7	80.5	high	0	58.3	41.7	80.6	high
Conservancy members (n=12)	25	75	0	58.3	mod	0	100	0	66.7	mod	0	100	0	66.7	mod
Resettlement farmers (n=12)	27.3	72.7	0	57.6	mod	81.8	18.2	0	39.4	low	81.8	18.2	0	39.4	low
ENP Management (n=5)	0	20	80	93.3	high	0	40	60	86.7	high	20	80	0	60	mod
Government (n=4)	25	25	50	75	mod	0	75	25	75	mod	0	50	50	83.3	high
Experts (n=2)	0	0	100	100	high	0	50	50	83.3	high	50	50	0	50	mod
Consumers (n=4)	0	75	25	75	mod	25	50	25	66.7	mod	100	0	0	33.3	low
NGOs (n=6)	16.7	16.7	66.6	83.3	high	16.7	50	33.3	72.2	mod	83.3	16.7	0	38.9	low
Unions (n=2)	100	0	0	33.3	low	50	50	0	50	mod	100	0	0	33.3	low
Insurance/ investors (n=1)	0	100	0	66.7	mod	100	0	0	33.3	low	100	0	0	33.3	low
Media (n=2)	50	50	0	50	mod	100	0	0	33.3	low	100	0	0	33.3	low

* 0-45% - low; 45-75% - moderate; 75-100% - high.

Appendix 6: Summary of Namibia's proposed approach to expanding the protected area network**Overarching****Goals**

to effectively expand, manage and develop the protected area network in order to adequately protect the biodiversity and landscape of the country

to devise a system of integrating land and natural resource management that transforms the current protected area patchwork into a protected areas network

to encourage partnerships that undertake pro-conservation land use practices

Long-term values**Medium-term targets****Short-term Actions**

Article 95 (1) of the Constitution provides the foundation for the formulation of policies, legislation and programmes aimed at safeguarding the country's biodiversity and ecosystems for the benefit of current and future generations

Vision 2030 calls for:

- an extended and efficiently managed protected areas network that includes biodiversity "hotspots" and trans-boundary conservation areas
- improved land uses and optimal livelihood strategies
- strong partnerships and the significant sharing of skills and opportunities between the state, private sector and conservancy stakeholders.

Convention on Biological Diversity (CBD)

Article 8 calls for:

- the planning, establishment and strengthening of protected areas
- effective governance, participation and benefit-sharing
- the setting of standards, assessments and monitoring

Millennium Development Goals (MDG) calls for:

an increase in 'the ratio of area protected to maintain biological diversity to surface area'

National Development Plan V targets for protected area management include:

- an increased number of management plans approved and implemented, an increased number of parks being managed well, an increased number of parks with improved infrastructure and an increased number of parks
- an increased number of management partnerships between parks and neighbours

Ministry of Environment and Tourism (MET)'s Strategic Plan 6 sets out to:

- develop management partnerships between parks and neighbours to promote compatible land use and generate economic activity via tourism and resource use
- provide opportunities to stimulate local-level economic development and assist in poverty alleviation

- decentralise management and devolve further rights and responsibilities over wildlife and other natural resources, particularly rangelands, to appropriate local community organisations, to improve both economic and conservation opportunities and values
- draft management and partnership agreements between the MET, conservancies, farmers and land managers
- reassess regulatory constraints and procedures in the wildlife sector, since these undermine both the economic and conservation objectives of conservancies, tourism and hunting concessions
- develop institutions and capacity for stronger local management of natural resources (e.g. although monitoring efforts have become more streamlined and rigorous, local people themselves need to analyse monitoring data to guide local decision-making).
- develop collaborative approaches towards management and resource use between protective areas, conservancies and the private sector to promote both conservation and economic benefit objectives (e.g. approaches based on clear resource-use rights of stakeholders)
- stakeholders need to
 - enforce more active, objective and effective land use planning and zonation
 - assess infrastructure needs (e.g. fences, water points)
 - address veterinary concerns
 - agree on law enforcement modalities

- adopt cost-sharing arrangements
- implement problem animal management
- discuss skills development and information sharing

Incentives

- + creating linkages and cooperative management practices between land users and land managers
- + safeguard ecological process (e.g. ecosystem services, river catchments and migratory routes)
- + extend protection to important habitats and endemic species that currently occur outside parks
- + coordinate land use and land develop planning
- + increase and enhance tourism opportunities (e.g. tourists are offered a variety of wildlife, landscape and cultural experiences)

Disincentives

- increased probability of human-wildlife conflict
 - fragmented policy framework pertaining to natural resource use, land use and the wildlife sector
 - weak institutional capacities
 - weak human capacities for protected area operations
 - incomplete biogeographic coverage,
 - the absence of tested mechanisms for public-private community partnerships
-

Appendix 6: Interview Schedule – Institutional Analysis (Chapter 7)

Biophysical Constraints:

1. Please identify the land and natural resource conflicts/constraints you experience with neighboring properties and/or with Etosha National Park (ENP)
2. What are the contributing factors leading to these experienced conflicts and/or issues?
3. What solutions to these conflicts and/or issues do you apply?

Community Attributes:

1. Please discuss your primary land use practice.
2. Please discuss your secondary land use practice.
3. What is the proximity of your property/settlement to the ENP?
4. Please discuss the land tenure where you reside and the land tenure of the neighboring properties.
5. Please rate your interest in an expanded protected area network around ENP.
6. What control and/or power do you possess to influence an expanded protected area network around ENP (i.e. either promote or prevent it)?

Institutions and Rules-in-use:

1. What rules do you need to abide to in order to
 - 1.1. benefit from the land and its resources;
 - 1.2. obtain access to markets to purchase/sell livestock/game;
 - 1.3. access more land and/or resources;
 - 1.4. transfer title deed; and
 - 1.5. erect/repair/remove fences between your property and your neighbor's property?
2. What 'day-to-day' (operating) rules regulate your access to
 - 2.1. grazing;
 - 2.2. water;
 - 2.3. erosion and flood control;
 - 2.4. use of natural resources;
 - 2.5. fuel wood and/or timber harvesting/use/sale?
3. What collective (communal) rules regulate your access to
 - 3.1. grazing;
 - 3.2. water;
 - 3.3. erosion and flood control;
 - 3.4. use of natural resources;
 - 3.5. fuel wood and/or timber harvesting/use/sale?
4. What constitutional laws regulate your access to
 - 4.1. Land and its resources
 - 4.2. hunting and/or tourism enterprises
 - 4.3. hunting for subsistence
 - 4.4. commercial/traditional livestock production
 - 4.5. stewardship/aesthetic/recreational benefits?

Interaction and Outcomes:

- 4.6. How do the collective and constitutional rules shape your 'day-to-day' operations
- 4.7. How do the collective and constitutional rules shape how you deal with conflict with neighbors/ENP?
- 4.8. Do these rules in place suite your needs (i.e. are they satisfactory)?
- 4.9. How do your 'day-to-day' operations shape collective and constitutional rules?
- 4.10. Which of these outcomes are the most important to you?

Appendix 7: Primary and secondary documents related to land and natural resource policy

- Bethune, S., and O. C. Ruppel. 2013. Land and agricultural laws and policies relevant for environmental protection in Namibia. In O. C. Ruppel and K. Ruppel-Schlichting, editors. *Environmental law and policy in Namibia: Towards making Africa the tree of life*, 157-170. Orumbonde Press. Windhoek, Namibia.
- Booth, V., R. Martin, and E. Wilson. 2005. Strengthening the system of national protected areas project, Namibia: Capacity assessment for parks management in conservation at individual, institutional and systemic levels. Environment and Development Group. Oxford, UK.
- Jones B. T. B. 2008. Community wildlife management in southern Africa: A review of current research activity in the region and of recent literature. International Institute for Environment and Development (IIED). London, UK.
- Government of the Republic of Namibia (GRN). 1996a. Nature Conservation Amendment Act. 1333.
- Government of the Republic of Namibia (GRN). 1996b. Nature Conservation Amendment Act. 1446.
- Government of the Republic of Namibia (GRN). 1998. National Land Policy. Ministry of Lands and Resettlement. Windhoek, Namibia.
- Government of the Republic of Namibia (GRN). 2000. Traditional Authorities Act No. 25. Government Gazette No. 2456. Parliament. Windhoek, Namibia. [<http://www.lac.org.na/laws/pdf/tradauth.pdf>] (Accessed on August 2015).
- Government of the Republic of Namibia (GRN). 2002. Communal Land Reform Act No. 05. Government Gazette No. 2926. Ministry of Lands and Resettlement. Windhoek, Namibia. [<http://www.lac.org.na/laws/2003/2926.pdf>] (Accessed on August 2015).
- Jones, B. 2012. Recognition and support of ICCAs in Namibia. In A. Kothari, C. Corrigan, H. Jonas, A. Neumann, and H. Shrumm, editors. *Recognising and supporting territories and areas conserved by indigenous peoples and local communities: Global overview and national case studies*. Technical Series no. 64. Secretariat of the Convention on Biological Diversity, ICCA Consortium, Kalpavriksh, and Natural Justice, Montreal, Canada.
- Jones, B. T. B. 1999. Rights, revenues and resources: The problems and potential of conservancies as community wildlife management institutions in Namibia. Evaluating Eden Series. Discussion Paper No.2. International Institute for Environment and Development (IIED). London, UK. [<http://pubs.iied.org/pdfs/7795IIED.pdf>] (Accessed on April 2014).
- Jones, B. T. B. 2001. The evolution of a community-based approach to wildlife management at Kunene, Namibia. In D. Hulme and M. W. Murphree, editors. *African wildlife and livelihoods: The promise and performance of community conservation*, 160-176. James Currey. Oxford, UK.
- Ministry of Environment and Tourism (MET). 2007. Policy on tourism and wildlife concessions on state land. Ministry of Environment and Tourism. Windhoek, Namibia.

- Ministry of Environment and Tourism (MET). 2008. National policy on tourism for Namibia. Directorate of Parks and Wildlife Management. Windhoek, Namibia.
- Ministry of Environment and Tourism (MET) 2009. National policy on human-wildlife conflict management. Directorate of Parks and Wildlife Management. Windhoek, Namibia
- MET. 2010. State of protected areas in Namibia: A review of progress and challenges. Ministry of Environment and Tourism, Directorate of Parks and Wildlife Management, Windhoek, Namibia. [<http://www.met.gov.na/Documents/State%20of%20the%20Parks%20Report%20LOW%20RES!!!.pdf>] (Accessed on February 2015).
- MET 2014. Fifth National Report to the Convention on Biological Diversity (2010-2014). Ministry of Environment and Tourism, Directorate of Parks and Wildlife Management, Windhoek, Namibia. [<https://www.cbd.int/doc/world/na/na-nr-05-en.pdf>] (Accessed on November 2015).
- MET. 2014. Namibia's second national biodiversity strategy and action plan 2013 – 2022. Ministry of Environment and Tourism, Department of Environmental Affairs, Government of the Republic of Namibia. Windhoek, Namibia.
- Namibian Association of CBNRM Support Organizations (NACSO). 2013. Community conservation in Namibia: A review of communal conservancies, community forests and other CBNRM initiatives. 2013 Annual Report. Namibian Association of CBNRM Support Organisations. Windhoek, Namibia. [http://www.nacso.org.na/SOC_2013/index.php] (Accessed on September 2015).
- NACSO. 2014. The state of community conservation in Namibia: A review of communal conservancies, community forests and other CBNRM initiatives. Annual Report 2013, Namibian Association of CBNRM Support Organisations (NACSO), Windhoek, Namibia. [http://www.nacso.org.na/dwnlds/refs/SOC_2013.pdf] (Accessed on April 2015).
- NACSO. 2015. The state of community conservation in Namibia - a review of communal conservancies, community forests and other CBNRM initiatives (2014/15 Annual Report). NACSO, Windhoek. [http://www.nacso.org.na/dwnlds/refs/SOC_2015.pdf] (Accessed on February 2016).
- Nature Conservation Ordinance. No. 4 of 1975. Act 27: 86.
- Zimmermann, I., , M. Humavindu, and U. Nakamhel. 2014. The ecological, social and economic implications of private game parks and private nature reserves in Namibia. Ministry of Environment and Tourism. Windhoek, Namibia. [http://www.the-eis.com/data/literature/Private_Game_Parks_and_Private_Nature_Reserves_in_Namibia.pdf] (Accessed on February 2016).