

**DRYLAND CONSERVATION AREAS, INDIGENOUS PEOPLE, LIVELIHOODS AND
NATURAL RESOURCE VALUES IN SOUTH AFRICA. THE CASE OF KGALAGADI
TRANSFRONTIER PARK**

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ABSTRACT

Contemporary conservation and development understanding in both policy and academic circles espouses that natural resources have a significant contribution to the livelihoods of local people and that knowledge of this can better foster conservation policies that are consistent with livelihood and ecological needs. This thesis is based on research conducted in the southern Kalahari region, South Africa among the San and Mier communities bordering Kgalagadi Transfrontier Park. It looks at the importance of natural resources to the San and Mier community groups and ascertains the extent of resource use and its value within broader livelihood portfolios. It also focuses on the cultural values of natural resources and interactions among institutions and actors and how these shape natural resource governance and livelihood outcomes. Overall, natural resources represent an important livelihood source contributing up to 32 % and 9 % of the total income of the San and Mier respectively or up to 46 % and 23 % if livestock incomes are included. However, the dependence on, diversification patterns and distribution of natural resource income vary substantially between and within the two communities. With regards to the cultural values attached to natural resources by the San and Mier, the findings show that these arise from an incredibly diverse and sometimes conflicting array of values that punctuate the two communities' way of life and they are inextricably linked to resource use. Lastly, governance of natural resources in the co-managed Park and community-managed resettlement farms is characterised by complex institutional arrangements, compounded by the existence of multiple actors that have multiple and sometimes conflicting objectives – as shaped by different meanings and interpretations of natural resources. Heightened inter- and intra-community conflicts are common, notably resource use conflicts between the San and Mier and between the San 'modernist' and 'traditionalist' groups. This demonstrates that the communities' livelihood dynamics in general and the dependence on natural resources in particular, are closely linked with ecological, economic and social factors including history, culture and present livelihood needs. By exploring the social-environment interactions, the study highlights the complexities and diversity of resource use for livelihoods that should be taken into consideration for both conservation and development policy interventions and research. The main argument of the study is that the contribution of natural resources to local livelihood portfolios in co- and community-managed areas, can be better understood through a consideration of cultural dynamics and institutional arrangements since these condition natural resource access, value and use.

DECLARATION

I, **Gladman Thondhlana** hereby declare that this thesis is my own original work, has not been submitted for any degree or examination at any other university, and that the sources I have used have been fully acknowledged by complete references. This thesis is submitted in fulfilment of a PhD in Environmental Science in the Faculty of Science at Rhodes University, South Africa.

Signature: _____ Date: _____

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PART 1: BACKGROUND, RESEARCH OVERVIEW AND METHODS

CHAPTER 1

INTRODUCTION: NATURAL RESOURCES, LIVELIHOODS AND PROTECTED AREAS

1.1 INTRODUCTION

Contemporary literature and empirical evidence show that international awareness of the importance of natural resources in the lives of rural communities throughout the world has grown over time (Campbell et al., 1997; Wollenberg and Ingles, 1998; Cavendish, 2000; Ntiamoa-Baidu et al., 2001; Shackleton and Shackleton, 2000; 2004a; Campbell and Luckert, 2002; Kepe, 2002; MA, 2003; Araia, 2005; Dovie et al., 2007; World Bank, 2004, 2007). Drawing from Shackleton and Shackleton (2007), the term ‘natural resource’ is used in this study to refer to any raw or processed product that is produced from a wild biological resource that is harvested or used in-situ for either domestic consumption and non-consumption or small-scale trade. In signifying the role of natural resources in rural livelihoods Dovie (2004), Shackleton and Shackleton (2004b) and Vedeld et al. (2004), among others, note that millions of people globally make use of a wide range of forest and other wild natural resource products not only for household consumption but also for cash-income generation (Chapter 5, Section 5.1). Some of the major debates and arguments in natural resources, livelihoods and poverty alleviation studies have been around conceptualising how the commercialisation of natural resources by local people can be used to add value to livelihoods (Shackleton, 2005; Shackleton et al., 2008).

It is argued that guiding and enhancing the use of natural resource-based products in domestic and wider markets provides a possible approach to contribute to increasing livelihood security and poverty reduction, thereby providing incentives for natural resource conservation and sustainable use (Anorld and Ruiz Perez, 2001; Wunder, 2001; Shackleton, 2005; Chapter 2; Chapter 5). In support of earlier contentions, Cavendish (2000) posits that wild resources contribute to rural livelihoods in a number of ways, generally adding to a diversified livelihood portfolio. They can supplement livelihoods through direct provisioning, trade, and in times of hardship they can serve as safety nets (Shackleton et al., 2000b; 2008). This importance of biodiversity and other ecosystem services for poor rural people has led to

greater effort to link conservation and rural livelihoods both in protected areas such as national parks and beyond them (e.g. in communal lands surrounding parks).

In demonstrating and quantifying the role and importance of natural resources to livelihoods, there has been much effort to determine the monetary value of the resources used (Cavendish, 2000; Shackleton et al., 2000a; 2002; Campbell and Luckert, 2002; Vedeld et al., 2004; Blignaut and Moolman, 2006; Mmopelwa and Blignaut, 2009; Chapter 5). The absolute values obtained, however, differ between studies in relation to a range of contextual factors such as proximity to markets, currency strength, diversity of resources available, abundance of key resources, biodiversity, opportunity costs, (Shackleton et al., 2000b) and other factors such as culture and social institutions (Kepe, 2002; 2008a; Chapter 6; Chapter 7). For example, the contribution of natural resources to total livelihood income ranges from over 50 % in some settings to less than 20 % in others (Campbell et al., 2002). All these studies indicate that the majority of rural households makes use of wild resources from their immediate environment for either subsistence or commercial purposes or both. Therefore, this clearly indicates the vital part that could be occupied by the natural resources sector as either a formal or informal rural poverty alleviation strategy.

The realisation that rural people benefit from natural resources for everyday use and income generation has resulted in changes to park conservation philosophy and practice. A significant number of parks in Africa, and South Africa in particular, now embrace the 'sustainable use principle' to meet both community needs and ecological integrity. Furthermore, the recognition that parks should not be treated as conservation islands in a sea of degraded lands (Pollard et al., 2003) but be seen as islands of conservation in a sea of human development (WPC, 2003) has given birth to a relatively new approach commonly referred to as 'conservation beyond fences or parks'. This approach calls for the integration of conservation efforts in and beyond parks with the 'sustainable use principle' applied across the landscape (see Chapter 2, Section 2.2.3).

Both scientific and non-scientific (traditional) conservation techniques are considered in these initiatives and hence find common ground in the quest for meeting conservation and livelihood needs across landscapes. These approaches are based on the assumption that access to resources will encourage communities to respect and use these in such a way as to ensure

long term sustainability. Access creates an incentive for wise use of resources by inducing behavioural change that will promote sustainable biodiversity use and conservation (Hutton and Leader-Williams, 2003; Muchapondwa et al., 2009). Pretty (2006) stresses that such incentive-driven models of conservation should be nurtured and encouraged. Therefore, this demonstrates that parks offer livelihood opportunities through direct use and other non-use values of natural resources and are living models for modern conservation policy and practice (Shackleton, 1996 cited in du Toit et al., 2003).

1.2 RESEARCH GAPS AND PROBLEMS IN STUDIES LINKING CONSERVATION, LIVELIHOODS AND DEVELOPMENT

Despite the ever increasing studies and evidence on the economic importance of natural resources for local livelihoods (Section 1.1), relatively few studies have been conducted in dryland ecosystems in Southern Africa such as the Kalahari (some exceptions are Milton and Bond, 1986; Barrow and Mogaka, 2007; Kerven and Behnke, 2007 and Madzwamuse et al., 2007). Madzwamuse et al. (2007) contend that studies linking livelihoods and wild resources in dryland landscapes have received inadequate attention and that the evidence of contribution of resources to livelihoods has seldom been aggregated to make the case for investment in dryland management at both local and national levels. More often than not, policy makers have relied on special pleading (Madzwamuse et al., 2007) and intuition (Ferraro and Pattanayak, 2006) rather than systematic assessment to determine the contribution of resources to livelihoods. Notwithstanding the large area of South Africa under arid conditions and in the context of dryland parks and their surrounding environments, there has been little systematic analysis of their importance, especially to local communities who have historically benefited from these ecosystems.

Moreover, most studies have not attempted to assess all components of the livelihood portfolio with a few exceptions (for example, Cavendish, 2000; Dovie, 2004), yet diversified livelihoods is a key characteristic of rural economies (Shackleton et al, 2000b). The Poverty and Environment Network (PEN), an international network and research project on poverty, livelihoods and forest resources under the Centre for International Forest Research (CIFOR), represents one of the few initiatives to systematically consider the full scale of livelihood benefits offered by wild natural resources. Without such crucial knowledge, policy interventions to optimise dryland resources contribution to national development and poverty

reduction could be misguided (Anderson et al., 2004). Some concerns have been voiced regarding the perceived rate of degradation and unsustainable use of the arid zones (e.g. van Rooyen, 1998; de Villiers et al., 2002). If correct, this could undermine the value of this natural capital in meeting the basic needs of many households living in drylands such as the Kalahari where this study is based.

Shackleton et al. (2000b) further draw attention to the sectoral focuses and lack of multi-disciplinary research that have caused linkages between livelihoods and resource-use systems to be neglected. For example, it is argued that social dimensions such as cultural values (Cocks, 2006) and other social institutions that shape use (Kepe, 2008a) have been overlooked in wild resources and livelihoods studies. Lack of such integrated studies is in part the reason why there is little understanding of the significance of resources to rural livelihoods in drylands. Consequently, few policies specifically target drylands in many countries (Anderson et al., 2004). Livelihoods and natural resources studies should pay more attention to specific cultural and institutional contexts to provide more comprehensive and reflective insights on the significance of resources. Without such critical information, the contribution of natural resources to the livelihoods of people will not be properly conceptualised and contextualised. Consequently, unintended bias can result from implementing conservation and development or macro-economic policies that fail to take into account the special challenges and opportunities of drylands (Anderson et al., 2004).

Knowledge of the value of the use of natural resources and their contribution to livelihoods and quality of life is needed to incorporate natural resource access and use into conservation and development planning. It is almost impossible to design and develop a system for sustainable resource use in and beyond parks without such knowledge. Furthermore, without such studies, it will also be problematic to develop and recognise the natural resource sector as a serious and significant rural development opportunity, more so in a dryland ecosystem context. The advantage of holistic assessments of land-based livelihoods is that they facilitate understanding of the multiple and diverse ways in which 'natural capital' is still crucial for many people within their suite of livelihood strategies (Shackleton et al., 2000b). Therefore, it is important to differentiate between the daily use of natural resources in household provisioning (subsistence) and its contribution to household income (cash income) relative to other livelihood sources to obtain a more comprehensive understanding of how important

natural resources are to rural peoples' livelihoods in a diversified rural economy. This study attempts to estimate and understand the importance of natural resource use to the lives of local people in the Kalahari dryland of South Africa.

1.3 K GALAGADI TRANSFRONTIER PARK (KTP) AND THE LOCAL COMMUNITIES

In 2008, South African National Parks (SANParks, 2008) issued a call for expression of interest to undertake research to investigate and develop a system for sustainable resource use by the #Khomani San (Bushmen) and Mier communities in Kgalagadi Transfrontier Park (hereinafter KTP or the Park) and the surrounding (resettlement) communal lands. This thesis is a response to this call. No systematic, comprehensive research had been done in the area since the successful #Khomani San and Mier land claim in 1999, and presently limited knowledge exists regarding the contribution and importance of natural resources to the livelihoods of the local San and Mier communities. Thus, in line with SANParks' sustainable use principles, research was required to determine the multi-dimensional use value of wild natural resources (socio-economic, cultural and spiritual values) relative to the communities' broader livelihood. This project aims to enhance our understanding of the significance of dryland natural resources for both consumptive and non-consumptive purposes and, through this, analyse the opportunities for conservation interventions that will lead to enhanced livelihood security and improved relations between KTP and the neighbouring San and Mier communities.

The study focuses on the KTP and local #Khomani San (indigenous and traditionally hunter-gatherers) and Mier communities (traditionally stock farmers) located in the Northern Cape Province of South Africa (see Chapter 4). The KTP situation is unique and will provide a learning point for future conservation and development initiatives. First, it is the first so called 'Peace Park' in Southern Africa with a well documented infamous historic past of forced evictions of indigenous people. Second, in line with contemporary conservation approaches of involving local communities, it has embraced this principle by awarding a section of the Park (referred to as a Contract Park, see Section 2.2.2) to local communities. Third and last, the Kgalagadi Transfrontier Park Management is also actively involved in conservation and livelihoods efforts beyond the Park (SANParks, 2009, pers comm.). Therefore, the conservation authority, SANParks, does not want to see its parks as islands of conservation in

a sea of degraded environments. However, this in itself creates complex challenges in terms of understanding how resource value is realised both inside and outside the Park given different resource access agencies (cultural and socio-institutional dynamics) (see Chapters 6 and 7 respectively) in and out of the Park. This is because efforts aimed at combining poverty reduction/livelihood needs and conservation in and beyond parks have mixed outcomes, both positive and negative (Gartlan, 1998; Oates, 1999; Adams et al., 2004).

While it can be said that the San represent one of the best studied groups of indigenous peoples in the world today, much of the work that has been done has concentrated on their history and foraging adaptations (Hitchcock, 1987). However, relatively little in the way of a detailed analysis of the socio-economic significance of natural resources to these people has been done, despite their reputation for being ‘close to nature’. The Mier on the other hand represents a group that has been largely overlooked in previous studies and they are not considered as an indigenous community in some circles (see Chapter 4, Section 4.2.3). The neighbouring San and Mier communities were historically locked in chronic poverty and relative shortages of land, technologies, education, health, labour and life chances (Chennells, 2001) and therefore the biodiversity-human relationship is of critical importance. In the absence of job opportunities and other income generating projects people may look to the environment for daily needs and continued survival. Therefore, the rationale for undertaking this research lies in the preceding arguments, including factors such as the history of #Khomani San and Mier (of dispossession in terms of land and access to resources) where they were separated from the plants and animals they once foraged and hunted (see Chapter 4). There is also significant information on the history of the Park and the #Khomani San and Mier communities that provides excellent contextual background and SANParks specifically needs data regarding the direct-use and cultural values of dryland resources to communities in order to achieve its co-management and sustainable resource use objectives.

1.4 AIMS AND KEY QUESTIONS UNDERLYING THE STUDY

Given the preceding context and motivation, the overarching aim of this study is to determine the contribution of dryland natural resources to the livelihoods of local #Khomani San and Mier communities and to identify and understand the cultural and institutional arrangements and contexts that constrain or help the integration of land and its resources into the two

communities' livelihood portfolios. The study seeks to explore the following specific questions:

- What are the direct-use values of the wild natural resources to the #Khomani San and Mier communities?
- How important are wild natural resources (in both cash and non-cash terms) to the #Khomani San and Mier communities relative to other livelihood sources?
- What are the cultural significances and values (ethical, spiritual, symbolic, educational, existence and bequest values) of wild natural resources to the #Khomani San and the Mier communities?
- What are the institutional arrangements (including actors) that govern access and management of these natural resources within and outside the Park?
- What do the findings from the above questions mean for conservation, sustainable natural resource management and livelihoods improvement for the #Khomani San and Meir within the KTP and surrounds?

1.5 RESEARCH HYPOTHESES

This study is premised on the following hypotheses:

- Natural resources play an important role in the livelihoods of rural dwellers in the Kalahari area.
- Cultural values shape the importance attached to natural resources and therefore cultural values represent a framework in which the value of natural resources is negotiated, contested and interpreted.
- The interactions, different interests and unequal power relations among different actors (groups, individuals and organisations) generally shape the institutional landscape and governance of natural resources, particularly resource access for livelihood use by different San and Mier users.

The predominant postulation behind this study is that recognition of the use, importance and value of natural resources to local people will assist the Park in sustaining natural resource use, ensuring biodiversity conservation and meeting human livelihood needs. The livelihood and cultural importance of natural resources in the area provides the basis for considering sustainable access and use arrangements and for building community-park relationships. Further, the study explores the links between the direct use values of natural resources, the

cultural values underlying (and shaping) such uses and the institutional arrangements (including actors) that guide natural resource access and management in the Park and resettlement areas in an integrated and holistic manner. Such an approach assists in the understanding of natural resource use dynamics and allows for identification of the multiple challenges in natural resource management, and consequently making it easier to design useful and relevant recommendations.

1.6 THESIS OUTLINE

Chapter 1 presents an introduction and background to the study. Chapter 2 looks at the conservation trajectory from early separatist approaches to inclusive approaches with a view to bring to light the foundation of modern conservation practice. Subjects and policy frameworks related to sustainable resource use in and beyond parks are discussed at length to provide a framework within which natural resource contribution and value to livelihoods could be understood better. In Chapter 3, theoretical and conceptual frameworks influencing the research, the study's methodological approach and methods are discussed. Chapter 4 is a presentation and analysis of the general location of the study site, biophysical characteristics, historical background, general land use patterns, and socio-economic attributes. This provides a context within which natural resource contribution to local livelihoods can be unambiguously understood and appreciated. Chapter 5 presents the contribution (monetary value, desirability and usefulness) of natural resources to rural livelihoods. Chapter 6 discusses the cultural values (non-monetary, ethical significance, symbolic dimensions) of natural resources and the interconnectedness of cultural values and natural resource use. It also discusses how culture shapes resource access and use. The relationship between different actors and institutions and natural resource governance is presented in Chapter 7. This provides a broad understanding of how a combination of cultural factors (in Chapter 6) and institutional dynamics influence natural resource access, use, management and livelihoods of the San and Mier. Natural resources and their use cannot be disconnected from the issues of natural resource governance by different institutions. Chapter 8 presents a synthesis and conclusion of the study findings. Each of the results chapters (Chapters 4, 5, 6 and 7) is written as an independent paper to allow easy conversion for publication. Therefore, there might be some overlaps in the discussions between these and the initial literature review and context chapters (Chapters 1, 2 and 3).

CHAPTER 2

THEORETICAL AND CONCEPTUAL CONTEXT: PARKS, CONSERVATION AND LIVELIHOODS - FROM A GLOBAL TO A LOCAL PERSPECTIVE

2.1 INTRODUCTION

The concept of conservation with people in parks is now common currency in international conservation literature and debates. However, the concept of ‘conservation beyond parks’ is relatively new in Africa, and more so in South Africa (see Pollard et al., 2003). What is common though, in most of the deliberations on conservation in and beyond parks are the livelihood- biodiversity linkages. Most researchers agree that the concept of livelihoods (at least) includes cultural and social (institutional) dimensions, and that failure to understand and consider these on the one hand or isolating them on the other hand may lead to a poor understanding of the value of natural resources to rural livelihoods and consequently impact on conservation success (Ntiamoa-Baidu et al., 2001; Kepe, 2008a).

2.2 CONSERVATION AND DEVELOPMENT: AN INTERNATIONAL CONTEXT

2.2.1 Key strands and switches in conservation thinking

There is a steadily growing, but at times dichotomous, body of knowledge on ‘conservation and development’ in conservation literature (Gartlan, 1998; Chapin, 2004). Extremist conservation biologists on the one hand, argue for conservation without people (see Oates, 1999; Terborgh, 1999; Sunderland, 2006), while a relatively new resurgent group of commonly labelled social scientists view conservation and people as inextricably linked (Murphree, 2000). The growing and proven evidence of the contribution and value of natural resources to livelihoods both in parks and out of them has been a key driver for the growing support of people-centred approaches to conservation (see Chapter 7).

Historically, conservation strategies have been dominated by attempts to reserve places for nature, and thus separate humans and other species (Carruthers, 1995, 1997; Hulme and Murphree, 1999; Pretty, 2006). A model which has been called ‘fortress conservation’, the ‘fences and fines approach’ (Wells et al., 1992) or ‘coercive conservation’ (Peluso, 1993) dominated conservation thinking internationally for much of the 20th century (Pollard et al, 2003). This conservation approach was premised particularly upon the USA idea of a natural park as a pristine or wilderness area (du Toit et al., 2003; Pretty, 2006) and the British notion

of a nature reserve that is managed intensively (Adams, 2004). Wilderness areas were envisioned as pristine environments comparable to those that existed before human interference, with delicately balanced ecosystems that needed to be preserved for present enjoyment and non-extractive use only (Pretty, 2006). Thus, traditional conservationist beliefs generally hold the view that there is an inverse relationship between human actions and the well being of the ecosystem (Pretty, 2006). This same sentiment is expressed more profoundly by Carruthers (1995). She posits that, referring to Kruger National Park in South Africa: “Since its inception and sporadic development, management has been driven by a desire to minimise human influences and maintain ‘pristine’ characteristics, no doubt shaped by the romanticised European view of the natural landscape before twentieth-century modernisation” (cited in Freitag- Ronaldson and Foxcroft, 2003).

However, with increasing and broad conservation knowledge, ‘protectionist’ conservation principles and practice came under fierce but justified criticism that led to the emergence of conservation with people. There is a popular belief among social scientists that conservationists are contemptuous of human needs and quality of life that they valued plants and animals over and above people (Hoff and McNutt, 1994). This enduring tension between resource exploitation and conservation has always been at the heart of conservation debates (Wilson and Bryant, 1997). Political changes too (especially with the advent of democratic practices) also inspired a new interest in decentralisation and community participation in conservation projects (World Bank, 2004). New and innovative programmes, aimed at removing or reducing conflicts between protected areas and people, signalled a shift in international thinking on conservation issues (Fabricius, 2004).

The new conservation approach emerged in different names such as co-management (Kelleher and Phillips, 1999; Murphree, 2000; Borrini-Feyerabend et al., 2000, 2004; Berkes, 2008b; de Koning, 2009), community-based natural resources management/conservation (Campbell et al., 2001; Fabricius et al., 2004; Kiss, 2004; Berkes, 2007), joint-management and Integrated Conservation and Development Projects (ICDPs) (ICEM, 2003; Agrawal and Redford, 2006) among others and in various degrees of application in different countries and regions. These projects attempted to ensure the conservation of biological diversity by reconciling the management of protected areas with social and economic needs of local people (Wells et al., 1992; McNeely, 1995; Borrini Feyerabend et al., 2000). This type of conservation that links

up with the livelihoods of the neighbouring residents is seen as an ideal way through which realised value (in monetary sense) can be appropriated for human use (Wells, 1996; Hulme and Murphree, 1999; Salafsky and Wollenburg, 2000, cited in Kepe, 2002).

Some of the factors leading to the criticism of 'exclusionist' approaches include, but are not limited to, the increased risk of marginalisation which resulted directly from the loss of traditional land rights, the risk of food insecurity, the risk of social disarticulation and the associated 'extinction of indigenous knowledge' (Pretty, 2006), and the risk of protected areas conversion into uncontrolled illegal activities such as poaching and protests (Palmer et al., 2002; World Bank, 2004). For example, in 1995, the Dwesa-Cwebe community in the Eastern Cape Province of South Africa invaded the Dwesa and Cwebe reserves as a symbolic act of defiance against 'protectionist approaches'. Once inside, they began plundering shellfish in the marine reserves and decimating indigenous inland forests (Timmermans, 1999). This protest strategy attracted much public and official attention that resulted in redressive interventions from many quarters including conservation authorities, local Government, local leadership and NGOs.

Thus, the need for conservation with social justice is precisely considered as one of the key motivations behind people-based approaches. The Declaration on the "RIGHT TO DEVELOPMENT" asserts that all human beings have an inalienable human right to development. According to Attfield and Wilkins (1992), development precisely refers to a comprehensive, social, economic, cultural and political process which aims at the constant improvement of the well being of the entire population and all its individuals on the basis of their active, free and meaningful participation in development and in the fair distribution of benefits (Attfield and Wilkins, 1992). The two basic principles of social justice are a) equality and equity in distribution of material goods such as natural resources and; b) participation in decisions affecting one's or community life (Hoff and McNutt, 1994). The former is crucial in exploration of the causal associations between misdistribution, poverty and exhaustion of natural resources, while the latter has been the foundation for new approaches that are founded on decentralisation of political power which would foster both community participation and the sustainable use of natural resources. Five categories of social justice are distinguished namely participatory, distributive, commutative, contributive and retributive justice (see Blignaut, 2004). The common currency in all the mentioned categories is a

highlight of the fact that everyone has a fundamental right of access to natural resources needed to satisfy all basic human rights.

Social justice also means that the survival rights of the oppressed and disenfranchised should be protected. In some instances, it entails giving back land resources to local and indigenous people who have a historical record of forceful evictions from parks and other forms of protected areas (Ramutsindela, 2002; Kepe et al., 2005). Lee (2006) asserts that there is no substitute for the winning of land rights as a way of conferring dignity and self reliance. The form of resettlement may depend on local conditions, but people could be settled inside or outside protected areas, with sustainable use as a key principle underlying conservation efforts. Resettlement areas and Contract Parks are such examples of land given to local communities (such as the San and Mier) outside and inside parks respectively (Reid et al., 2004). It is not surprising therefore, that sustainable development was extended to make an explicit reference to justice, equity, and elimination of poverty during the World Summit on Sustainable Development in Johannesburg in 2002. World leaders agreed that biodiversity and resource conservation must be fully integrated into strategies for economic development and are essential elements of sustainable livelihoods at local scales.

Today, there is a growing number of field conservation projects where at least some livelihood needs have been realised. For example, the Dzanga-Sangha project in south-western Central African Republic, despite operational problems, has been hailed as flagship of people-centred conservation (Ntiamoa-Baidu et al., 2001). The project is engaged in the management of natural resources within a multi-use protected area, comprising the Dzanga-Ndoki National Parks and the Dzanga-Dende Special Forest Reserve. The project is successful in conserving the forest's abundant and diverse plants and animals, developing eco-tourism potential and protecting the socio-economic rights of the indigenous Ba'Aka people who exclusively depend on wildlife as their source of livelihoods (Ntiamoa-Baidu et al., 2001). The understanding in community involvement, joint-management or co-management is that some forms of extractive use, if well managed, properly monitored and based on understanding of biological limits to use, generate funds and provide positive incentives to drive habitat and species conservation (Bond, 1994; Child, 1995; Murphree, 1996; Hulme and Murphree, 1999). This approach has seen the emergence of Contract Parks

as a way of promoting sustainable use (both extractive and non-extractive use) for meeting both ecological and human needs (see Reid et al., 2004).

2.2.2 Transfrontier Parks (TFPs) and Contract Parks

A Transfrontier Park (TFP) (or Transfrontier Protected Area) is typically defined as “an area of land and/or sea that straddles one or more boundaries between states, sub-national units such as provinces and regions, autonomous areas and/or areas beyond the limits of national sovereignty or jurisdiction, whose constituent parts are especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources and managed co-operatively through legal or other effective means” (Sandwith et al., 2001:3). In South Africa, these TFPs that link ecosystems across international borders are also referred to as ‘Peace Parks’. Some TFP agreements specify that each country should give particular attention to developing and involving communities living adjacent to the park (see Chapter 4, Section 4.2.2; Chapter 7, Section 7.2.1). This is parallel to current trends in literature that support the view that TFPs often help to reunite communities historically divided by arbitrary political divisions and improve people-park relations (Hanks, 2003). Since the official launch of the KTP in May 2000, a number of other TFPs (with co-management arrangements) have been formed and more are in the planning process, not just in South Africa (e.g. the Great Limpopo Transfrontier Park and the Ai-!Ais-Richtersveld Transfrontier Park) but in the rest of Africa as well (Büscher, 2010).

The advent of Contract Parks (in TFPs and other parks) worldwide was seen as a way of involving local people in the management of resources that they have traditionally relied upon. A Contract Park is defined as “any land that is either privately or state owned that is managed by an agreement reached between the owner (state or private) and a conservation agency such as the South African National Parks (Boonzaier, 1996). The ‘Contract Park’ land is legally specified and its boundaries, identification, ownership and status are clearly established (Robinson, 1985, cited in Reid et al., 2004). At times it entails negotiations with surrounding local residents and negotiating for ‘Contract Parks’ in which communal land is incorporated within game reserves or part of existing parks demarcated into separate units so that they can be used for conservation and development purposes (Wynberg and Kepe, 1999; Kepe et al, 2005; Holden, 2007; Kepe, 2008b). Conceptually, the conservation discourse behind Contract Parks recognises that alternative forms of income generation, with genuine

economic incentives, must be offered in order to protect the parks and meet community needs (Reid et al., 2004). In most Contract Park projects, eco-tourism is held up as ‘the promise of the future’ for alternative income generation. These ‘community-based’ Contract Park projects range from allowing local people limited use of resources inside them, to giving local people almost complete control of the project (Kepe, 2002). Supporting this position was the president of the IUCN, during the World Parks Congress in Durban in 2003, when he argued that “if local people do not support protected areas, then they cannot last” and that protected areas should be now seen as “islands of biodiversity in an ocean of sustainable human development” with their benefits extending far beyond their boundaries.

However, co-management approaches in general and particularly in protected areas, have been subject to criticism. Locke and Dearden (2005) (cited in Adams, 2006) warn that the recent paradigm shift towards greater community participation weakens the ability of protected areas to preserve wild biodiversity, and Terborgh (1999) insists that “active protection of parks requires a top-down approach because enforcement is invariably in the hands of police and other armed forces” and further discusses the failures of ecotourism and the sustainable development movement. Brockington (2004) believes that ‘fortress conservation’ is still in practice in some localities. Drawing from his experience in Nkomazi Game Reserve in Tanzania, Brockington argues that: “the lessons of history are that new mechanisms of natural resource use and management can be imposed by powerful groups on weaker, marginal peoples, and that this situation has continued without effective challenges for many years... we have to acknowledge the existence of the powerful forces mitigating against just solutions in order that the justices which community conservation portends might become reality” (cited in Fabricius and Kock, 2004:32).

Sceptics of people-centred conservation argue that projects that seek to integrate conservation and development have tended to be overambitious and underachieving. Brockington et al. (2006) highlight that the potential benefits of integrating biodiversity with management and planning for livelihood needs are substantial, but a few examples of successful implementation exist. Marshal Murphree (2000:2), a key proponent of Community Based Conservation (CBC) argues that, “successes recorded (with CBC) are isolated and externally initiated and heavily subsidised by the outside world” and therefore, that this thought (of CBC) is still an aspiration for many parks and their authorities. Adams et al. (2004), contend

that although it is desirable to satisfy the goals of biodiversity and poverty reduction simultaneously, it may only be possible under specific institutional, ecological, and developmental conditions. Hayes (2006) warns that given the mounting arguments against the environmental efficacy of community-based conservation programmes and the recent backlash against sustainable development and local participation in resources management, it appears that the pendulum maybe once again swinging in favour of the traditional park (protectionist) paradigm. Fabricius (2004) suggest that conservation projects should not be evaluated generically, rather a case by case approach will provide a justified and objective state-of-affairs of CBNRM projects.

However, despite the criticisms noted above resource use is still not a choice but an imperative for many households living in rural Africa and more so for the poorest (World Bank, 2002a, 2002b, 2004; Shackleton and Shackleton, 2004b; Pretty, 2006). Therefore, conservation efforts that embrace sustainable use by the local poor are essential if we are to address the Millennium Development Goals, since, for some individuals, natural resources are perceived as central to their survival and in most cases local people are characterised by extreme poverty (World Bank, 2004). Ferraro and Pattanayak (2006) argue that successful conservation projects that involve local people, though few and far from being perfect show how local communities can benefit from conservation and thus, provides a path for future conservation initiatives. Since the establishment of the Kgalagadi Transfrontier Park, (and the subsequent creation of a Contract Park inside the KTP), similar establishments have been seen elsewhere in South Africa. Contract Parks in the Great Limpopo Transfrontier Park and Ai-!Ais-Richtersveld National Park are such examples. The principal national conservation agency responsible for the management of these parks is South African National Parks (SANParks). KTP remains a prime example and a model for future conservation practice (that attempts to embrace local livelihood needs) not only in South Africa, but also in the whole of Africa.

2.2.3 Conservation beyond park fences

For much of the twentieth century most parks were managed as distinct units separate from their surrounding landscapes (Pollard et al., 2003; Rao and Ginsberg, 2010). However, with improving understanding that conservation areas do not exist in a vacuum but are nested and connected in a heterogeneous, social, economic, environmental and political matrix that

influences their origins and development (Pollard et al., 2003), the practice of ‘island’ conservation has been challenged (Fabricius et al., 2006). Importantly, much of the earth’s biodiversity is found outside parks and therefore, conservation advocates are challenged to move the principles and practices beyond fences through support for ‘conservation by the people’ (Murphree, 1996; Rao and Ginsberg, 2010). Muchapondwa et al. (2009), contend that the land that is outside of protected areas could potentially alter ecological functions inside protected areas and subsequently leading to biodiversity loss, given that protected areas are always part of larger ecosystems. Hence there is need to expand management interventions beyond parks or protected areas (Chapter 1, Section 1.1). This approach is also pro-poor in its thinking and strategies since it also pursues what Cernea and Schmidt-Soltau, (2006) call ‘double sustainability’ (as it endeavours to protect both the biodiversity and people’s livelihoods at the same time).

Important in *conservation beyond fences* is the empowering of communities and individuals to take full responsibility for managing natural resources adjacent to protected areas that contribute to their sustainable livelihoods. On the basis of several case studies in South Africa, Fabricius and de Wet (1999) concluded that “the main negative conservation impacts of forced removals from protected areas are that they contribute to unsustainable resource use outside the protected areas, because of increased pressure on natural resources in areas already degraded due to overpopulation” (cited in Fabricius and de Wet, 2002). The theme of the 5th World Parks Congress on ‘Benefits Beyond Boundaries’ captures the euphoria of community benefits from protected areas and beyond. The theme is viewed as a way of challenging people to understand the many values and benefits that areas beyond protected areas offer (Miller, 2003 cited in Ramutsindela, 2006). The KTP has programmes targeted at the surrounding communal lands where the San and Mier communities live, after being provided with land ownership outside the Park following their successful land claim. The concept is that if resources are managed sustainably, especially within the local cultural and institutional contexts, both local communities and the ecosystem will be sustained, consequently avoiding pressure on Park resources.

2.2.4 Culture, institutional dynamics and natural resource governance

At the heart of contemporary conservation paradigms are the influences of cultural background and social institutional arrangements in terms of natural resource access, use and

governance. Culture and other social institutions are important in access and use of natural resources in given contexts (e.g. Kepe, 2002, 2008a; Matose, 2008; Chapter 3, Section 3.4; Chapter 5, Section 5.1; Chapter 6; Chapter 7). Cultural, spiritual, and heritage values exert a strong influence on local preferences and well being. It is also argued, for instance that the notional value that elements of the environment have for different people is a reflection of values embodied in their cultures (Byers, 1996; Rao and Ginsberg, 2010). Thus, natural resource use ultimately originates from within the constellation of shared goals to which a society aspires – elements that transform natural resources into satisfaction of human needs.

Though proponents of strict protectionist approaches still spearhead for intensively and strictly managed protected areas, other studies contend that other land-use regimes may provide effective means for communities to enforce rules and that protected areas do no better than alternative governance structures (Hayes, 2006). The debate on the role of local institutions in biodiversity conservation and livelihoods linkages has been discussed at length in the literature (Ostrom, 1990; Western and Wright, 1994; Ghimire and Pimbert, 1997; Neumann, 1997, 1998; Hulme and Murphree, 2001). Most authors also agree that institutions shape access and use of resources in a given context (Kepe, 2002, 2008a; Matose, 2008). Institutions are regarded as levers through which human behavior could be controlled and resources could be sustainably managed (see Chapter 7). Therefore considering different cultural orientations and institutional configurations, the environment that is being valued becomes a site of conflict between competing notions of value and interests of the different people.

However, very few studies on resource use and livelihood dynamics have looked at the influence of cultural aspects (such as identity, traditional knowledge, myths, norms, etc) and institutional configurations on resource access, use, livelihoods and management (see Matose, 2008). Furthermore, there has been less focus on cases of land restitution in protected areas (such as the KTP) where co-management is often seen to be applicable (de Koning, 2009). A very big complement of studies has failed to realise that protected areas and areas adjacent to them are sites of nested and complex institutional arrangements. Hence, the knowledge and understanding on how the value placed on resources by resource users is influenced by various institutional arrangements is still shallow. A focus on the influence of institutions is critical in this study as co-management has been seen as the only strategy in memorandum of

agreements to reconcile land restitution in protected areas (Kepe, 2008b). Institutional and natural resource governance issues are quite different between co-managed parks and community-managed land. Governance aspects in parks often involve the principal conservation agency (usually Government agencies) and representatives of local communities, and though rules are designed through collaborative means, communities are relatively powerless and their needs and aspirations are rarely addressed (Sayer et al., 2000; Brockington, 2004). In community-owned land, natural resource management responsibilities often entirely lie with the community through locally elected committees of traditional leadership. However, inter and intra community conflicts are common, with certain groups of people possessing more decision making powers than others (Ellis, 2010; Thondhlana et al., 2011). In the context of the KTP, management of resources could be relatively easy in the Park, while it could be more challenging outside the Park due to increased complexity ranging from power relations, cultural differentiation, other competing land uses and heightened inter- and intra-community heterogeneity among others. Different land tenure regimes such as the Contract Park, the rest of Park, surrounding game farms and communally-owned (See Chapter 4, Section 4.2.2.2) resettlement land mean different management arrangements.

Community-owned land, such as the resettlement farms owned by the San and Mier communities in the Kalahari is what is normally referred to as common property, implying a system of common governance for resources where use of the resources by separate units like households produces external effects for each other (Vatn, 2005). Therefore, by establishing common property over the resources at stake, the San and Mier communities regulate interactions through rules about *who is allowed to do what* concerning the common resources. State property such as the KTP, is about internalising the externalities by bringing them under one common set of goals, and one common governance structure, in this case, the state (Vatn, 2005). Co-management of state land such as the KTP, is in response to the fact that action by one unit has external influence over the other. For example, if the Park management decides to restrict resource access in the Park, local communities may not be able to use resources that have multi-dimensional meaning to their livelihoods. Therefore, joining management efforts (co-management) is seen as a way of transforming the external problem e.g. resource access restriction into an internal one, which can then be treated with the common management structure of key actors. The Joint Management Board (JMB) of the KTP is such management

structure that is supposed to represent the interests of SANParks, the San and Mier, key stakeholders in the Contract Park agreement (see Chapter 7, Section 7.4.2.2).

However, each land arrangement faces different challenges with the management of communally-owned resettlement land being particularly challenging due to the aforesaid factors. Understanding the functioning of these different resource regimes (through examining culturally and institutionally rooted interactions) is critical in designing approaches that can contribute to the sustainable management of natural resources in the different resource tenure regimes. This is especially important in situations where local communities are involved in co-management of some parcels of land such as the Contract Park, as in this case study.

2.3 DRYLAND ECOSYSTEMS AND RURAL LIVELIHOODS

Attention to drylands and rural livelihoods becomes salient to this study as more than 91 % of South African lands is classified as arid or drylands (de Villiers et al., 2002). The Millennium Ecosystem Assessment (MA) (2003) defines a dryland “as land where plant production is limited by water availability”. Drylands as defined by the Convention to Combat Desertification, refers to lands where annual precipitation is less than two thirds of potential evaporation, from dry sub-humid areas (ratio ranges 0.50 - 0.65), through semi-arid, arid and hyper-arid (ratio < 0.05), but excluding polar areas. Dryland ecosystems including sub-humid, semi-arid, arid and hyper-arid areas occupy approximately 50 % of the Earth’s terrestrial surface (Madzwamuse et al., 2007). The Kalahari region, where this study is based, is a semi-desert area which receives less than 200 mm of rainfall annually (see Chapter 4, Section 4.2.1).

More than 35 % of the world’s population live in drylands, and many people directly depend on them for their livelihoods for goods and services such as food, fodder, fibre, medicine and so forth (Madzwamuse et al., 2007), contrary to the once popular notion that viewed drylands as wastelands (Bulpin, 1965). According to Anderson et al. (2004), African drylands alone are home to 268 million people or 40 % of the continent’s population and excluding deserts, comprise 43 % of the continent’s surface area. Some of these drylands are marginalised and contain many of the Africa’s poorest and most food-insecure people. Most of the drylands, particularly hyper-arid and arid lands are nominally regarded as extensive grazing lands for livestock or game (Grossman and Ganda, 1989).

Drylands also provide habitat for wildlife and are critical to the survival of many migrating species. In addition, such drylands are often the last reserves of this game as the land is unsuitable for conversion into agriculture or forestry. Despite comparatively low species numbers, biodiversity is crucial to maintaining ecosystem functions in drylands. Losing species in dryland systems may result in the reduction of resilience, productivity and livelihood security far more quickly than in more humid environments especially given the increasingly evident encroachment of human activity into the very dry and hyper-arid areas. Madzwamuse et al. (2007), contend that although drylands have fewer species than the tropics or semi-tropics, they are characterised by a high degree of endemism and also contain wild resource products with high use and non-use values. For example, the value of land under wildlife in the arid Lowveld region of South Africa has been found to be potentially higher than other land-use option (Blignaut and Moolman, 2006). As a result, most researchers, practitioners, donor agencies and government departments are being compelled to re-examine their perceptions of drylands (such as the Kalahari) as wastelands or useless areas (e.g. Barrow and Mogaka, 2007; Madzwamuse et al., 2007). Drylands have been presented with new names such as ‘the real jewels of the Kalahari’ (Madzwamuse at al., 2007), ‘undervalued national economic resources’ referring to Kenya’s drylands (Barrow and Mogaka, 2007) and the ‘hidden value’ (Araia, 2005). Anderson et al. (2004), contend that productive and prosperous enterprises in a dryland context can only flourish where people in drylands are not only able to secure the necessary investment, largely for water and infrastructure development, but also where the contribution of natural resources to their livelihoods is clearly understood.

2.4 A SOUTH AFRICAN CONTEXT

2.4.1 Conservation policy

After the first democratic elections in 1994, the new ANC government of South Africa realised that protected areas had remained inaccessible to the majority of South Africans and few benefits were derived from these, hence the need to come up with initiatives that benefit local communities (DET, 1997). Conservation without people was a characteristic of the pre-1994 apartheid era in which the basic philosophy of protectionism prevailed, particularly with an explicit emphasis on the repudiation of the human element (Carruthers, 1997). Of particular concern was the fact that most protected areas were established within some of the most poverty stricken parts of the country and in most instances at severe costs to indigenous

and local communities. However, South Africa recognised that parks are assets of unsurpassed value which both conserve biodiversity and potentially generate substantial socio-economic benefits to local communities and the nation as a whole. Since then, the preconditions for and discourses on the sustainability of conservation areas are being rewritten as the practice of fortress conservation is increasingly challenged (Pollard et al., 2003). Since the early 1990's the conservation sector in South Africa has made strides to emulate their counterparts in the rest of Africa and elsewhere, by incorporating rural livelihoods and social justice – in practice or at least in principle – into conservation planning (Wynberg and Kepe, 1999; Cock and Fig, 2000 cited in Kepe, 2002). Many of the conservation areas, such as the KTP are located in the dry regions of South Africa.

2.4.2 South African policy context on sustainable use in parks and surrounding landscapes

Table 2.1 provides a brief overview of some of the key policies that have guided natural resource management strategies and actions and continue to affect *people-natural resource* relationships in South Africa. This should not be seen as exhaustive though. South Africa is a signatory of the Convention on Biodiversity (CBD). The CBD is widely seen as a turning point in conservation, in its embodiment of holistic strategies to ensure the conservation and sustainable use of biological resources (Kepe, 2002). The CBD's main objectives are the conservation of biodiversity; the sustainable use of biological resources; and the fair and equitable sharing of benefits arising from the use of genetic resources. Article 8 (j) of the CBD calls for approval of local people in promoting wider use of their knowledge and sharing with them the benefits of such commercial utilisation of knowledge (UNEP, 1992). This non-binding instrument has provided an impetus and precursor to community-based conservation in and beyond parks in South Africa and elsewhere. Having signed the CBD agreement in 1992 and in line with the requirement of Article 6 of the convention, South Africa developed a National Biodiversity Strategy and Action Plan and approved the National Environmental Management: Protected Areas Act 57 of 2003 among other initiatives. A key feature in these strategies and plans is the involvement of indigenous and local communities in conservation planning, particularly those communities with a history of forced eviction from their ancestral lands. The awarding of ancestral land back to the indigenous San and Mier communities in the KTP is partly seen as a result of the Declaration of the rights of indigenous people (Table 2.1).

Table 2.1: A brief overview of key policies informing natural resource management approaches in South Africa

Key policy	Influence on people and parks
Global policies	
Declaration on the Rights of Indigenous Peoples	Provides the minimum standards for the survival, dignity and well-being of the indigenous peoples of the world.
United Nations Convention to Combat Desertification (UNCCD)	Provides a framework to combat land degradation (that cause desertification) and mitigate the effects of drought in arid, semi-arid and dry sub-humid areas through national action programmes that incorporate long-term strategies. The strategies are supported by international cooperation and partnership arrangements.
South African policies	
Biodiversity Act No. 10 of 2004	Calls for integrated and cooperative governance of biodiversity conservation, sustainable use of indigenous biological resources and the fair and equitable sharing of benefits from indigenous resources.
Protected Areas Act No. 57 of 2003	Stipulates a comprehensive and consultative planning process for the management of national parks and other protected areas.
National Biodiversity Strategy and Action Plan of 2003	South Africa is required to develop national strategies, plans or programmes for the conservation and sustainable use of biodiversity and equitable sharing of benefits derived from genetic resources.
National Forest Act of 1998	The status of some tree species such as <i>Acacia erioloba</i> , <i>Acacia haematoxylon</i> and <i>Boscia albitrunca</i> are listed in the Red List of South African Plants as declining and hence they are protected by National Law.
Objective 1.4 of the White paper of 2000	Promotes environmentally sound and sustainable development in areas adjacent to or within protected areas.
SA National Biodiversity Strategy and the Durban Accord	Advocates for sustainable natural resource use.
SANParks Draft Policy on Resource Use	SANParks to “familiarise itself with historical relationships between the protected area, its resources and stakeholders, particularly against the backdrop of historical ownership of and access to land and resources”.

2.4.3 Drylands of South Africa

Nearly 91 % of the South Africa is arid, semi-arid or dry sub-humid and falls broadly within the United Nations Convention to Combat Desertification (UNCCD) definition of *affected drylands* (de Villiers et al., 2002). About 8 % is considered hyper-arid while only about 1 % of the surface areas of South Africa may be defined as humid. The distribution of the five

aridity zones is represented in Table 2.2. The Kgalagadi Transfrontier Park is located in the Northern Cape province of South Africa. As indicated in the above table, the Northern Cape, unlike others, is the most arid province consisting of arid and hyper-arid conditions only.

Table 2.2: Distribution of aridity zones in South Africa per province (after Hoffman et al., 1999 cited in de Villiers et al., 2002)

Province	% Aridity class according to ratio of MAP:PET					
	Hyper-arid	Arid	Semi-arid	Dry sub-humid	Humid	Total area
	<0.05	0.05-0.2	0.2-0.5	0.5-0.65	>0.65	Km ²
Eastern Cape	0	34	51	12	3	169 863
Free State	0	34	65	1	0	129 798
Gauteng	0	0	100	0	0	18 186
KwaZulu-Natal	0	0	60	31	8	92 333
Mpumalanga	0	0	88	9	3	77 780
Northern Cape	24	76	0	0	0	362 739
Northern Province	0	30	68	1	0	123 190
North West	0	57	43	0	0	116 178
Western Cape	8	64	24	2	2	129 503
Total km ²	96 142	566 944	477 169	61 532	17 783	1 219 570
% of total area	8	47	39	5	1	100

2.4.4 Land Reform in South Africa

In 1994, consequent to the end of apartheid, the South African government instigated an ambitious, policy-driven land reform and restitution programme intended to reduce social disparities and improve the lives of those marginalised by the Apartheid system of segregation and discrimination (Williams, 1996; Levin and Weiner, 1997; Ramutsindela, 1998; Bradstock, 2004; Kepe et al., 2005). Land Reform in South Africa is divided into three programmes namely Land Redistribution, Land Tenure Reform and Land Restitution. The main objectives of the land reform programme are to (a) redress the injustice of the past; (b) foster National reconciliation and stability; (c) underpin economic growth, and (c) improve household welfare and alleviate poverty (DLA, 1997). According to Kepe et al. (2005), the land restitution policy (under which the San and Mier land claims fall) aims to restore land or provide alternative forms of redress (e.g. alternative land, financial compensation or preferential access to state development projects) to people dispossessed of their rights to land by racially discriminatory legislation and practice after 1913. The Northern Cape's

Commission on Restitution of Land Rights promises that “a person or community dispossessed of property is entitled either to restitution of that property or to equitable redress. This is in accordance to the South African Constitution mission to build a better future based on social justice”.

One of the most contentious rural land restitution cases in South Africa is that of the Dwesa/Cwebe on the ‘Wild Coast’. The non-resolution of land claims on the Wild Coast had been a source of numerous land-related conflicts (Kepe, 2001). Most of these claims were in relation to land reserved for nature conservation, or land targeted for economic development (see Kepe, 2001). Villagers who lost land to the Dwesa/Cwebe Nature Reserves finally had their land rights restored in July 2001, after many years of mayhem. Another notable example is the Makuleke community in the Northern part of Kruger National Park. It represents one of the first large-scale community-based rural land claims in conservation areas in South Africa and arguably set an excellent precedent for land claims in other important conservation areas (Ramutsindela, 2002).

Given the emerging acknowledgement of the realised value of natural resources to the livelihoods of many rural South Africans, several authors argue that it is worth asking whether land reform, amongst other things, can enhance this value by raising productivity levels and increasing access to and control over the resources and contribute to the reduction of poverty (Shackleton et al., 2000a, 2000b; Kepe, 2002). Such knowledge is important in determining and informing future natural resource use plans in resettlement land especially land that is inside and outside parks, such as the park land (in the KTP) and communal resettlement farms (adjacent to the KTP) awarded to the San and Mier communities of the Kalahari (see Chapter 4).

2.4.5 Land reform and poverty alleviation

Andrew et al. (2003), argue that the Land Reform Programme as a poverty alleviation strategy has not made significant progress. It has been found in a recent study that 50 % of all land reform projects have failed to make beneficiaries permanently better off (CDE, 2008b cited in Martens, 2009). For this reason, Goebel (2005) argues that it is increasingly becoming difficult to convincingly argue that land reform will alleviate rural poverty. For example, land transferred in a redistribution process in Limpopo province was found to be either abandoned

or used less productively than before (McCusker, 2004). This commentator further contends that it is not the quantity of the land but the quality of the benefits derived from the land that matters and the support and capacity that is provided after the redistribution or restitution of the land. Often people are left to fend for themselves. Within the context of this study, an analysis of different institutional arrangements and systems of state support will help in understanding how they constrain or improve the capacity of local communities (the San and Mier) to manage their land and improve their livelihood strategies.

The 2003 World Parks Congress held in Durban stressed that biodiversity conservation and protected area management must be socially sound, that is, “must strive to reduce and in no way exacerbate poverty” (IUCN, 2004). While IUCN recommends to its members that “where negative social, cultural, and economic impacts occur as a result of protected areas creation or management, affected communities should be compensated (IUCN, 2004), conservation organisations have not yet translated this recommendation into practice by adopting consistent formal resettlement policies. Government officials sometimes openly argue that the costs of resettling park inhabitants according to socially sound guidelines will be too high (Cernea and Schmidt-Soltau, 2006). Therefore, it has been argued that land reform is not contributing to improved livelihoods as mere access to land does not mean better livelihoods or better land-use practices (Andrew et al., 2003).

However, while this evidence is not contested, most of the indicators of a successful land reform are biased towards crop production while little is known about the contribution of land reform in terms of natural resource access and use, and importance for cultural and identity fulfilment in the case of the San and Mier. In addition, the relationship between livestock ownership and resource use (grazing and browsing) is also rather shallow at this stage. The San and Mier communities received land outside the KTP through the land restitution programme as a way to improve their livelihoods (see Chapter 4). Some of the households own livestock among other livelihood strategies and options. Understanding these relationships (between land reform, resource use, livestock ownership, institutions and livelihoods) will shed light on the different interest between resource groups/users between and within communities.

CHAPTER 3

RESEARCH APPROACH, CONCEPTUAL FRAMEWORKS AND METHODS

3.1 INTRODUCTION

This Chapter presents a particular view on the research approach to the study and explores ways in which specific understandings of resource value and how it manifests become salient to the issue of natural resource use and management in the context of the complete livelihood portfolio. A key distinction that this Chapter will seek to draw out is between the tangible and intangible dimensions of natural resources by looking at the frameworks for understanding the direct-use and non-use values of natural resources (i.e. the Total Economic Value (TEV) and the Millennium Ecosystem Assessment (MA) frameworks. Methodological shortcomings of neo-classical or traditional valuation approaches will be highlighted and integrative approaches (e.g. the Sustainable Livelihood Framework) will be discussed.

The TEV (Figure 3.1) and the MA (Table 3.1) frameworks are relevant in this study as they are useful in conceptualising and identifying the multiple values attached to natural resources and, in particular, the culturally-inspired uses of natural resources enjoyed by the San and Mier communities of the Kalahari. The Sustainable Livelihoods Framework (SLF) is used as a methodological approach to understand the conditions, the alternatives and strategies and the limitations that affect the livelihoods of the sampled San and Mier households, with regards to natural resource use and management. The Institutional Analysis and Development (IAD) framework (Figure 3.2) is specifically used to explore the different actors and institutions responsible for natural resource access and management in the Park and the resettlement farms and how these interact to influence natural resource management and livelihood outcomes. The above-mentioned approaches will be used in a holistic way to explore the links between the direct use values of natural resources, understood in combination with the cultural values uses of natural resources and the institutions shaping resources use and management in the KTP and the community-managed resettlement farms.

The Chapter also takes a brief look at some of the leading determinants of resource value with an articulation of how and why natural resource significance manifests differently in different localities. The line of argument is that in order to get a deeper understanding of the intricacies

of wild natural resource use and management in and out of park systems in Africa generally and in South Africa in particular, there is need to change the rather shallow perceptions of what the landscape and its resources mean to the indigenous and local communities inhabiting these landscapes.

3.2 CONTEXTUALISING VALUATION OF NATURAL RESOURCES IN LIVELIHOOD RESEARCH

This study is interdisciplinary in nature, drawing on the above approaches that link fields such as economics, ecology, sociology, history and politics among others. Given the interdisciplinary nature of the study, the methods were drawn from diverse disciplines to give a balanced understanding of the contribution of resources to local livelihoods. One advantage of drawing from diverse approaches is the opportunity of social explanations of ecological and economic phenomenon – contributing to bridging the gap between quantitative and qualitative methods of data enquiry. According to Creswell (2003), quantitative research establishes statistically significant conclusions about a population by studying a representative sample of the population. Qualitative research describes an event in its natural setting and is described as a subjective way to look at life as it is lived and an attempt to explain the studied behaviour (Abusabha and Woelfel, 2003; Walsh, 2003). Creswell (2003) affirms that quantitative and qualitative methods of enquiry both seek to explain events from different perspectives, and are therefore both valid ways to evaluate a phenomenon in the proper context.

3.2.1 Natural resource valuation

This section provides the conceptual and theoretical base and framework for the study's objectives (see Chapter 1, Section 1.4) addressed in Chapters 5, 6 and 7.

3.2.1.1 Understanding value

According to the *Oxford English Dictionary*, the word 'value' has a number of possible meanings (Hawkins, 1990 cited in Lynam et al., 2002). Four definitions relevant to this study are noted. Firstly, value is interpreted as the amount of money, goods, or services considered being equivalent to a thing or for which it can be exchanged. Secondly, value may refer to desirability, usefulness and importance. Thirdly, value can denote the ability of a thing to serve a purpose or cause an effect. In the context of ecosystem services, this refers to services

such as flood control, waste absorption, etc. Lastly, the term value can allude to one's principles or standards, in other words, one's judgment of what is valuable or important in life. It is evident that these four definitions can be associated with (1) economic, (2) social, (3) ecological, and (4) ethical/philosophical concerns, respectively (Lynam et al., 2007). Therefore, this indicates that wild natural resource value has economic, social, ecological and ethical dimensions. In general, this study uses the term 'value' in the sense of (1) monetary and (2) desirability, usefulness, and (4) ethical importance (non-monetary, e.g. cultural value).

The above definitions and discussions draw us to social constellations - social interactions and processes that are imbedded in practice which shape the value people can derive from natural resources (Kepe, 2002; 2008a) and the resultant relativity of values in time and space. In supporting the above contention, Farber et al. (2002:378), state that: "Values ultimately originate from within the constellation of shared goals to which a society aspires – value systems – as well as the availability of 'production technologies' that transform things into satisfaction of human needs".

3.2.1.2 Economic valuation

Ecosystem services valuation has been for a long time a key element in the design of policies aimed at sustainable natural resources management (Keyzer et al., 2006). Resource valuation is the process whereby a particular resource, or resource product or service is assigned a numeric value, usually in a monetary form. It enables a decision process to determine which service or set of services is valued most highly and how to develop approaches to maintain services by managing the system sustainably (Farber et al., 2002; MA, 2003; Turner et al., 2003). Indeed, up until now, economic valuation strategies dominated debates and took centre stage in informing environmental policies in most parts of the world. This approach appealed to the theory of markets – to the goals of maximising utility and to the centrality of money as a universal measurement for differences in human desires, of use values and of elements and processes in nature (Kepe, 2008a). The *economic valuation* approach has also been widely applied in the management of natural resources in communal lands (see Shackleton et al., 1999; 2002; Turpie, 2003; Dovie et al., 2004; 2006; Turpie et al., 2006).

Drawing from Harvey (1996), there are several arguments supporting the rationale behind the use of money as a measure of value. First, money is considered as the only means by which people value significant aspects of the environment daily. Second, money is regarded as the only well understood and universal measure of value that currently exists. The assertion is that money reduces the complex and multidimensional values of resources (including subjective non-use values such as aesthetics) to a simple objective denominator (money) that is understood by everyone in most societies. Lastly, it is argued that speaking in monetary terms is the only language that holders of social power and most government officials understand. Therefore, whenever a good is marketed, as in the case of fuelwood, fodder or other minor natural resources products, its exchange value, approximated by market price, can be used as a measure of value. For a more detailed theoretical thinking behind the valuation of ecosystem services see for example Constanza et al., (1997); Heal (2000); Hannon (2001); de Groot et al., 2002; Farber et al., (2002); Howarth and Farber, (2002) and Limburg et al., (2002).

3.2.1.3 Criticism of economic valuation

The major critique of traditional or conventional resource valuation methods (based solely on direct market prices) is that many environmental goods and services are not traded in formal markets. This is the reason why past valuation methods have been disputed as relying on an arguably narrow target (market indicators/prices only) (Gram, 2001; Kepe, 2008a). It is not the intention of this study to discredit conventional valuation methods, rather the aim is to reflect on their weaknesses and why integrated approaches (such as Sustainable livelihoods approaches) are favourable. Kepe (2008a) observes that researchers agree that neo-classical economic valuation has limitations when it comes to addressing total economic values and moral values fully (see for example, Farber et al., 2002). Given the absence of formal markets, it could be argued that relying on actual market prices for valuation is flawed (Cavendish, 2002). As a consequence, some natural resource services may be excluded from household budget surveys, a common scenario in past valuation studies, leading to an underestimation of the contribution of resources to rural livelihoods.

One key assumption in conventional economics is that market values are determined through a market process in which people or groups can express their preference for various goods or services. Values are expressed in the outcome of their exchange prices. The assumptions are

that markets are free and competitive and that buyers and sellers have the same power and have equal access to information (Kepe, 2008a). In reality though, no single group or individual can influence the market outcomes in their favour (IIED, 1997). It is argued that price generally approximates the value of the resource in exchange and not its value in use (Smith, 1937: 28 cited in Chopra, 1993). Subsistence users without much access to cash may not be able to impute a high exchange value to products that for them have a high assigned use value (Chopra, 1993). There is therefore need to examine local economies and the non-cash transactions of natural resources. Such transactions are normally affected by socially-rooted interactions. Hence the need to link natural resources use with a host of cultural and institutional factors embedded within societies.

These approaches also fail to consider the indirect-monetary value of resources (household provisioning in the form of savings) (see Shackleton et al., 2000b) and non-monetary value such as shade provided by trees, burial sites, and other cultural values. Blignaut and de Wit (1999) argue that certain things in the landscape have values that make them non-quantifiable in monetary terms, for example, life and beauty (i.e. social and cultural dimension of wild resources). The underlying factor that results in uncertainty around quantification and monetisation of natural resources is the lack of consideration of the real dimensions of human behaviour rooted in neo-classical economic assumptions (Blignaut and de Wit, 1999; Araia, 2005). These traditional approaches lack consideration of the multi-dimensionality of human behaviour and recognition of the un-substitutability of products. This is the reason why full accounting of ranges of various values of complimentary and competitive services has become the major focus of contemporary valuation attempts.

In light of the above weaknesses, and in efforts to complement conventional economic valuation methods, many researchers argue the importance of using innovative approaches and multi-disciplinary tools to fill the gaps and to address limitations effectively. The importance and necessity of including community perspectives in natural resource management (see Tapela et al., 2007) has encouraged the development of a range of valuation approaches and methodologies (Chambers, 1992; Campbell and Luckert, 2002; Nemarundwe and Richards, 2002). One of the greatest strengths of qualitative research based methods is the ability to go beyond numbers (Kepe, 2008a) and discuss vital qualitative issues, as well as explore differentiation across natural resources users and other stakeholders, a feature that

previous traditional economic methods have failed to incorporate (Cavendish, 2002). Practitioners who approach resource valuation without a consideration of qualitative values often exclude the knowledge, preferences, and values of the people affected or concerned by the outcome (Long and Long, 1992; Tapela et al., 2007).

Researchers however, note that it is always a combination of conventional economic methods and relatively qualitative approaches that makes valuation results robust. For example, Lynam et al. (2007), remind us that qualitative tools are rarely used alone but are typically part of a series of methods and procedures. Integrative approaches also encourage diverse perspectives, multiple interpretations and a multidisciplinary analysis (IIED, 1997). In addition, qualitative approaches can also provide an opportunity for the researcher to identify power relations in the field, for example, leaders and influential individuals can be recognised and gender relations can be analysed. An analysis of these embedded social interactions is critical in economic valuation, as it helps explain behaviour and how resource value manifest under varying social circumstances. Furthermore, this gives insight into the ways in which the economic, political, socio-cultural and environmental aspects are linked as well as what the stakes are for different groups of actors. Therefore, this indicates that there is no ‘one method fits all’ or ‘magic method’ when it comes to valuation attempts in resource and livelihood studies. In a nutshell, it is noted that both quantitative and qualitative tools have different foundations and theoretical applications. However, integrating them is mutually beneficial. Hence, any wild natural resources and livelihood assessments should consider economic, social, ecological and cultural dimensions (ethnicity, taboos, norms, myths) for robust and reliable results. Apart from the methodological challenges and shortcomings highlighted, there are also other matters of concern in previous valuation studies that need to be taken into account.

Firstly, and referring to a study by Peters et al. (1989), Sheil and Wunder (2002) note omissions of some products, for example, medicinal plants and wildlife that appeared of little consequence, given the high value already obtained. The warning here is that attention should be given to resources that are deemed to be of low value since they could be low in absolute monetary terms but highly considered in people’s lives. In some cultures, children in particular, may gather fruits or hunt small animals and eat them away from home (Colfer et al., 1997; Gram, 2001). Returning home with a full stomach and gaining a more balanced diet

from multiple natural resource products may be therefore, important in some contexts. This should as a result, be considered in valuation studies. On the other hand, most people place importance on the materials that they need to build their property such as homes and kraals but do not necessarily harvest the construction material regularly. Hence researchers should ideally not overlook this as some communities do not place much value on resources if they are not used on a daily basis.

Furthermore, Sheil and Wunder (2002) draw our attention to another dimension that should be considered in wild resources and livelihood studies. There is a risk of strategic bias whereby community members may react in various ways to the perceived opportunities and threats of being researched. People may seek to bias their recorded natural resource uses upwards so as to be better recognised, for example, being seen to be using a larger area, or collecting more natural resources than usual. At the same time, a downward bias may arise from the secrecy surrounding taboos, illegal activities, shame, conflicting uses, or jealousies. Lastly, there is also an argument that the available per hectare harvest levels recorded at any time should not be simply extrapolated as a yearly constant into an infinite future because of destructive harvesting practices. Understanding the context in which resource valuation is undertaken is seen as one way to address the aforesaid criticisms. Tapela et al. (2007:62) pertinently argue that research arrangements in general must be understandable and agreeable with local interests, and that, as far as possible, research must justify its relevance to local concerns.

3.2.2 TEV framework for determining economic value

The services of ecological systems and the natural capital stocks that produce them contribute to human welfare, both directly and indirectly, and therefore represent part of the total economic value of the planet (Constanza et al., 1997). In light of the preceding assertion by Constanza et al. (1997), it comes as no surprise that the mainstream economic approach to valuation takes an instrumental (usage-based) approach and seeks to combine various components of value into an aggregate measure of resource value labelled Total Economic Value (TEV) (White and Crus-Trinidad, 1998). The concept of TEV therefore, provides a framework for the valuation of many natural resources (Barbier et al., 1997; de Groot et al., 2002; MA, 2003; Brander et al., 2006) and is needed for designing meaningful and successful policies in this sector.

The TEV framework (Figure 3.1) views ecosystem goods and services as the flows of benefits to humans provided by the stock of natural capital or resources (de Groot et al., 2002). Total economic value is an aggregate of total use value and total non-use value. Use value is normally divided into direct-use value, indirect use value and options value. Direct-use value refers to the value derived from the use of raw materials and physical products from natural resources (i.e. provisioning services) (Oliver, 1995; Chapter 5, Section 5.3.3). In other words, direct-use values arise from the consumption of wild food products, for example, wild fruits, medicinal plants, wild vegetables and honey among others, and use of resources such as fuel wood, manure and building material. It may also include non-consumptive uses such as shade, burial sites and enjoying recreational and cultural amenities such as wildlife viewing (IIED, 1997; MA, 2003).

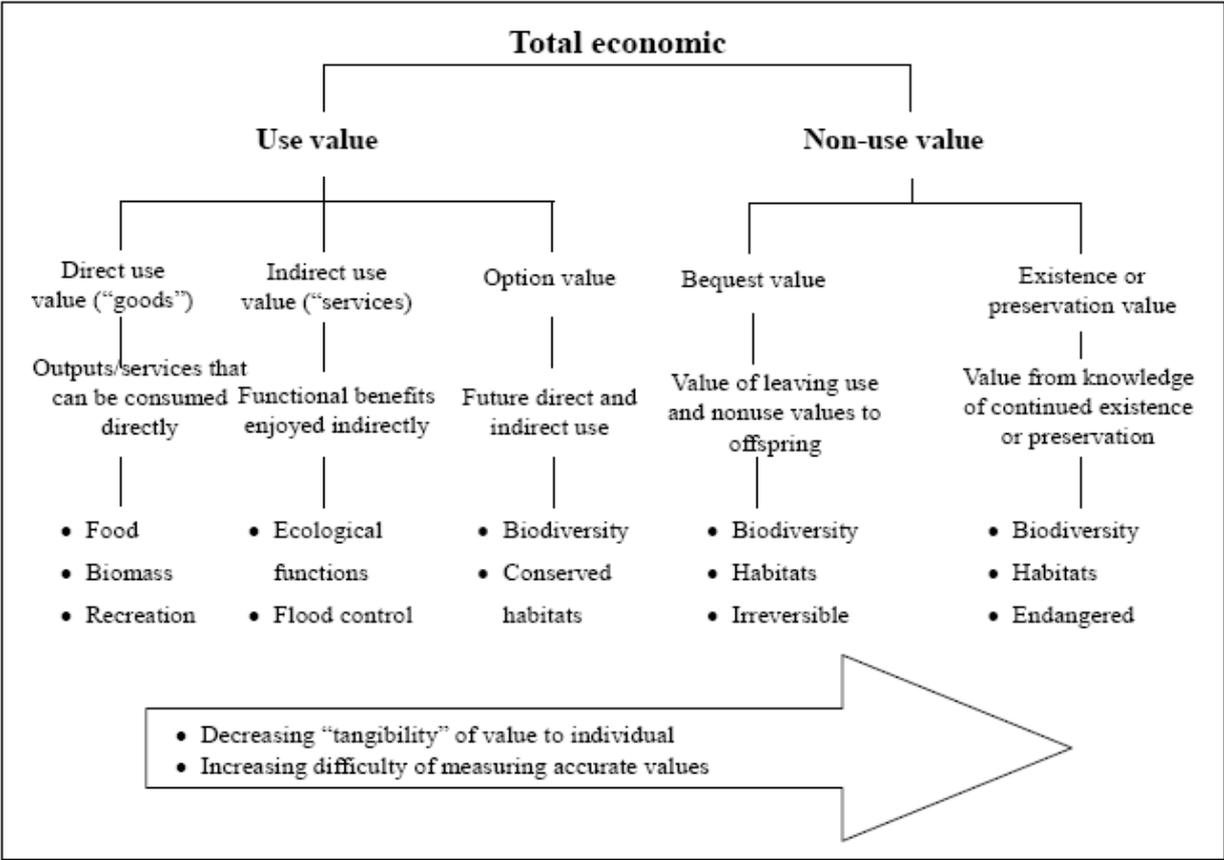


Figure 3.1: Total Economic Value Framework (Adapted from Jin et al., 2003)

Indirect-use value refers to the value associated with indirect ecosystem services or functions, such as storm protection or flood control, nutrient retention, microclimate stabilisation and maintenance of water quality (i.e. regulating services) (Oliver, 1995; MA, 2003; Brander et al., 2006). People usually benefit from these but do not necessarily consume them in a direct way. Option value is the premium placed on or the willingness to pay for maintaining the possibility of future use of a resource (Munasinghe and Lutz, 1993; Dharmaratne and Strand, 1999; Brander et al., 2006). In a clear maintenance of the preceding assertion, Oliver (1995), describes option value (which could be direct or indirect) as the willingness to pay to maintain the resource weighted by the probability that the resource will be used at some future date. Option value can also be classified under non-use values and therefore cuts across use and non-use values. Quasi-option value is the value of what people are willing to pay to avoid irreversible decisions until new information reveals whether certain ecosystems have currently unknown values (MA, 2003).

Non-use values are those values, which are independent of an individual's present or future direct or indirect use (Dharmaratne and Strand, 1999). Non-use values are normally divided into existence value and bequest value (Figure 3.1). Existence value is the value attached to knowing that an environmental asset exists even though the value attributer may not be interested in current or future consumption of the resource (Dharmaratne and Strand, 1999; Chapter 6, Section 6.1). Oliver (1995) supports the same argument that existence value arises from the notion that individuals who make no use of a particular natural resource may gain utility from the mere existence of the resource, even if there is no intention to use the resource in the future. This sentiment links with human value systems – appreciating that we share the world with other living things that deserve to exist.

Bequest value is the value that an individual derives from ensuring that the resources will be available for his or her heirs or future generations (Barbier et al., 1997; Chapter 6, Section 6.1). Bequest value is summarised as the willingness to cooperate (through monetary or non-monetary means) for conservation and preservation of natural resources, to avoid irreversible changes specifically for the benefit of future generations. Bequest, existence and option values are closely linked to spiritual and cultural values (another key objective of this study) since they are not tangible but have a significant influence on conservation (see Oliver, 1995; Posey, 1999; Cocks and Dold, 2004; Cocks, 2006). Bequest and existence values are

traditionally more important for the San people because of their long history of strong attachment to nature (see Chapter 4, Section 4.2.3.1 and Chapter 6).

In summary, the total economic value of a natural resource is the sum of use and non-use values. Using the TEV framework is not about creating a dollar value only, but also demonstrating the range of values that need to be considered when designing policies for sustainable natural resources management (IIED, 1997). However, as Oliver (1995) notes, identification is only the first step in assisting conservation policy development, and what is required is some means of quantifying each element in monetary and non-monetary terms. It should be noted that the values represented by use value in the left-hand side of Figure 3.1 are more easily derived and tangible. For example, direct use values in particular, such as consumption of fuelwood, are fairly easy to estimate since they are easily quantifiable. Moving towards the right-hand side of Figure 3.1, values become more difficult to grasp and measure. For the purposes of this study, and to develop a useful guide to understanding cultural values, option, bequest and existence values will be classified as cultural values.

The realisation that some aspects of natural resource use are difficult to value in monetary terms, has led to the emergence of integrative approaches in resource use and livelihood studies. The Sustainable Livelihoods Framework (SLF) is one such approach. The new integrative approaches are premised upon the recognition that the social aspect of natural resources is not separate from, but inevitably co-constituted through the natural or biological, just as the material and cultural/symbolic dimensions of natural resource use are also fully intertwined.

3.2.3 The Sustainable Livelihoods Framework (SLF)

The Sustainable Livelihoods Framework (SLF) (Scoones, 1998; Chapter 1, Section 1.1), was used as a conceptual approach to understanding the circumstances, options and constraints of the two community groups. The term ‘livelihood’ and what it means has been extensively discussed among academics and development practitioners (see for instance Ellis, 1998, Chambers and Conway, 1992; Francis, 2000). The common consensus emerging from the various discussions is that livelihood is about the ways and means of making a living. The most commonly used definition of livelihood stems from the work of Chambers and Conway (1992) who state that a livelihood “comprises the capabilities, assets (including both material

and social resources) and activities required for a means of living". Broader understandings of livelihood include matters of finding or making shelter, transacting money or preparing food (Wallman, 1984), but is related to the issues and problems of access and changing political, economic and socio-cultural circumstances. This suggests that livelihood could be conceptualised as equally a matter of the ownership and circulation of information, the management of social relationships, the affirmation of personal significance and group identity, and the inter-relation of each of these aspects to the other (Wallman, 1984). Therefore, efforts or strategies such as poverty reduction, for instance, through the sustainable use initiatives such as that in the KTP and the surrounding communal lands aims at more sustainable livelihoods.

The livelihoods approach focuses on poverty reduction interventions by empowering the poor to build on their own opportunities, supporting their access to assets, and developing an enabling policy and institutional environment. This approach is particularly suited to a study of this nature since it provides a complete guide on how livelihood outcomes manifest given different processes and structures such as culture and institutions. The sustainable livelihoods concept and framework adopted by DFID in the late 1990s (building on work by IDS, IIED, Oxfam and others) have been adapted by different organisations to suit a variety of contexts, issues, priorities and applications.

The SLF identifies livelihood assets in terms of five types of capital with which people are differently endowed namely human capital, social capital, physical capital, financial capital and natural capital. There is a general agreement that the livelihoods concept has social, cultural and political dimensions, as well as material ones (Turner, 2004). Therefore, the outcomes can be thought not only in terms of cash income and other subsistence uses (such as daily use of fuelwood, food security), but also in less material terms, such as well-being, social, cultural or religious status or human rights. Specifically, the framework shows how people pursue a range of livelihood strategies in order to achieve livelihood outcomes, both material and intangible. In community-based conservation terms, natural resources correspond to natural capital. For these natural resources to be managed sustainably, human and social capital must be available and appropriately deployed. The status, networks, roles and relationships that shape how people interact in their access to, use and governance of natural resources are elements of social capital (Section 3.4; Chapter 6, Section 6.4.2.3; Chapter 7

Sections 7.4.6 and 7.5. The framework also shows that a number of ‘transforming structures and processes’ can influence the efficacy with which local assets are used in pursuit of livelihood strategies (Turner, 2004).

In this framework, ‘structures’ are the organisational hardware (both public and private sector) that influences people’s lives and to which people may (or may not) have access such as legislatures, government departments, NGOs, private corporations etc. ‘Processes’ are the many structured and unstructured ways in which people relate to each other, for example, policies, cultural practices, legislation, gender relations, power structures, local institutions (Turner, 2004; Jones and Carswell, 2004). These structures and processes are at the heart of this study (as one of the objectives) as they influence how resources are accessed and used and therefore have an impact on resource significance at household level.

The framework’s practical application is fairly summarised in Scoones’s (1998:3) statement that: “Given a particular *context* (of policy setting, politics, history, agroecology and socio-economic conditions), what combination of *livelihood resources* (different types of ‘capital’) result in the ability to follow what combination of *livelihood strategies* (agricultural intensification/extensification, livelihood diversification and migration) with what *outcomes*? Of particular interest in this framework are the *institutional processes* (embedded in a matrix of formal and informal institutions and organisations) which mediate the ability to carry out such strategies and achieve (or not achieve) such outcomes”. This provides a much more flexible conceptual platform for analysing livelihoods as pathways, explicitly focusing on access to opportunities, varying interests and the workings of power.

3.2.4 Millennium Ecosystem Assessment (MA) framework

As discussed earlier, it is common practice in economics both to refer to goods and services separately and to include the two concepts under the term services (MA, 2003). In this study, all these benefits are considered as natural resources or ecosystem services because it is difficult to determine whether a benefit provided by an ecosystem is a good or a service, for instance, shade from trees. Moreover, when people refer to ecosystem goods and services, cultural values are largely unexamined and therefore often misunderstood (MA, 2003). The meaning of ecosystem services is expounded in Box 1. This study focuses on the so called provisional and cultural services (Section 3.2.4.1).

Box 1: Understanding Ecosystem Services: Adapted and expanded from MA (2003).

Ecosystem services are defined as the benefits obtained by people from ecosystems or ecological units. This definition is derived from two other commonly referenced and representative definitions: “Ecosystems services are the conditions and process through which natural ecosystems, and the species that make them up, sustain and fulfil human life. They maintain biodiversity and the production of ecosystem goods, such as seafood, forage timber, biome fuels, and natural fibre, and many pharmaceuticals, industrial products, and their precursors (Daily, 1997b:3).”

The services include **provisioning services** such a food and water, regulating services such as flood and disease control, **cultural services** such as spiritual, recreational, and cultural, and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth.

3.2.4.1 MA framework

For operational purposes, and drawing from the Millennium Ecosystem Services Framework of 2003, this study will recognise two types of ecosystem services namely, *provisioning services* and *cultural services* (Table 3.1).

Table 3.1: Classification of provisioning and cultural values (Adapted from MA, 2003)

Provisioning services	Cultural services
<i>Products obtained from ecosystems</i>	<i>Non-material benefits obtained from ecosystems</i>
Food (plant and animal)	Spiritual and religious
Fuel wood	Sense of place
Medicinal plants	Cultural heritage
Construction material	Aesthetic
Biochemicals	Recreation and ecotourism
Genetic resources	Inspirational
Freshwater	Educational

The framework is simple and hence ideal for unproblematic understanding and conception. Furthermore, it corresponds perfectly with this study’s objectives of establishing the direct-use and cultural values of resources to the local San and Mier communities. This study looks at direct-use values only and non-use values (*provisioning and cultural services* respectively, see Box 1 and Table 3.1), otherwise referred to as cultural values in this context. Specific details about the *provisioning* and *cultural services* will be paid attention to in Chapters 5 and

6 respectively. This corresponds to use value (direct-use value goods) and non-use value (optional, bequest and existence values) under the TEV framework. Provisioning services such as biochemicals, genetic resources and fresh water are not covered by this study. Other important (indirect-use values) ecosystem services such as regulating services (e.g. climate, disease and water regulation and water purification) are beyond the scope of this study, and were the focus of a separate PhD study during the same period (see SANParks, 2008).

3.3 CONCEPTUALISING INSTITUTIONS AND GOVERNANCE OF NATURAL RESOURCES

This section provides the theoretical and conceptual background for understanding *institutions* and *governance* of natural resources (see also Chapter 2, Section 2.2.4; Chapter 7).

3.3.1 Understanding institutions

There are two notable definitions of institutions. The New Institutional Economy identifies institutions as rules of the game – that act as external constraints. North (1990:3) typically defines institutions in this framework as “... the rules of the game in a society, or more formally, the humanly devised constraints that shape human interaction”. Neo-Classical Institutionalists describe institutions as cognitive, normative, and regulative structures and activities that provide stability and meaning to social behaviour (Scott, 1995). This study somewhat cut across the two definitions, since both are well suited to discussing the dynamics of institutions, actors, interests and values among other issues. It draws on insights from institutions as rules of the game (North 1990; Vatn, 2005) but also pays particular attention to the many actors involved (organisations and individuals) in instituting, monitoring and enforcing of these rules.

Therefore, in this study, *institutions* are understood as “the prescriptions that humans use to organise all forms of repetitive and structured interactions, including institutionalised cultural values as well as formal organisations” (Ostrom, 2005:1, cited in Jones and Boyd, 2011; Chapter 7, Section 7.2.2). Merely focusing on institutions as formal and informal rules may provide too narrow a perspective given that there is often a mismatch between rules and what people actually do (e.g. Holmes-Watts and Watts, 2008). Rules cannot easily be analysed independently (Richardson, 2004). Instead, focussing on actors, their interests, their value

systems, whom and what these actors represent, what they say they do and what they actually do in practice may provide a deeper understanding of the role of different institutions in natural resource governance. In fact, actors sometimes protect certain institutional values, conventions, norms and legal rules (Vatn, 2005) and therefore their actions could be generally viewed as a representation of their institutional orientation and values. Moreover, actors are responsible for initiating or maintaining institutions at different and multiple levels including local level, regional level and multi-national level (Vacarro and Norman, 2007). In other words, actors can craft, perpetuate and reproduce institutional values. Indeed, actors and their choices are important components of this study's analyses.

Institutions are social constructs and therefore are not normally neutral (Vatn, 2005). The power to form institutions to support one's interest may bear unequal and oppressive outcomes (Robbins, 2004; Chapter 7). Sheil and Wunder (2002) maintain that revealing the subtleties of power play between stakeholders can be crucial in understanding the distribution of natural resources among people. Robbins (2004) argues that a focus on asymmetries of power among actors provides valuable perspectives in understanding and explaining institutional performance. This means that natural resource value in rural livelihoods is realised through social contestations that are shaped by complex institutions at local and external levels (Kepe, 2008a; Cousins, 1999). Therefore, different social and institutional settings at the local level can determine how different actors regard natural resources and hence influence the arrangements for governance of those resources.

Consequently, the relationship between institutions and governance of natural resources could be understood in different ways that are important in informing this study. First, institutional arrangements may facilitate or constrain access to natural resources or certain type of resources by certain groups (i.e. the power aspect). Second, institutions may be responsible for coordinating processes and actions to produce more efficient natural resource management (for example, by securing cooperation) amongst actors. Lastly, institutions may be instrumental in resolving conflicts to ensure social justice (see Chapter 2, Section 2.2.1).

Kepe (2008a) however cautions that institutions responsible for natural resource governance are often characterised by conflict and ambiguity as much as by harmony and complementarity. In particular, power relations are embedded within institutional forms,

“making contestation over institutional practices, rules and norms always important” (Scoones, 1998). Therefore, institutions are shaped in a space of interests, values, conflict and coordination. In sum, a deeper understanding of institutions (including actors), interactions and power dynamics may be the key to better inform policy for good natural resource governance and management.

3.3.2 Understanding governance of natural resources

Governance is described as the act or manner of governing and it is about power, relationships and accountability (Borrini-Feyerabend et al., 2004; Forsyth, 2007). The IUCN Collaborative Management Working Group (CMWG) and Theme Indigenous and Local Communities, Equity and Protected Areas (TILCEPA) (2004:1) defines *natural resource governance* as: “The interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders have their say in the management of natural resources – including biodiversity conservation”. It encompasses the processes that shape how social priorities are made, how conflicts are acknowledged and possibly resolved, and how human coordination is facilitated (Vatn, 2005). Moreover, it includes the actions of the state and may encompass actors such as communities, businesses and NGO's among others. Governance is closely related to the achievement of management objectives, the sharing of relevant responsibilities, rights, costs and benefits, and the generation and sustenance of community and financial support for sustainable use of resources (CMWG and TILCEPA, 2004).

Issues such as struggles over power, practices, justice, knowledge, trust, social capital, accountability and ethnicity are increasingly being paid attention to, in understanding how certain institutions influence the value placed on resources by users in order to govern resource access, use and benefits (Robbins, 2004; Benjaminsen et al., 2006; 2008; Collomb et al., 2010). The concept and practice of governance is therefore recognised as centrally important for conservation in parks and beyond them, to maintain biodiversity integrity and improve livelihoods – where institutions emerge as levers for good natural resource management by regulating the behaviour of a set of individuals within a given community (North, 1990; Ostrom, 1990).

There are different types of natural resource governance namely state governance, private governance, joint (co) governance and community governance – distinguished on the basis of management authority, responsibility and accountability according to legal or customary legitimate rights (CMWG and TILCEPA, 2004; Chapter 2, Section 2.2.4). The different types of governance arrangement often have different conservation and livelihood outcomes (CMWG and TILCEPA, 2004). This study is especially interested in *co-management* and *community-based management* since natural resource arrangements in the Park and resettlement farms represent these management types respectively (see Chapter 2 and Chapter 4). Community-based management, such as in the farms, are often better understood by drawing insights from the common property theory (Ostrom, 1990; Chapter 7, Section 7.2.2).

3.3.3 The Institutional Analysis and Development (IAD) framework

The Institutional Analysis and Development (IAD) framework (Figure 3.2; Chapter 7, Section 7.2.2) is often used in understanding how actors behave in collective action setting and the institutional foundations that form such settings.

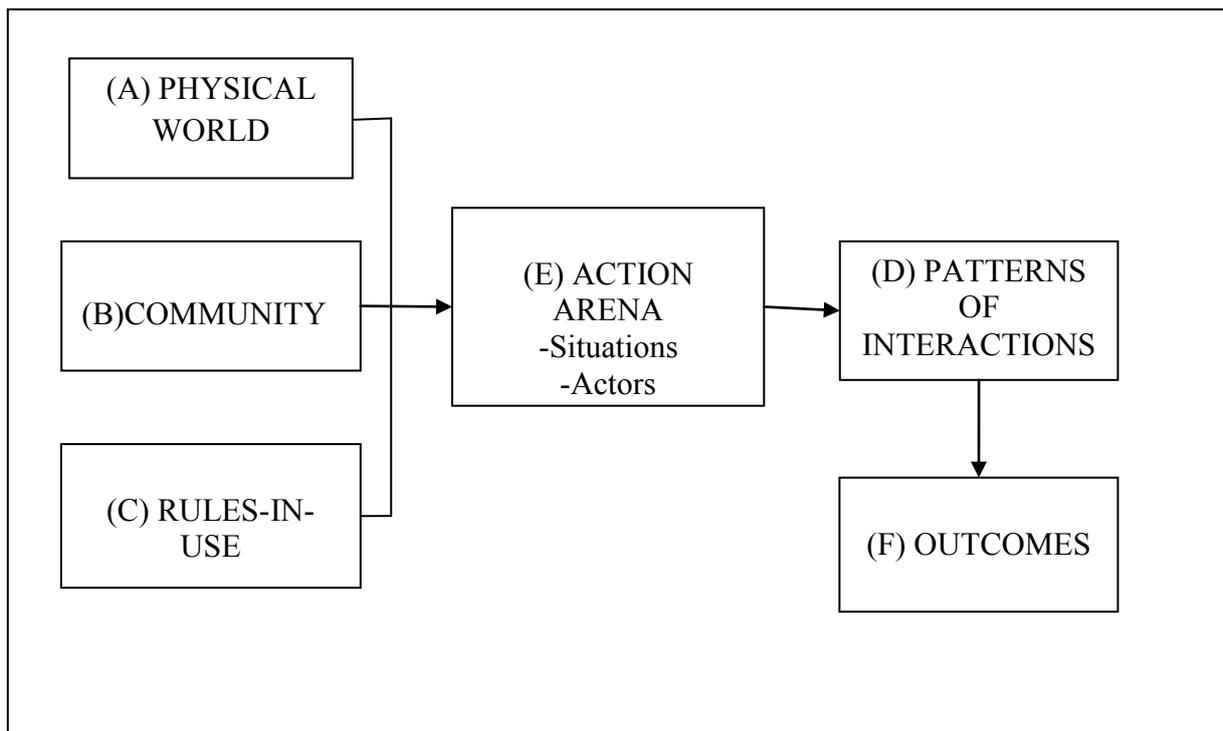


Figure 3.2: Institutional Analysis and Development Framework (Adapted from Ostrom et al., 1994)

Ostrom (2007:44) asserts that the IAD framework offers researchers a way to understand processes by outlining a systematic approach for analysing institutions that govern actions and outcomes within collective choice arrangements. The IAD framework (Figure 3.2) identifies four types of variables that are assumed to affect policy processes and outcomes (Ostrom et al., 1994) as: (A) attributes of the physical world, (B) attributes of the community within which actors are embedded, (C) rules that create incentives and constraints for certain actions, and (D) the patterns of interactions among actors.

The physical world (A) varies from place to place and might typically include elements such as climate, terrain, diversity of species present, stock of natural resources, temporal and spatial variability of natural resource units, current condition and other physical factors that impact the state of the ecosystem and the humans that interact with it (Ostrom, 1990). The community (B) is an important context that affects individual actions, including things like “generally accepted norms of behaviour, the level of common understanding about action arenas, the extent to which preferences are homogeneous, and distribution of resources among members” (Ostrom, 1990:45). The rules of the game (C) are the principal means actors use to influence processes and outcomes in natural resources management. The patterns of interactions (D) reflect the impact of rules of the game on institutional leadership, priorities, communication, collaboration, and accountability. The principal focus of investigation is on the action area (E) (Figure 3.2). The action situation is described as the social space where individuals interact, exchange goods and services, engage in appropriation and provision activities, solve problems, or fight (Ostrom et al., 1994:28). An actor is the individual, or group functioning as a corporate actor, who takes action based on preferences and values among others.

Performance reflects the outcomes (F) produced by the patterns of interactions of different actors responsible for community-based management in terms of participation and benefits (i.e. in the resettlement farms and co-management in the Park, in this case study). According to (Koontz, 2003:3), the framework is “one particularly useful framework, which has structured inquiry across a broad array of policy sectors and disciplines”. This framework is relevant for this study since it acknowledges that within systems everything is connected to everything else (Richardson, 2004; Chapter 7, Section 7.2.2).

3.4 IMPORTANCE OF CONTEXT IN NATURAL RESOURCES AND LIVELIHOOD STUDIES

In the course of this study, the need to consider context in wild resources and livelihood studies has come to the fore. Given factors such as spatial, temporal, cultural and institutional conditions (Table 3.2), whose similarity is not common across different regions and within regions, many scholars advocate for context specific approaches (see for example, Sheil and Wunder, 2002; MA, 2003; Kepe, 2008a). These basic factors, given the name of ‘terms of assessment’ (Sheil and Wunder, 2002), define and delimit the scope of each study and as well as the interpretation of results and any potential research conclusions.

Kepe (2008a) in particular emphasises the need to situate resource value within the local livelihood context, where social interactions and differentiation are seen to affect *who* uses *what* resources, and *how much* of the available resources – thus bringing in the non-monetary aspects of wild natural resource value (desirability, usefulness and importance). This thinking is supported by the MA’s (2003) argument that when assessing ecosystem services, it is often convenient to bind the analysis spatially and temporally with reference to the ecosystem service or services being examined since landscapes are mosaics of different human uses. Some areas can be managed for multiple uses, but some uses are mutually exclusive (Byers, 1996; Byers et al., 2001).

Sheil and Wunder (2002) raised questions about the participatory dimensions of valuation attempts. Questions asked were: to what extent do the researchers actually consult local people and understand their costs and benefits, their context and motives for choosing among livelihood and land use options? The questions point out to the need to take into account vast differences in biophysical and historical, social and economic contexts. Social obstacles to the realisation of potential resource importance should not be ignored. In principle, each contextual factor might influence the broader interpretation of the economic significance of wild resources. Furthermore, it may also provide insights on which to base decisions concerning resource management, and to relate the results to other settings. An attempt to clarify the many factors affecting the specific results from a single study area has the advantage of enabling the examination of the conclusions with respect to other sites. The diversity of the products, markets, and livelihood outcomes involved in the sector must be appreciated. Thus, in most circumstances, a case specific approach will be needed. This is

because different products will have different potentials and problems which produce diverse outcomes.

In the context of dryland ecosystems, Barrow and Mogaka (2007), suggest that it is important that decision makers have a better understanding of the particular conditions of land use management. They argue for example that the management conditions in most cases should favour extensive and communally managed systems and be able to cope with aridity and temporal and spatial variability in rainfall. For instance, livestock production has proved to be a viable form of land use in many arid landscapes. Livestock in turn, depend totally on the natural ecosystem goods and services (pasture, brows, water). However, in some dryland areas, direct-use of natural resources rather than livestock production is a key livelihood strategy both in terms of direct incomes and household provisioning for daily use (see for example, Kerven and Behnke, 2007; Madzwamuse et al., 2007).

In a nutshell, a growing number of researchers argue that discussions on natural resources-based livelihoods that are out of context, despite novel intentions, can easily lead to inappropriate conclusions (Byers, 1996; Sheil and Wunder, 2002; Kepe, 2008a). These may in turn lead to misguided actions. Therefore, for ecosystem services and livelihood research to have an impact on conservation and development policy and on decision making, livelihood conclusions need to be place-specific rather than generalised. As noted by IIED (1997), local level valuation assists to avoid generalisations about the landscape outside of the study area, and magnifies local understanding of present and future values for better local level biodiversity resources management.

In the context of this study, such insights are considered useful in avoiding a shallow and narrow understanding of the contribution of resources to local communities' livelihoods and consequently provide guidance for appropriate interventions and designing incentives for sustainable natural resources management in dryland ecosystems. This study draws from the above lessons by situating the study in the biophysical, social, economic, historical and political context of the Kalahari region (Chapter 4) so as to achieve better understanding of the contribution of natural resources to local people's livelihoods and context-relevant policy recommendations. Drawing from earlier works and in an effort to draw attention to the

importance of context in wild resources and rural livelihood studies, some of the factors that are considered pertinent to this study will now be discussed (Table 3.2).

Table 3.2: Key determinants of natural resource value

Determinant	Brief explanation
Spatial factors and resource availability	<ul style="list-style-type: none"> • Ecosystem services are unevenly distributed in accordance to landscape variability. Richness of area in terms of biodiversity means more important livelihood resources.
Temporal factors	<ul style="list-style-type: none"> • Time affects <i>what</i> amount of a <i>natural resource</i> is harvested during <i>which</i> periods of the year.
Cultural factors	<ul style="list-style-type: none"> • Cultural, spiritual, and heritage values exert a strong influence on local preferences and well being.
History	<ul style="list-style-type: none"> • Situating natural resource users e.g. foragers, in history is essential to any deeper understanding of them and their way of life in modern times.
Social and institutional factors	<ul style="list-style-type: none"> • Realised and notional values of resources to rural livelihoods are socially constructed and contested. Resource access and use is mediated by complex institutions at local and external levels.

The discussion and presentation should not be seen as exhaustive, rather it should be seen as a reflection on some of the main issues considered significant. First, landscapes are diverse and therefore ecosystem services are unevenly distributed and experienced in different ways by people in accordance to landscape variability. Spatial patterns thus affect use patterns significantly (IIED, 1997; Sheil and Wunder, 2002). In dryland environments livelihood opportunities are limited. For example, the alternatives that people have such as crop production and livestock farming are risky activities. Consequently, natural resources may become more important or valued both for everyday use but also as a safety net to fall back on during high risk periods such as drought (Chapter 5). Second, in terms of temporal factors, one dimension of time that is an important determinant of resource value is seasonality. Time affects *what* amount of a *natural resource* is harvested during *which* periods of the year.

Third, it is argued, for instance that the notional value that elements of the environment have for different people is a reflection of values embodied in their cultures (Byers, 1996; Chapter 6). In addition, the notional value of importance will be higher for people with a few other forms of livelihoods and also where there are a few forms of alternative livelihood as in isolated dryland system. Thus the environment that is being valued becomes a site of conflict between competing notions of value and interests of the different people (O'Neill, 1997 cited in Kepe, 2008a), for example between immediate local economic needs, cultural values and conservation needs (Benjaminsen et al., 2008). Fourth and last, to understand decisions about natural resource use, and the resultant benefits and value to the people, there is a special need to have a clear perception of their history and context in terms of natural resource access and use (Sheil and Wunder, 2002; Chapter 4).

It has become increasingly important for wild resources and rural livelihood studies to pay particular attention to local level institutions (Chapter 7). It is vital to note that most rural African landscapes have a multiplicity of users (normally from within the same community). Therefore, these landscapes are multiple-use environments. Hence the relationship between these dynamic and diverse landscapes (multiple use) and the differentiated users (multiple users) could be analysed and understood through how these people derive their livelihoods by having legitimate control over resources (Leach et al., 1999 cited in Kepe, 2008a). The ability to have effective command over natural resources is based on firstly, securing resources access and use rights and secondly on a series of processes that transform the rights into livelihood outcomes. Kepe (2008a) argues that realised and notional values of resources to rural livelihoods are socially constructed and contested hence a focus on social institutions as terrains of negotiation is critical (see also Chapter 7). He further argues that these institutions are characterised by conflict and ambiguity as much as by harmony and complementarity, especially with respect to communally owned resources.

Therefore, apart from spatial and cultural factors, this study will focus on institutions as a key factor influencing resource value and sustainable management of resources (Chapter 7). This is especially important considering that the study area is characterised by different land parcels (tenure system) i.e. the main park, Contract Park, game farms and resettlement (communal areas), which are under different management regimes (Chapter 4, Section 4.2.2.2).

3.5 OVERVIEW OF METHODS EMPLOYED IN THIS STUDY

The above discussed frameworks (in earlier sections) were used to design the study such that it uses multiple methods, including quantitative surveys as well as key informant interviews. As earlier noted, there is a growing consensus emerging from the literature on fieldwork methods that the research output will be of higher quality if methods are combined as they yield different but complementary data (Campbell and Luckert, 2002; Kepe, 2002). Standardised and semi-structured interviews combined a structured quantifiable approach with an unstructured approach (see Reid et al., 2004). The methods were designed to (a) determine the contribution of natural resources to the livelihood of the two local communities, relative to other livelihood sources and (b) identify and understand the social landscape arrangements (cultural and institutional) and contexts that constrain or help the integration of land and its resources into the beneficiaries' livelihoods portfolios in a sustainable way (see Chapter 1, Section 1.4). Both are key issues that should be brought into the ongoing policy debate about co-management and sustainable use of natural resources. The livelihoods of the #Khomani San and the Mier communities were chosen because both received land in 1999 through the Government Land Restitution Programme (Chapter 4). Two case studies (San and Mier) provide a deeper understanding of some issues and aid in understanding some aspects such as culture and its influence on livelihood strategies such as resource use. This case study approach is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence (see Robson, 1993).

Primary data were collected during 2009 and 2010 using structured household surveys (Appendix 5), semi-structured key informant interviews (Appendix 6) and observations. The respondents were purposely selected based on being part of the San and Mier communities who were beneficiaries of the 1999 land claim (see Chapter 4). At the time of the land claim, there were around 300 San claimants and this number was expected to rise to approximately 1000, as the verification process of the people claiming to be part of the #Khomani San was being finalised (Bosch, 2005). The target of this research was to survey all San households located in the resettlement farms (Andriesvale, Uitkoms, Erin, Witdraai, Scotty's Forty and Miershoop pan). While it was easy to locate San households in the farms, it was somewhat difficult in other locations (Rietfontein, Welkom and Askham) since some San members were integrated into the Mier community. In such circumstances, snowball sampling was used,

where known San members in these mentioned locations were used to locate other San households (see Bryman, 2008). The snowball sampling technique had the advantage of expanding the sample beyond contacts known to the researcher in the first stage of his project. In total, 100 San households were surveyed, representing roughly all San households (80 in total) situated in the resettlement farms (at the time of the study) and 20 households located in small locations (Rietfontein and Welkom) (see Figure 4.1). A similar number (for comparative purposes) of Mier households (100) were sampled from different locations (Askham, Welkom, Groot Mier, Klein Mier and Rietfontein) also using the snowball or chain referral sampling technique.

The questionnaire collected information on socio-demographic dynamics and the natural resources harvested (see Chapter 5, Section 5.2) and the cultural aspects (Chapter 6, Section 6.3) and institutional dynamics (Chapter 7, Section 7.3) related to natural resources access and use by San and Mier communities. Questions relating to culture focused on facts, myths, beliefs and attitudes, while those relating to institutions evolved from a review of community-based conservation initiatives, assessing what factors affected success or failure (see Reid et al., 2004).

In the second phase, 50 questionnaires (Appendix 7) were purposely administered to respondents who had indicated that they had knowledge about the various actors responsible for natural resources management in the resettlement farms and the Contract Park. The second set of questionnaires was specifically tailored to capture indicators of governance performance (such as participation, decision making, attitudes towards leaders and accountability) and indicators of socioeconomic benefits provided by the Park and resettlement farms such as whether respondents had received benefits or whether community projects had been implemented as promised and points of conflicts (see Collomb et al., 2010). The Mier were not covered in the second phase since a majority of households (92 % out of 100) indicated (in the first phase) they were either not a member of any governance body or did not have any idea about existence of any local institution except for the Municipality.

The surveys targeted household heads as the respondents and key decision makers in the absence of household heads. The surveys and personal interviews were conducted in the local language Afrikaans, with the help of a local translator (with a matric certificate, the highest

level of secondary education). The translator was thoroughly trained before the surveys, with the help of an Afrikaans-speaking MSc student, who was doing a study during the same research period. A trial run was done in the field to make sure no information was lost during translation.

Standardised semi-structured interviews were conducted with community leaders as they had a good understanding of the state of affairs of the Contract Park. Subjectivity or bias was minimised through interviews with different community members. Semi-structured interviews sought to describe and explore interviewees' thoughts about the Park and provide a fuller understanding of key issues that might have been overlooked during structured interviews. This also provided enough time to listen to the communities' side of the story. The specific methods used, data collected and programmes for analysis are discussed at length in each of the appropriate empirical chapters.

3.6 LIMITATIONS AND ASSUMPTIONS

Sheil and Wunder (2002) argue that even the best livelihood and natural resource study cannot quantify all potential values. Some natural resource products are consumed away from the settlement during medicinal plant collection, fuelwood and livestock herding trips making it difficult to measure the exact quantities of consumed resources (see Gram, 2001). Weights of grass and wood for construction were also difficult to establish since neither wood nor grass is regularly collected though highly valued. Quantities of medicinal plants were also a challenge to establish since the quantities were very low and so they could not be measured by any standard spring balance scales. A kitchen scale had to be used later. The communities are also generally secretive with regards to medicinal plants. Most of the knowledge is protected knowledge purportedly on a general suspicion about how the outsiders will use the information. This is especially so for the San, since there has been previous conflict between them and outsiders. A case in point is the Centre for Scientific and Industrial Research (CSIR) who registered a valuable patent from an indigenous plant, Hoodia (known for its appetite suppressant properties), without prior informed consent of the San (Chennells, 2007; Table 4.1; Chapter 7, Section 7.4.6). Consequently, the San have become increasingly secretive on information regarding their indigenous medicinal plants and their uses.

PART II: CONTEXTUAL ANALYSIS AND EMPIRICAL FINDINGS

CHAPTER 4

STUDY AREA AND CONTEXTUAL SETTING: DESCRIPTION OF THE KALAHARI REGION AND HISTORICAL ANALYSIS OF THE KTP AND ITS LAND CLAIMANTS

4.1 INTRODUCTION

The main purposes of this Chapter (drawing on literature and field surveys) is (a) to provide the reader with an understanding of the study area and (b) to build and fully understand the context in which this research is undertaken, including the factors that could influence the two main research questions, the results and interpretation of these. The study aims to (a) determine the contribution of natural resources to the livelihood of the two local communities, relative to other livelihood sources and (b) identify and understand the social landscape arrangements (cultural and institutional) and contexts that constrain or help the integration of land and its resources into the beneficiaries' livelihoods portfolios (see Chapter 1, Section 1.4). The area has a complex history and without fully understanding this it is not possible to understand the current situation or interpret the results.

4.2. THE KALAHARI REGION, THE K GALAGADI TRANSFRONTIER PARK AND THE LOCAL COMMUNITIES BORDERING THE PARK

4.2.1 Biophysical characteristics of the Kalahari region

The term Kalahari is derived from the Setswana word *kgalagadi* meaning the 'thirst land'. The Kalahari region is a vast, gently undulating and sandy semi-desert ecosystem 900 m above sea level. It spans Botswana, Namibia and South Africa (Madzwamuse et al., 2007). The region is subject to extreme variations in temperature, reaching 45° C in summer to well below freezing point in winter (van Rooyen, 1998). Most of the rain falls between January and April with an average annual precipitation rate of 200 mm (Low and Rebelo, 1998). A high variability in the amount and timing of rainfall is often reported, with several years of below average rainfall, as well as years of above average annual rainfall accompanied by flash floods risk (Massyn and Humphrey, 2010). Grass production after years of good rainfall poses a risk of uncontrollable veld fires. There is no surface water except in seasonal shallow pans and fossil valleys (Madzwamuse et al., 2007). The soils (windblown sand) have low levels of

nutrients. The arid nature of the Kalahari region, as well as absence of potable underground water presents obvious constraints on development initiatives. Bradstock (2006) notes that low average rainfall, intermittent surface water and poor soils make agricultural production of any type a testing land use option. Given limited opportunities in the Kalahari drylands, wild ‘free’ natural resources potentially constitute an important livelihood source for both subsistence use and cash income generation for many people.

Though the Kalahari region is often described as one of the harshest environments inhabited by man (e.g. Chennells, 2001), it is populated by uniquely adapted fauna and flora. The Kalahari is not an empty desert or wasteland as commonly imagined. More accurately described as savannah or sandveld, it is a region that encompasses complex ecosystems and incredible diversity of wildlife (fauna and flora) (Brinkhurst, 2010). In terms of vegetation characteristics, shrubby Kalahari dune bushveld predominates (van Rooyen and Bredenkamp, 1996) and is distinguished by scattered shrubs of grey camel thorn (*Acacia haematoxylon*) and grasses such as dune bushman grass (*Stipagrostis amabilis*), gha grass (*Centropodia glacica*) and giant three-awn (*Aristida meridionalis*). A second component of vegetation, the thorny Kalahari dune bushveld, is characterised by sparsely scattered trees of camel thorn (*Acacia erioloba*), shepherd trees (*Boscia albitrunca*) and false umbrella thorn (*Acacia luderitzii*). These trees are listed in the Red List of South African plants as declining and hence are protected by National Law (National Forest Act of 1998) yet they are still crucial for local people’s livelihoods.

Tourism opportunities and development potential in this semi-arid area builds on a combination of its vast and unique bio-physical landscape and a rich cultural history making it ‘a must see’ for visitors. Undulating dunes, clear skies (and star gazing), scattered individual camel thorn trees – many of them with gigantic nests of the sociable weavers (birds), its wilderness experience, hunting opportunities, the general diversity of wildlife in the Kgalagadi Transfrontier Park (KTP), interesting local San and Mier history present an attractive ‘tourism experience’ for most would-be tourists (Massyn and Humphrey, 2010).

4.2.2 Kgalagadi Transfrontier Park

The Kgalagadi Transfrontier Park (KTP) (Figure 4.1) is situated in the Kalahari desert in Northern Cape Province of South Africa and Botswana from 22° 10" East, 20° 0" West, 24° 6" North and 26° 28" South. The KTP consists of an area of 37 256 km² (SANParks, 2006) and is one of the very few conservation areas of this magnitude left in the world (Bright, 2005; Scovronick and Turpie, 2009). The Park is the prime attraction and a major economic generator in the area. The number of bed and camping nights sold in 2008 was 32 977, with a total guests of 25 208 (Massyn and Humphrey, 2010). Market segmentation shows that 72 % of the tourists were local South Africans, 27 % overseas and 1 % from Southern African Development Community (SADC).



Figure 4.1: Location of the Kgalagadi Transfrontier Park and surrounding areas. 25 % of the park land in South Africa (Adapted from Dierkes, K., in Massyn and Humphrey, 2010)

4.2.2.1 The pre-land restitution history of KTP (1865 to 1994)

Information on the early history of the KTP is largely drawn from the Park Management Plan of 2006 (SANParks, 2006). The KTP, Africa's first Transfrontier park (Hanks, 2003), was formed by the amalgamation of the former Kalahari Gemsbok National Park in South Africa

and the Gemsbok National Park in Botswana in April 2000. Its major biodiversity characteristics are a large herbivore migratory and arid ecosystem which supports a fully functional large carnivore predator/prey system and an important refuge for a large raptor community (Kepe et al., 2005; SANParks, 2006).

Before European settlement in the late 19th century, the South African part of the KTP was the San (Bushmen) people's hunting and gathering territory. However, the land eventually became attached to the Cape Colony and the government subdivided it into farms for White settlers from 1897. However, the settlers were slow to take the newly surveyed farms and the Cape Government decided to give them to 'coloured' farmers instead. The term 'coloured' in South Africa refers to an ethnic group of mixed-race who possess some Sub-Saharan Africa origin but not enough to be considered black according to South African laws since they often possess substantial ancestry from other continents such as Europe and Asia. With the outbreak of World War 1 in 1914 (Table 4.1), the Union of South Africa Government drilled a series of boreholes along the Auob River bed in case they wanted to invade South West Africa. Guards were recruited from the local community to protect and maintain the boreholes and were permitted to settle next to the boreholes with their families and livestock. Nonetheless, this corridor was never used to invade South West Africa and the borehole guards (coloureds) stayed on, largely forgotten by the authorities.

However, due to the harsh Kalahari environment, the coloured farmers struggled to make a comfortable living from their farms. They therefore, together with the biltong (dried/cured meat that originated in South Africa) hunters from further afield gradually went on game hunting sprees. It is reported that the only areas not impacted were in the more remote reaches of the upper Nossob River, where the San people (historically) lived in harmony with animals and plants. To protect the ecosystem from wanton degradation by the farmers and biltong hunters, the then Minister of Lands Piet Grobler decided to proclaim the area a National Park in 1931. Land was purchased from European settlers south of the Park to resettle the coloured people. In 1938, the British government proclaimed a new game reserve across the Nossob in what is today Botswana. After World War 1, game fences were erected along the Park's western and southern boundaries but the Eastern boundary remained unfenced and open for animal migration from east to west.

Table 4.1: Chronology and summary of key historic events in the southern Kalahari region

Date	Key event
1865	The Mier community flees British rule in the Cape Colony, comes to live in the Northern Cape, and displaces many of the San in the process.
1884	A German national, Stoffel Le Riche ventures into the Kalahari from Namibia.
1891	Park area, part of which the Mier had occupied annexed to Botswana formerly Bechuanaland.
1913	Natives Land Act of 1913 forcibly displaced the local indigenous communities across the country.
1914	Union of SA Government drills boreholes along the Auob river to provide their troops with water as a strategic move to invade South West Africa, now Namibia (outbreak of World War 1).
1920's	Farmers and biltong farmers start to kill game as food supplement due to the harsh environment but to unsustainable levels.
1930	The Coloured Persons Settlement Areas (Cape) Act was implemented.
1931	Kalahari Gemsbok National Park proclaimed by the then Minister of Lands, Piet Grobler, to prevent the further depletion of game by farmers and biltong hunters through the National Parks Act.
1931	Land purchased south of the park to resettle the land-dispossessed "coloured" community now known as the Mier.
1938	The British government proclaimed a new game reserve across the Nossob in what is today Botswana i.e. present day Botswana Gemsbok National Park.
1938	Game fences erected along the Park's western and southern boundaries, eastern boundary remains unfenced for animals to migrate from east to west.
1948	An informal verbal agreement of a Transfrontier Park between the conservation authorities of the then Bechuanaland Protectorate (now Botswana) and the Union of South Africa (now South Africa).
1955	Race classification in South Africa through the Group Areas Development Act, Act No 69 of 1955 introduced resulting in further marginalisation of the San and exacerbated their loss of identity as a distinct ethnic group due to their classification as 'coloured'.
1970	Most San had totally been dispossessed of their traditional land in the Kalahari, and were spread all over South Africa, living in small groups or clans.
June 1992	Representatives from the South African National Parks Board and the Department of Wildlife and National Parks of Botswana set up a joint management committee to manage the area as a single ecological unit.
1994	New democratic government elected in South Africa.
1995	The #Khomani San and Mier launch a land claim for return of their ancestral land rights in the park.
1996	Major uproar, as <i>hoodia gordinii</i> , a desert succulent plant traditionally used by the San is secretly patented by the Council for Scientific and Industrial Research (CSIR) a South African government research organisation.
Early 1997	A management plan drafted, reviewed and approved by the two conservation agencies of Botswana and South Africa.
March 1999	Former Deputy President Thabo Mbeki signs an historic land restitution settlement with the #Khomani San tribe of Kalahari Bushmen.
March 1999	First phase of the land claim completed as the government returned 40, 000 ha and 42 000 ha of farmland outside the park to the #Khomani San and Mier respectively.
April 1999	Botswana and South Africa signs a historic bilateral agreement to manage their adjacent National Parks, as a single ecological unit.
May 2000	Former Presidents Festus Mogae of Botswana and Thabo Mbeki of South Africa formerly launch Southern Africa's first peace park, the Kgalagadi Transfrontier Park.
May 2002	25000ha of land given to the San (San Heritage park) and 30000ha to the Mier (Mier Heritage Land) forming the together forming the community !Ae Hai! Kalahari Heritage Park.
August 2002	The Joint Management Board (JMB) is established.
July 2007	!Xaus Community Lodge in the Contract Park opens.

In June 1992, representatives from the South African National Parks Board (present day SANParks) and the Department of Wildlife and National Parks of Botswana set up a joint management committee to manage the area as a single ecological unit. An integral feature of the agreement was that each country would provide and maintain its own tourism facilities and infrastructure, giving particular attention to developing and involving communities living adjacent to the Park.

In South Africa, as part of the shifting conservation paradigm, the idea was later to allow local San and Mier communities access and sustainable resource use rights in the Park, against a background of land dispossession where both the San and Mier were not only confined to smaller territories, but also prevented from practicing their traditional foraging and livestock rearing practices respectively. Getting access to the Park was seen as a way of addressing some of the social-economic challenges (such as high levels of unemployment, low education levels, dependence on state grants, alcoholism, domestic violence, and associated social problems) (see Ellis, 2010) that had become characteristic of, particularly, the San as a result of land dispossession. However, the challenges of basically pitching relatively powerless communities against powerful and organised Park management (which resulted in further disempowerment) were overlooked.

4.2.2.2 The post-land claim history of the Park (from 1994 to present)

After the election of a democratic government in 1994, the San were enabled to prepare and submit a claim for the restitution of their traditional land in the Kalahari, most of which lay within the KTP, asserting that its members had been illegally alienated from their ancestral lands following the proclamation of the Park in 1931 (Bosch and Hirschfeld, 2002; Kepe et al., 2005; Bradstock, 2006; Ellis, 2010). In a land settlement encouraged by a worldwide acknowledgement of their rights as reflected in the UN General Assembly ‘Decade of Indigenous Peoples’ (Oldam and Frank, 2008), and other provisions relating to indigenous people (Garcia-Alix and Hitchcock, 2009), part of the San land was returned to them. “At the time of the land claim, the San had become thoroughly fragmented as a people, some eking out a humble living as ‘live attractions’ at tourist resorts, where foreign visitors could photograph and meet the semi-naked ‘skin-clad’ little people” (Chennells, 2001:272). This livelihood strategy is still popular practice today among the San, in particular crafters, as an income generating activity.

The motivation for the land claim, according to Useb (2000), was that the San's loss of land meant the loss of natural resources. Lee (2006) argues that to the San people, land means life and without land the San cannot survive. Furthermore, the San do not feel healthy if they cannot find wild vegetables, fruits, medicinal plants and meat. One aspect unique to this group of people is their need to walk in the bush and talk and reconnect to nature. Therefore, without land they are unable to live according to their culture and in the process lose their identity. Indeed, cultural and spiritual connection to land was one of the key arguments in their land claim process (Chennells, 1999, 2001; Holden, 2007; Grossman and Holden, 2009).

The first phase of the land claim was completed in March 1999, as the government returned 40 000 ha of farmland outside the Park and more than 25 000 ha inside the Park (Bosch and Hirschfeld, 2002). This was in line with the government's land restitution programme (see Chapter 2, Section 2.4.4) in which the aim was to restore land to those people who were displaced forcibly after June 1913 as a consequence of the Natives Land Act and the Native Trust and Land Act of 1936 (DLA, 1997; Bradstock, 2006). This land was to be used for the benefit and development of the #Khomani San that were members of the overall Communal Property Association (CPA) – registered co-owners of this land. The restitution of communal land rights procedure in South Africa involves an observance of the *Communal Property Associations Act 28 of 1996*, which enables communities to form Communal Property Associations (CPAs), for the purposes of acquiring, holding and managing property on a basis agreed to by members of a community (SAHRC, 2004; Chapter 7, Section 7.4.3.1). The San also intended to use this restitution to recapture their language and culture and reconstruct their identity (Chapter 6, Section 6.4.6).

The Mier land claim overlapped with that of the San community (Chennells, 1999). They claimed areas within the Park from which they were also displaced when the nature reserve was first established in 1931 (Bosch, 2005; SANParks, 2006). A settlement framework was concluded in 1999 and the agreement resulted in the transfer of about 42 000 ha of land outside the Park to the Mier community. In accordance to the terms of the final 2002 agreement, the South African Government further transferred the ownership of about 30 000 ha of Park land, called the Mier Heritage Land, to the Mier community (Bosch, 2005). It is reported that the Mier, in the face of a desperate land need themselves, freely gave 7 000 ha of their land to the San as a remarkable gesture of reconciliation since they displaced the San in

the Kalahari in the 19th century (Chennells, 2001; SANParks, 2009, pers comm.). It was believed this would help lay a foundation for future partnerships in this area. The land given to the San and Mier communities is divided into parkland and *community-managed resettlement land* or farms outside of the park about 60 km from the main gate. There was an agreement that no San member would settle permanently in the Park. Three types of parkland access rights are recognised and organised into three main zones, namely the *Contract Park*, *Commercial Preference Zone (V-Zone)* and the *San Symbolic and Cultural Zone (S-Zone)* (Figure 4.1).

The Contract Park

The land within the KTP which was transferred to the San and Mier communities functions as a jointly-owned Contract Park (a combination of San and Mier heritage land, Figure 4.1) known as the !Ae!Hai Kalahari Heritage Park (see also Bosch and Hirshfeld, 2002). The aim of the *Contract Park* is to enable ecotourism opportunities, including hunting, camping trails, walking trails and a tourism lodge, for the benefit of the communities. Presently a commercial partner is operating !Xaus Lodge (owned by the communities) while ensuring that the interests of and benefits to the partner (theoretically at least) do not supersede those of the owners. The Contract Park is jointly managed by SANParks, (the national conservation authority) and the two communities through a Joint Management Board (JMB) (Reid et al., 2004; Kepe et al., 2005; SANParks, 2006; Chapter 7, Section 7.4.2.2). Other actors such as NGOs, Department of Land Affairs, San Technical Advisors and the San Traditional Council are involved but in advisory roles (see Chapter 7).

The benefits from the *Contract Park* so far are only in the form of job opportunities (employment and crafts selling) and the generated income does not directly accrue to both San and Mier households. The income is reportedly used for the community (!Xaus) lodge maintenance and general development of the San and Mier area (housing, water, etc). Apart from eco-tourism ventures, the co-management agreement in theory allows the San to carry out cultural practices, hunt (in a traditional way) and collect culturally important wild foods and medicines. However, at the moment traditional use of wild natural resources in the Contract Park is still curtailed and hunting has not yet happened (see Chapter 7, Section 7.4.5.1; Chapter 8, Section 8.3).

The Commercial Preferential Zone (V-Zone)

The second zone is the *Commercial Preferential Zone (V-Zone)* that borders the Contract Park (see Figure 4.1). Only the #Khomani San have priority to exercise commercial and cultural rights in this zone (Chennells, 2001; SANParks, 2006; Grossman and Holden, 2009). The *V-Zone* provides the San with access to the Auob river system, one of the two major rivers where the majority of game congregates. The San are also expected to exercise the rights to further ecotourism activities in partnership with SANParks, with the exception that by law, no commercial hunting is allowed (although traditional hunting is). In carrying out all activities, the San must abide by the provisions of the National Parks Act and need to inform the Park management prior to such visits (Chennells, 2001).

San Symbolic and Cultural Zone (S-Zone)

The third zone is a *San Symbolic and Cultural Zone (S-Zone)* (Figure 4.1) (effectively the remainder of the park) with limited commercial rights. According to the co-management agreement, only members of the San community are allowed relatively free access for purposes such as visiting culturally and symbolically important sites, food or medicine gathering and educational trips under the control of Kgalagadi Transfrontier Park Management. In terms of the concession, the private ecotourism organisation (yet-to-be-selected) for the community will be granted the rights by SANParks to operate a commercial ecotourism enterprise in the entire Park while ensuring that employment opportunities (e.g. trackers) and economic empowerment schemes benefit the San (Chennells, 2001; Bosch and Hirschfeld, 2002).

San and Mier Resettlement Farms

The San *resettlement farms* are divided into eight farms designated for specific activities namely; Miershoop pan (game farming); Witdraai, Erin, Sonderwater and Rolletjies (traditional purposes and ecotourism), Uitkoms (subsistence use) and Scotty's Ford and Andriesvale (livestock farming) (Figure 4.1). It should be noted that the majority of the San people live in the farms (Andriesvale, Uitkoms, Witdraai, Scotty's Forty and Erin) located about 60 km away from the KTP. During the research period only two household resided in Sonderwater, a farm bordering the Contract Park (see Figure 1).

The Mier resettlement farms are divided into game farms and land for livestock grazing and browsing. Crop production is virtually non-existent while livestock production is the main agricultural activity. Part of the land designated for livestock production is communally owned, while some of the land is leased to households at a monthly rental charge. A few households own land that was either passed from earlier generations or bought from the Mier Municipality. Hunting in the Mier game farms is only allowed upon payment of hunting fees to obtain a hunting license. Like the San situation, fuelwood collection is prohibited in the game farms and Contract Park but allowed in the leased and community-owned farms. It should be emphasised that according to the National Forest Act of 1998, for certain plant species (e.g. *Acacia erioloba*, *Acacia haematoxylon* and *Boscia albitrunca*) listed as declining in the Red List of South African Plants, fuelwood collection is only allowed for subsistence use rather than commercial purposes. Nevertheless, field observations showed that illegal fuelwood harvesting for commercialisation in both communities was a common activity. The size of the leased farms and individually owned farms range from 1900 ha to 3065 ha. Farmers who own or rent these large pieces of land often have bigger livestock herds than farmers who do not own land (who graze their livestock in communal land). Most households do not qualify for credit loans as they do not have collateral security.

4.2.3 The local people and their socio-economic status

The local San and Mier communities are considered ‘indigenous people’ in land and natural resource use agreements in the KTP and surrounding farms. However, the definition of ‘indigenous people’ is a contested one. For the purposes of this research, the 1993 draft UN Declaration of the Rights of Indigenous Peoples definition approved in 1994, following the famous Cobo definition, will be adopted. According to Jose R. Martinez Cobo:

“Indigenous communities, peoples and nations are those which: 1) have a historical continuity with pre-invasion and pre-colonial societies that developed on their territories; 2) consider themselves distinct from other sectors of the societies now prevailing in those or parts of them; 3) form at present non-dominant sectors of society, and; 4) are determined to preserve, develop, and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as a people, and 5) in accordance with their own cultural patterns, social institutions, and legal systems” (United Nations, 1994).

The #Khomani San of the Kalahari in South Africa fits this typical mould of UN indigenous people definition. The San are traditionally hunter-gatherers, a typical aspect of most indigenous communities. However, though beyond the scope of this study, there have been questions on whether the Mier people could be defined as indigenous or not (Chapter 1, Section 1.3). This is because they do not fit a number of the criteria used. Nonetheless, the Mier community is considered indigenous in this study context (and from the point of view of the land claim settlement) as they successfully claimed land that they were forcibly removed when the Park was formed. Furthermore, as noted, they are today viewed as indigenous in all the contractual agreements in the Park.

4.2.3.1 The San: Their lifestyle, dispossession from land and current socio-economic status

The Kalahari is home to the San people, commonly considered to be the earliest inhabitants of the Southern-African sub-continent and one of Africa's oldest indigenous peoples (Barnard, 1992; Hitchcock, 1987; 1996; 2002; Chennells, 1999; 2001; 2009; Holden, 2007). The San or Bushmen as they prefer to be called are the only indigenous hunter-gatherer people in the area. Before the influx of Bantu people from the North, the San roamed widely in Southern Africa, as evidenced by their rock art in caves across the region, but were slowly forced to retreat into the Kalahari through persecution by the Bantu settlers in the North and European settlers in the South. The establishment of the KTP meant further displacement of the San into marginal areas. Few other groups had the tenacity and knowledge to survive in this desert. Today the San, through repeated marginalisation, are among one of the poorest communities not only in the subcontinent of Southern Africa, but also in South Africa. The modern-day South African San are not one society but a collection of different people with different languages and cultural practices united by their experience of being hunters and gatherers (Chennells, 2001; 2009).

The San people had a simple way of life and lived in small family groups with no leader or chief. The older members of the tribe gave advice and taught the children anything they needed to know. Though many authors contend that the San had a nomadic lifestyle, Hitchcock (1987) argues that it is a popular and persistent misconception that the San 'owned no land' or were nomadic. As a matter of fact, different degrees of ownership over game, land and veldfoods existed among different San groups. For example, amongst the !Kung San of Northern Botswana and Namibia, clearly identified areas of land-rights known as n!oresi

(plural), ensured enough veldfoods, water and game to support the family group or band for a year (Heinz, 1972;1979; Lee, 1979). Permission had to be sought for use of water resources in a nlore, but was never refused and the stealing of natural resources could lead to severe punishment (Thoma, 1996). Hupston (2009) postulates that the San believed they would be punished by God if they misused the environment. Indeed, in their long history, there is no evidence that they have ever needlessly exploited nature and some commentators describe the San as the world's greatest conservationists (e.g. Heinz, 1972; Lee, 2006; Hupston, 2009). Their most compelling feature that set them apart is their sense of place, sense of belonging and sharing and a sense of rootedness in place (Lee and Hitchcock, 2001; Lee, 2006; Chapter 6). Therefore, the hallmark of their social attitudes was their utter belief in co-operation within the family, between clans and within nature itself. Elements of this philosophy persist up to this day.

However, the San across Southern Africa were decimated to about 100 000 people and by 1998 only 10 % of the San were still living on their ancestral lands (Arnold and Gaeses, 1998). In South Africa, Holden (2007) and Chennells (2009) note that the San were reduced to near extinction and today only some 1 500 people remain spread across the Northern Cape Province. A drastic change occurred when Bantu groups and European settlers invaded San territories with their livestock during the 17th century forcibly relocating indigenous people into smaller tracts of communal land (Tanaka, 1980; Thomas, 2006). "The corresponding and widespread colonial belief prevailing in the 18th and 19th centuries, that land inhabited by indigenous people was 'terra nullius', or 'unoccupied land', underpinned the vast array of dispossessions in all colonised countries, including Australasia and the Americas, and caused incalculable damage to ancient cultures and knowledge systems that were intrinsically related to their environments" (Chennells, 2001:274).

According to Chennells, in every country where the San once roamed, their evictions from traditional lands had been effected in such a way as to appear 'legal'. The removal of resident San to make way for nature reserves (the proclamation of the Kalahari Gemsbok National Park (now KTP) in South Africa in 1931) in order to provide pristine areas of 'wilderness' for tourism and recreation of the upper classes is one example (Chennells, 2001; Hitchcock, 2002; Maruyana, 2003). The conservation paradigm of the government of the time, in keeping with that of others in the Western World, was simply 'separatist' (Gall, 2001).

The emergence of the race classification legislation (the Group Areas Development Act) in 1955 designed by the apartheid government that came to power in 1948 further marginalised the San. In terms of this legislation, the San were classified as coloured (mixed race). Robins (2001) maintains that many people with San ancestry opted to identify with the new coloured identity due to the negative connotations associated with the term 'Bushmen' under apartheid. Consequently, unlike the coloureds and black Africans, the San people were not given their own 'reserves' as it was assumed that they were thoroughly assimilated into the coloured population. This contributed to the particularly marginalised identity of the San, as demonstrated today by the small number of San native language speakers (Robins, 2001), and led to the erosion of their culture and way of life resulting in their transition from a highly independent, resilient group of people to one with high dependency on the state and problems with substance abuse, poverty and low self-esteem.

During apartheid it could be said that the most prominent characteristics of San identity were their shared experiences of dispossession, mistreatment, exploitation and neglect by those more economically and politically powerful than themselves (Hitchcock, 2002). Their hunter-gatherer lifestyle was effectively destroyed. Arnold and Gaeses (1998) note that it is ironic that the then San's habit of sharing resources that provided assistance to the new settlers in finding good pasture and water was the beginning of their almost entire dispossession. The San's culture of sharing resources developed into a system of sharing poverty and oppression (Thoma, 1996). They were forced to live on their ancestral land as servants (Ross, 1983; Worden, 1985) working as labourers on farms with remuneration being paid in kind or alcohol (Useb, 2000; Chennells, 2001; Bosch and Hirschfeld, 2002).

In terms of contemporary livelihood strategies, the San combine Government poverty relief projects, social welfare grants, craft making, filming appearances, livestock rearing and collection of veld products among others to make their living (see Chapter 5, Section 5.1; Table 5.3). The living conditions of the San however vary widely. Some continue to hunt and gather on traditional land (awarded through the land restitution), while others eke out humble lives in rural poverty, working for low wages on neighbouring farms (Chennells, 2009). All the San land (resettlement farms and Contract Park) is communally owned and no-one has individual private access and use rights. Most members San who were part of the restitution claim live in surrounding farms (e.g. Witdraai, Erin, Andriesvale, Miershoop Pan, Ashkam,

Uitkoms and Sonderwater) and small locations such as Askham, Welkom and Rietfontein (Figure 4.1). A smaller number of the San live in and around relatively large cities such as Upington and Kimberley.

Since the San land restitution, several organisations/institutions and their actors linked to conservation and development interventions in the communal-owned resettlement farms have emerged. They address conservation from a diversity of angles, such as law, policy, wildlife management and ecosystems, local livelihoods (livestock) and individual basis. These include government and government agencies, NGO's, corporations, local community members and committees and individual stakeholders. The Communal Property Association (CPA), the Bushmen committee (Boesmanraad), Department of Land Affairs, South African San Institute (SASI), San Technical advisors, Mier Municipality and the Bushmen Farming Association (Boesman Boere Vereniging) are some of the predominant organisations. Conflicts related to competing meanings and uses of land and natural resources for subsistence purposes, cultural needs, livestock production and commercial purposes among different groups of San people have been reported (Ellis et al., 2010; Thondhlana et al., 2011).

4.2.3.2 The Mier: Their lifestyle, dispossession from land and current socio-economic status

The coloured Mier community of the Kalahari mainly originated from the people of Captain Vilander who fled British rule in the Cape Colony in 1865 (van Rooyen, 1998). The Mier are believed to have settled themselves more than 150 years ago across an extended area that reached from Rietfontein as the central point to the Orange River and into present day Namibia and Botswana, displacing many of the San in the process. It is reported that since the 1860's, the Mier also suffered at the hands of land-hungry settlers and the apartheid government. In 1891 the British Crown annexed the land the Mier occupied and incorporated it into British Bechuanaland, which became part of the Cape Colony in 1895.

Many of the original occupiers lost their land rights at the beginning of 20th century, allegedly by stealth and treachery (van Rooyen, 1998) when the then Kalahari Gemsbok Park was established. It is argued that the Mier, predominantly sheep, goats and cattle farmers, were unfairly pushed into the unproductive hardveld south of the Park and Kalahari dunes where they faced water shortage problems for their livestock. A hardveld is a hard-surfaced grazing area formed by igneous and metamorphic rocks, overlaid by loamy soils and characterised by

active erosion. It is subject to frequent climate extremes such as drought and therefore very marginal for livestock farming.

In 1930, the Coloured Persons Settlement Areas (Cape) Act was implemented. It provided for the declaration of crown land reserved for the settlement of coloured persons. Their fate was also further worsened by the race classification legislation of 1955, which marginalised the Mier on the basis of their colour. The national Coloured Areas Act No 3 of 1961 similarly provided for the reservation by proclamation of land for occupation and ownership by coloured people.

Most Mier people (who settled in these reserves) were predominantly farmers, with cattle, sheep and goats husbandry forming the main source of livelihoods for many households. The once independent community was reduced to living on small pieces of land designated as coloured reserves where they struggled to make a living. Land was of life importance and is still justifiably a very valuable and scarce resource in this region. The Mier community is still generally perceived as an agricultural community due to their strong agricultural history, though other sources of livelihoods are increasingly becoming important (e.g. wage labour and social grants) (Koster, 2000; Chapter 5, Section 5.1; Table 5.3). The Land Restitution Programme after 1994 recognised their efforts to survive as farmers. The present Mier area comprises approximately 400 000 ha of land and accommodates more than 6 000 residents. Most people stay in Rietfontein which is the main settlement, and amongst smaller settlements such as Welkom, Askham, Groot Mier, Klein Mier, Philandersbron, Klipkolk.

The local Mier game farms and the Contract Park are communal property, but legally Mier Municipality property. Thus, the Mier land (leased and communal resettlement farms) management is largely the responsibility of the Mier Municipality, though certain communal and town representatives are reported to be there for easier communication between individual communities and the Municipality. Evidence of conflicts over meaning of and access to land for direct natural resource use and livestock production within the Mier community has been documented (Kepe et al., 2005; Ellis et al., 2010).

4.3 CONCLUSION

Generally, though the two communities are beneficiaries of the 1999 land restitution and have traditionally depended on land-based livelihoods, they differ in their forms of natural resource use. On the one hand, the San are historically considered to be interested in the extractive use of natural resources for meeting their daily livelihood needs. On the other hand, the Mier predominantly use their land for livestock production among other livelihood activities. Given the different cultural backgrounds of the two communities, the different land parcels and the multiple actors involved in management, contestations over natural resource use and management within and between the San and Mier are common. These are linked to their history and take many forms such as conflicts over meaning, access and use of resources.

CHAPTER 5

WILD NATURAL RESOURCE USE, INCOME AND DEPENDENCE AMONG THE SAN AND MIER COMMUNITIES

5.1 INTRODUCTION

Since the seminal works of Peters et al. (1989) and Godoy et al. (1995) in tropical forests and Cavendish's (2000) research in the woodlands of Zimbabwe, there has been a steady proliferation of literature on the contribution of biodiversity or 'natural resources' to rural livelihoods. Several authors have reviewed why natural resources continually attract attention in conservation and livelihood debates (e.g. Alpert, 1996; Garnet et al., 2007; Sunderland et al., 2008; Chapter 1, Section 1.1; Chapter 2). Firstly, they contribute to the livelihoods of local people. It is widely accepted that the majority of rural households in developing countries depend heavily on goods and services freely provided by the environment (e.g. Cavendish and Campbell, 2002; Shackleton and Shackleton, 2000; 2004b). Secondly, increasing extraction of these resources indicates their economic importance and thus could provide an incentive to look after them, ultimately leading to more sustainable natural resource management (e.g. Pretty, 2006). Many studies have attempted to document these relationships (e.g. Ambrosi-Oji, 2003; Dovie et al., 2006; Mamo et al., 2007; Vedeld et al., 2004; 2007; Kamanga et al., 2009).

These studies have made use of household economic approaches, Sen's entitlement/capability approach (Sen, 2003) or the Sustainable Livelihoods Framework (Carney, 1999; Farrington et al., 1999; Chapter 3, Section 3.2.3) to show how groups of poor people try to improve their living standards based on the assets available to them. In particular, valuation studies and natural resource income accounting have been used to estimate the economic value of particular natural resources or suites of resources to the livelihoods of local people (Table 5.1). These studies (Table 5.1) have identified some interesting issues; first, natural resources make a significant contribution to average rural household income. In a meta-study of 54 case studies world-wide, Vedeld et al. (2004; 2007) showed that the average total income share derived from forest resources was 22 %. Second, poorer households tend to depend more on these resources, with these often contributing on average up to 40 % of their household income (see Shackleton and Shackleton, 2006; Mamo et al., 2007; Shackleton et al., 2008).

Table 5.1: Direct-use value (USD/household/year) and income share (%) of natural resources to aggregated household income from selected studies (Adapted from Shackleton et al., 2011)

Place/Region	Description of natural resource and activities	Value/year (USD)	Share (%) of total household income	Source
India	Semi-arid common pool resources	33-46*	14-23	Jodha, 1995
Chivi, Zimbabwe	Semi-arid woodlands	578	15	Campbell et al., 1997
Shindi Ward, Zimbabwe	Semi-arid, woodlands, multiple resources	545	35	Cavendish, 2000
Bolivian lowlands and eastern Honduras	Rain forest	-	39 (median)	Godoy et al., 2002
Limpopo, South Africa	Semi-arid Savanna, plant products	367-941	-	Shackleton et al., 2002
South West Cameroon	Forest, multiple use	60-300	6 -15	Ambrosi-Oji, 2003
Mametja, Limpopo, South Africa	Semi-arid Savanna	620	-	Twine et al., 2003
Southern Malawi	Forest resources	90*	30	Fisher, 2004
Limpopo, South Africa	Savanna area, wild edible herbs	167	-	Dovie et al., 2006
Ethiopia	Forests, multiple activities	832	39	Mamo et al., 2007
Case studies (Africa, Asia, Latin America)	Wet, semi wet and dry forest resources	678	22	Vedeld et al., 2004; 2007
Chiradzulu, Malawi	Forest resources	76	15	Kamanga et al., 2009
Okavango Delta, Botswana	Wetlands, multiple activities	1434	>50	Mmopelwa et al., 2009

The lack of consistence in the study methods used and types of resources considered in different valuation studies may limit generalisations of findings to different study contexts though key trends could be drawn. *Means values in the table obtained through conversion of local currency to US dollar using the average prevailing exchange rate during the year of field work.

Third, in absolute terms, wealthier households may generate higher total natural resource income than poorer households (Cavendish, 2000). Lastly, there is considerable differentiation in the type of natural resource goods used and the income generated from this use across different households and communities, depending on local ecological and economic conditions, and the profile and asset base of individual households (Cavendish and Campbell, 2002; Kamanga et al., 2009). Furthermore, a number of studies, mainly on

community-based natural resource management, and co-management have indicated how cultural and institutional dynamics influence access to and, consequently, the use of resources and the value of these to households in a given context (Table 5.2; Chapter 2, Section 2.2.4; Chapter 3, Section 3.4; Chapter 6; Chapter 7; Chapter 8).

Table 5.2: Selected studies demonstrating the influence of culture and institutions on natural resource use

Place/Region	Description of natural resource management arrangement	Source
Various African cases	Conservation sites in Africa	Byers, 1996
Zimbabwe	Co-management of resources in communal areas	Mandondo, 1997
Zimbabwe	Community-based natural resources management	Kepe, 2008a
Various African cases including South Africa and Zimbabwe	Co-management in forest reserves	Matose, 2008
Sub-Saharan Africa	Community-based natural resources management	Nelson and Agrawal, 2008
Several cases world wide	Natural resource use under different management regimes	Claus et al., 2010
Andra Pradesh India	Joint forest management	Saito-Jenson et al., 2010
Kalahari area, South Africa	Co-management and community-based management	Thondhlana et al., 2011

A clear understanding of such relationships and the factors influencing these is required to design policies and models for sustainable natural resource use systems in communal areas and parks, as is required for the unique Kgalagadi Transfrontier Park (KTP) and surrounding farms set-up following the landmark land restitution process in 1999 (details in Chapter 4). Cultural and institutional factors are paid attention to in Chapters 6 and 7 respectively. While there is a steadily growing literature that quantifies the contribution of natural resources, mainly forest resources (e.g. CIFOR PEN Project¹), to the household livelihood portfolio and the factors affecting this, there has been less work in arid regions such as the Kalahari. This is despite the fact that drylands are home to millions of people world-wide, some of whom are marginalised and food-insecure. There is now growing evidence to indicate that drylands resources are vital to the livelihoods of many communities globally (Twyman 2000; 2001; Chapter 1, Sections 1.2 and 1.3; Chapter 2, Section 2.3).

However, where attempts have been made (e.g. Barrow and Mogaka, 2007; Madzwamuse et al., 2007), these studies have not looked closely at issues like how social differentiation and diversification amongst different groups of households may shape natural resource use and income. This is particularly so for the Kalahari region. In order to bridge this gap in understanding, this Chapter estimates the contribution of natural resources to the southern Kalahari San and Meir communities' broader livelihood context by specifically looking at the relationships between assets, natural resource use, income and livelihoods.

The specific objectives of this Chapter are to:

- estimate the contribution of natural resource income to the total household income portfolios of the San and Mier;
- find out the total value and percentage share of natural resource income amongst different San and Mier wealth groups and between the two community groups;
- demonstrate how different natural resources are significant to different household groups and between the San and Mier communities; and
- show the relationship between various household characteristics and natural resource use.

These two communities traditionally belong to different cultural orientations with quite different modes of production, being traditional hunter-gatherers and livestock farmers respectively (Table 5.3; Chapter 4, Section 4.2.3). However, contemporary livelihood strategies and activities show different and similar livelihood sources including natural resource use, government grants, remittances and wage labour among others (Chapter 4, Section 4.2.3).

¹ The Poverty and Environment Network (PEN), an international network and research project on poverty, livelihoods and forest resources under the Centre for International Forest Research (CIFOR), represents one of the few initiatives to systematically consider the full scale of livelihood benefits offered by natural resources, though the scope here is limited to only 30 cases primarily in forest rich areas (www.cifor.cgiar.org/pen).

Table 5.3: Selected attributes of the San and Mier communities

Attribute	Community	
	San	Mier
Traditional livelihood strategy	Hunting and gathering	Livestock production
Contemporary livelihood strategies	Government grants, wage labour, natural resource use, crafts, picture appearances, livestock farming, etc.	Wage labour, government grants, natural resource use, livestock farming, remittances, etc.
Cultural values	Largely relate to plant and animal use.	Relate to livestock production.
Institutional arrangements	Communal and co-management in farms and Contract Park respectively (with many actors involved).	Municipality is the key institution for resource management in the farms and Contract Park.

The combination of relatively marginalised communities and limited options and choices in the Kalahari drylands means that natural resources may play a pivotal role in contributing to livelihood needs and providing safety nets during times of stress and crisis for both groups (see Shackleton et al., 1999). Further, by comparing two distinct communities, a broader platform for understanding the contribution of natural resources to the livelihoods of different people given varying cultural and institutional arrangements is provided. The bulk of natural resources in the southern Kalahari area are derived from rangelands in the form of direct household provisioning, cash income generation and livestock graze and browse. Consequently, this study is not only concerned with natural resource income as the sum of subsistence and cash incomes from wild resources (see Sjaastad et al., 2005), but also with livestock income (from livestock products and services) to show the importance of browsing and grazing in the region (see Cavendish, 2002).

This distinction between the value derived from households' direct use of wild resources versus livestock grazing and browsing is maintained throughout the Chapter to illustrate different forms of natural resource dependence. Direct natural resource income measured in this study refers to what comes only from wild or 'renewable' natural resources and includes fuelwood, medicinal plants, bush meat and wild food plants among others. Livestock income refers to the flows of goods and services from livestock such as cattle, sheep and goats to indicate the importance of natural resources for grazing in the area. The cash and non-cash ('in kind' benefits, see Mmopelwa et al., 2009) components of natural resource income are

presented separately, in order to provide a clear representation of the market and subsistence values of local natural resources.

Local livelihoods are analysed in relation to diversification, dependence and distribution (between different income groups) for the San and Mier communities. Diversification in this context essentially refers to the different types and numbers of economic activities that households engage in, including particular cash and subsistence strategies. Dependence relates to the share of income derived from natural resources relative to other income sources, and hence the reliance on natural resources as an income source. Distribution refers to how the above two characteristics (diversification and dependence) vary across different household 'wealth' or socio-economically differentiated groupings. Social differentiation describes social hierarchies that maintain asymmetries in the way different people relate to each other and in the way they access and benefit from natural resources and other economic sources (Ellis, 1993). The relationship between asset access and total natural resource income for the two community groups is also considered.

5.2 RESEARCH METHODS

5.2.1 Data collection

Data were collected during 2009 and 2010 using structured household surveys (Appendix 5) to generate income accounts for the San and Mier households. The communities generally perceived 2009 and 2010 to be characterised by drier spells relative to preceding years. The study focussed on resource use in the resettlement farms (adjacent to the Park) where almost all natural resources are harvested. In both communities, households were purposely selected for interviews on the basis of being part of San or Mier community group that benefitted from the 1999 land claim and whether they resided in and or used resources from the resettlement farms. In case of the San, almost all households who resided on the farms (during the research period) were targeted. A few households (known to be part of the #Khomani San) but who resided in small settlements away from the farms, such as Welkom, Ashkam and Rietfontein were difficult to locate, hence a snowball sampling approach of referral was used (see Chapter 3, Section 3.5). This totalled 100 households out of an estimated total San population of at least 1000 people. A similar number of households (100) were selected for interviews from the Mier community, again through a referral process (see Chapter 3, Section 3.5; Bryman, 2008).

The household survey targeted household heads for interviews. In the case of short and extended absence of household heads, household members with knowledge of the household head (usually the eldest person) for the former and members who were responsible for making decisions in the household for the latter were interviewed. The first part of the questionnaire captured the socio-economic characteristics of the households (Chapter 3, Section 3.5). The natural resource use section collected information on all the types of natural resources harvested, volumes of harvest, harvesting frequency, harvesting location, the use of resources, whether or not the harvest was for the market, and the associated price if marketed (see Blignaut and Moolman, 2006). Some of the resources (such as medicinal plants and fuelwood) were physically measured in the field to estimate the quantities harvested. In the case of fuelwood, 30 % of measured quantities was added to capture increased usage in winter months after deliberations around this with local people (see Mmopelwa et al., 2009).

Information on the type and size of livestock herd, sales per month and subsistence use of livestock products (milk, skin and meat value) were obtained. Local market prices were used to estimate the annual value of livestock goods and services. While extraction and production costs were generally not included for wild resources since few were processed, the costs of livestock production were included, and were especially relevant for the Mier whose costs (buying extra food, medicines, hiring herd boys, fence maintenance, etc.) were considerably higher. The opportunity costs of labour associated with the collection of resources for own use or farming livestock were not determined due to difficulties associated with getting accurate measures of rural households' labour costs (see Cavendish, 2002). Some of the difficulties relate to obtaining the proportion of time spent on different natural resource-related tasks or activities since communities do certain activities at the same time. For example, while people are collecting fuelwood, they may opportunistically harvest wild foods or medicinal plants. Given these difficulties (and many others, see Cavendish, 2002) it is often argued that researchers may decide not to adjust household accounts for labour input costs, especially considering that this is seldom done in other economic studies of rural households.

Total natural resource income was based on the sum of direct natural resource consumption (in-kind value), sales (e.g. fuelwood, wild meat, medicinal plants and wild foods) and on livestock income values explained in Section 5.1. Non-natural resource income sources for households were also captured in order to determine the average share of natural resource

income per year. All the reported income values in this study are estimated at a gross income basis and all values are reported in South African Rands. The exchange rate between the South African Rand (ZAR) and the U.S. Dollar was roughly U.S. \$1.00 = ZAR7.00 during 2009.

5.2.2 Data analyses

Descriptive statistics and income quintiles (categorised as poorest, poorer, poor, less-poor and well-off households) for the San and Mier households were used to illustrate different sources of income and financial values, income shares and distribution of natural resource income across different socioeconomic groups. Since analysis of wealth by income quintile does not take into account the value of other household assets (e.g. land, livestock value) from previous incomes or potential for future income, it is a more transitory measure of household poverty than the one that takes into account permanent measures of wealth such as land holding, livestock and other assets (see Kabubo-Mariara, 2008). T-tests (since data were normally distributed after checking with Kolmogorov-Sminov and Lilliefors tests for normality) were undertaken to compare means (wage income, remittances, social grants, livestock income and natural resource income) between the San and Mier communities. For the purposes of comparing means of different income sources between different socio-economic groups, households were categorised into three groups, namely poorest households (a combination of poorest and poorer income quintiles consisting of 40 households), middle income households (poor income quintile consisting of 20 households) and wealthy households (a combination of less-poor and well-off income quintiles consisting of 40 households). One way Analysis of Variance (ANOVA) and Post Hoc Tests were undertaken to determine if means were significantly different for different income groups within the two communities using the statistical analysis programme STATISTICA. Multiple regression analyses also were run to investigate if and how households' socio-economic explanatory variables (such as age, education, gender, etc.) were related to natural resource use/income. The functional forms were assumed linear in the presented regression models, consistent with the literature (e.g. Mamo et al., 2007; Vedeld et al., 2007; Kamanga et al., 2009). Running several tests using different functional forms, did not show significant differences in the results or improved model fits (see Gujarati and Porter, 2009).

In addition to the household survey, information was obtained using key informant interviews and observations. Interviews were conducted with key informants (herbalists, crafters, livestock owners and elders) on particular common natural resources, their seasonal availability, who collects, and perceptions on resource availability and cultural importance. These interviews provided much of the qualitative information used to interpret how different household characteristics influenced resource use among different wealth groups and between the San and Mier communities.

5.3 RESULTS AND DISCUSSION

5.3.1 Characteristics of the San and Mier respondents and households

In terms of the average age, number of years spent in school and household size, there were little differences between the San and Mier respondents and households (Table 5.4). Out of 100 households targeted in each community (San and Mier), 62 % and 68 % were male-headed and 38 % and 28 % were female-headed respectively.

Table 5.4: Characteristics of the San and Mier respondents and households (SE = standard error of the mean)

Characteristic	San (n=100)	Mier(n=100)
Average age \pm SE	49.9 \pm 1.68	49.7 \pm 1.35
Years spent in school \pm SE	4.03 \pm 0.41	4.66 \pm 0.45
Household size \pm SE	4.96 \pm 0.41	5.47 \pm 0.46
Male-headed household	62 %	68%
Female-headed households	38 %	28 %

The total percentage of Mier households does not add up to 100 % because some of the respondents were not household heads.

Most households were poor, living on less than USD 3 per day or less than USD 1 per day per capita, which suggests the role that natural resources play in people's livelihood could potentially be quite significant.

5.3.2 Household livelihood diversification, dependence, incomes and values from different livelihood activities and sources of income

Tables 5.5 and 5.6 present earnings and income shares by source for the San and Mier households respectively, stratified by income quintiles. Income quintiles show that for the San, wage income contributed proportionally more to poorer and less-poor households' livelihoods (26 – 27 %) than to the poorest (17 %) and most well-off households (19 %)

(Table 5.5). However, the actual monetary value of wage income decreased from ZAR14076 ± 6599 for well-off households to ZAR1510 ± 678 for poorest households (Table 5.5). Dependence on social grants was highest for the poorest households (42 %) and decreased to 20 % for well-off households. Remittances contributed the least to total mean income per year (1 – 6 %). In line with other studies (e.g. Adhikari et al., 2004), livestock income share was higher for well-off households (ZAR17866 ± 5888) and decreased to (ZAR457 ± 450) for the poorest households (Table 5.5). Direct natural resource consumption contributed at least 30 % of total annual income for all income quintiles except for the poorer San households, although the value derived from natural resources increased from poorest (ZAR3211 ± 812) to well-off households (ZAR22627 ± 4524) (Table 5.5).

Table 5.5: Mean annual income ± SE (in ZAR) and percentage (%) of total income (in parentheses) from different livelihood sources stratified by income quintile for sampled San households

Income source	Income quintiles					All households (n=100)
	Poorest (n=20)	Poorer (n=20)	Poor (n=20)	Less-poor (n=20)	Well-off (n=20)	
Wage Income	1510±678 (17)	4320±1330 (27)	7342±2066 (27)	10065±2860 (26)	14076±6599 (19)	7463±1567 (23)
Remittances	50±50 (1)	990±503 (6)	240±239 (1)	1674±771 (4)	3480±1899 (5)	1287±437 (4)
Social grants	3804±90 (42)	6516±1508 (41)	9948±2030 (37)	10008±1976 (26)	14748±2498 (20)	9005±904 (28)
Livestock income	457±450 (5)	1294±689 (8)	1184±736 (4)	2050±880 (5)	17866±5888 (25)	4570±1369 (14)
Direct natural resource consumption	3211±812 (36)	2804±862 (18)	8076±1986 (30)	14949±2728 (39)	22627±4524 (31)	10333±1367 (32)
Mean total income per household per annum	9032	15924	26790	38746	72797	32658

Analysis of Variance showed significant differences between different San household groups (poorest, middle income and wealthy, see Section 5.2) in terms of wage income ($F = 3.59$; $p < 0.05$), remittances ($F = 7.06$; $p < 0.05$), social grants ($F = 7.34$; $p < 0.01$), livestock income ($F = 5.65$; $p < 0.01$) and direct natural resource income ($F = 18.51$; $p < 0.01$). Post hoc analysis for paired comparisons showed that wage income for richest households was significantly higher than that of the poorest households ($p = 0.008$) but not from middle income households. Similarly, remittances showed significant differences between poorest and

wealthy households ($p = 0.034$) and between middle income and wealthy households ($p = 0.049$). Social grants for wealthy households were significantly higher than that of the poorest ($p = 0.000$) and middle income households ($p = 0.043$). Likewise, livestock income and direct natural resource income for wealthy households was significantly higher than that of poorest households ($p = 0.003$ and $p = 0.000$) and middle income ($p = 0.016$ and $p = 0.001$) respectively.

With regards to the Mier, well-off households derived as much as 69 % of their total annual income from wages but the dependence dropped to 15 % for the poorest households (Table 5.6). Mean wage income value decreased from ZAR71760 \pm 25774 for well-off households to ZAR1050 \pm 618 for the poorest households. Social grants were the main source of income for the poorest (41 %) to less-poor households (51 %). Livestock income constituted at least 14 % of total annual income for all income quintiles except for the poorest (8 %). Consistent with the pattern amongst the San (in Table 5.5), total livestock income for Mier increased from ZAR601 \pm 961 per annum for the poorest group to ZAR14758 \pm 6402 per annum for well-off households (Table 5.6).

Table 5.6: Mean annual income \pm SE (in ZAR) and percentage (%) of total income (in parentheses) of different livelihood sources stratified by income quintile for sampled Mier households

Income source	Income quintiles					All households ($n=100$)
	Poorest ($n=20$)	Poorer ($n=20$)	Poor ($n=20$)	Less-poor ($n=20$)	Well-off ($n=20$)	
Wage Income	1050 \pm 618 (15)	2820 \pm 1165 (16)	6660 \pm 1904 (25)	7720 \pm 2591 (20)	71760 \pm 25774 4 (69)	18002 \pm 5800 (47)
Remittances	850 \pm 613 (12)	1260 \pm 731 (7)	480 \pm 318 (2)	2370 \pm 1180 (6)	780 \pm 613 (1)	1148 \pm 335 (3)
Social grants	2880 \pm 719 (41)	8766 \pm 1612 (50)	13212 \pm 2039 (50)	19152 \pm 2231 (51)	7758 \pm 2226 (7)	10354 \pm 987 (27)
Livestock income	601 \pm 961 (8)	2484 \pm 1141 (14)	3877 \pm 1481 (15)	5958 \pm 1819 (16)	14758 \pm 6402 (14)	5536 \pm 1463 (14)
Direct natural resource consumption	1694 \pm 336 (24)	2207 \pm 371 (13)	2043 \pm 474 (8)	2629 \pm 533 (7)	9257 \pm 3504 (9)	3566 \pm 3504 (9)
Mean total income per household per annum	7075	17537	26272	37829	104313	38606

Dependence on direct natural resource consumption declined from 24 % for the poorest to 9 % for well-off households, though well-off households derived higher income (ZAR9257 ± 3504) from this source than all the other households (less-poor, poor; poorer and poorest income groups) because well-off households owned more livestock (see Section 5.3.5).

Overall, there were significant differences in mean wage income ($F = 05.12$; $p < 0.01$), social grants ($F = 8.03$; $p < 0.01$), livestock income ($F = 4.03$; $p < 0.05$) and direct natural resource consumption ($F = 6.39$; $p < 0.01$) between different Mier income groups (poorest, middle income and wealthy households). Post hoc tests showed significant differences in wage income between wealthy and poorest households ($p = 0.003$) and between wealthy and middle income households ($p = 0.032$). Remittances were not significantly different perhaps due to a very few households who depended on remittances as a source of income. Social grants were significantly different between wealthy and poorest households ($p = 0.000$) and between middle income and poorest households ($p = 0.004$). Social grants (2009/2010 rate) consisted mainly of child support grants (ZAR240/month) and old-age grants (ZAR1010/month) and a few foster child grants (ZAR680/month) and disability grants (ZAR1010/year). Households with more members under the age of 15 years and members who were 60 years or older had more income from child support grants and old-age grants. Like the San, there were significant differences in livestock and direct natural resources income between wealthy and poorest households ($p = 0.006$ and $p = 0.000$) and between wealthy and middle income households ($p = 0.098$ and $p = 0.009$) respectively.

Tables 5.5 and 5.6 clearly show that the mean value of total natural resource income (direct natural resource consumption and livestock income) was generally higher for better-off households than the poorest ones. This parallels studies elsewhere (e.g. Cavendish, 2000; Fisher, 2004). However, the dependence pattern was somewhat uneven – while the poorest households tended to depend more on direct natural resource consumption than well-off households, well-off households depended more on livestock income than poorest households. However, taken together, direct natural resource consumption and livestock income generally played an important role for both communities despite considerable differential income values and income shares. The income shares and monetary values (Tables 5.5 and 5.6) derived from direct natural resource consumption and livestock income

for the San and Mier respectively are generally comparable to findings elsewhere including in less arid environments (Table 5.1; see also Section 5.3.5 for findings on livestock income).

On the whole, the findings show that direct natural resource consumption (32 %) contributed the most to mean aggregate San income per year followed by social grants (28 %), wage income (23 %), livestock income (14 %) and remittances (Figure 5.1, see also Table 5.5). Conversely, the main income source for all Mier households was wage income (47 %), followed by government social grants (27 %), livestock income (14 %), direct natural resource consumption (9 %) and lastly remittances (see also Table 5.6). A high dependence on social grants in the two communities is a clear indication that many people are generally poor, and is confirmed by the fact that most individuals lived on less than USD 1 per day. On average the Mier showed significantly higher non-farm incomes (a combination of wage income, remittances and social grants) than the San per annum ($t = -2.01; p < 0.05$), while the San had significantly higher income from direct natural resource use ($t = 4.32; p < 0.01$). There were no significant differences in livestock income between the two communities. The San on average derived 46 % of their total income from a combination of direct natural resource consumption and livestock income compared to the Mier’s 23 %, displaying a stronger and substantially higher dependence on natural capital.

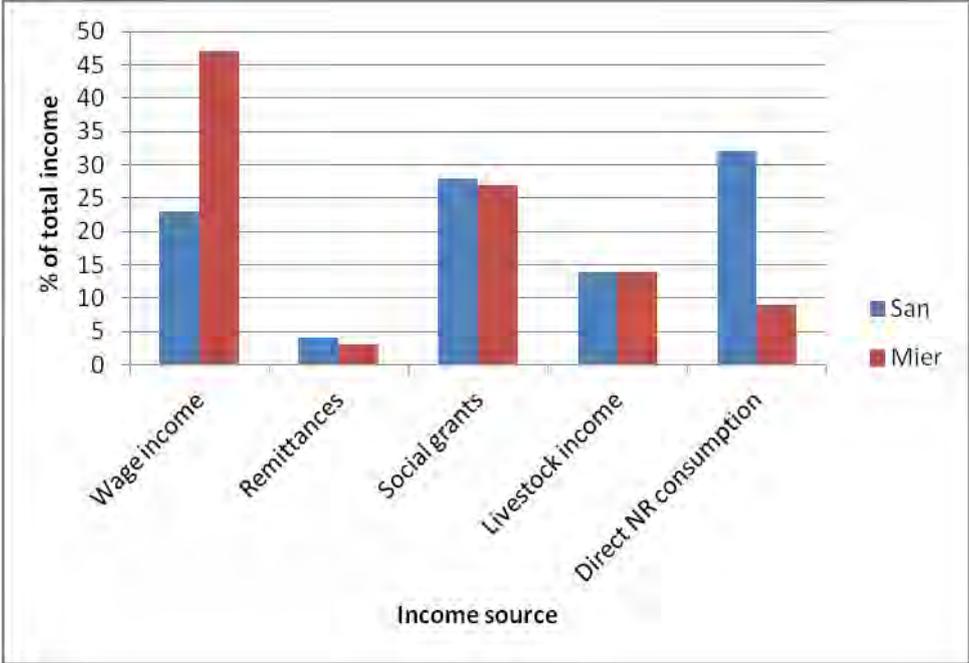


Figure 5.1: Dependence on the main income sources for San and Mier

5.3.3 Household dependence on incomes from and value of different direct natural resource-based livelihood activities (excluding livestock)

The proportion of San and Mier respondents that harvested and used different wild natural resources is shown in Table 5.7. A wide variety of natural resources were used mainly for subsistence purposes (provisional services or direct-use, see Chapter 3, Section 3.2.2). Fuelwood and medicinal plants were the only products that were used for cash income generation. More than 80 % of the San and Mier households harvested fuelwood, emphasising the importance of this natural resource product especially for households who either did not have electricity in their homes, or could not afford the cost of electricity. Fuelwood use was followed by medicinal plants as these were used by at least 80 % and 30 % of the San and Mier households respectively. Only San respondents were involved in craft-making. The percentage of San households who harvested natural resources was more than the Mier indicating that these results parallel those in the previous section with the San depending more on direct-natural resource income than the latter (Table 5.7).

Table 5.7: Percentage of San (S) and Mier (M) households that used, harvested, received (as gifts), bought and sold selected natural resources

Natural resource or resource-based activity	Subsistence use		Harvesting		Gifts		Buying		Selling	
	S	M	S	M	S	M	S	M	S	M
Fuelwood	88	83	88	81	-	2	-	-	7	4
Wild food plants	38	8	38	8	-	-	-	-	-	-
Wild plants for crafts	33	-	33	-	-	-	-	-	33	-
Bush meat	89	51	23	16	56	35	10	-	-	-
Medicinal plants	83	36	65	27	5	-	13	9	5	-

Numbers do not add up to 100 % because not all sampled households used certain natural resources. Further, some people used natural resources but did not necessarily harvest them, while others used resources but did not commercialise them.

It can also be seen that the percentage of respondents who reported harvesting medicinal plants and hunting bush meat was relatively lower than the percentage of the respondents who actually used these resources, obtained through purchases or gifts. The percentage of respondents who declared that they sold fuelwood for a living was also considerably low. This may be due to the fact that fuelwood harvesting for commercial purposes and bush meat hunting are illegal activities (see Chapter 7). Natural resources such as thatching grass and wood for construction were used more by the San than the Mier. Many livestock owners

collected camel thorn seed pods for fodder provision while a few households collected these for cash income generation.

The estimated mean direct-use values and proportion of income generated from different natural resources (per household per year) by different San and Mier income groups are presented in Tables 5.8 and 5.9 respectively. There were some striking differences regarding dependence on different sources of natural resource income. As expected, the San showed a significantly higher dependence on direct natural resource income than the Mier (Section 5.3.2). For the San, it was mainly fuelwood (53 %), livestock income derived from browsing and grazing (34 %) and to a lesser extent crafts (13 %) and bush meat (3 %) that constituted the main sources of income for all households (Table 5.8). The average income from crafts was ZAR1776 ± 413 per year. However, in line with other studies in Southern Africa (e.g. Fisher, 2004), income from crafts-making (considered a low return livelihood activity in this context) was most important for the poorest, poorer and poor households, constituting at least 29 % of their annual mean total natural resource income though the poorest sometimes derived less total income (Table 5.8).

Table 5.8: Mean annual income of different natural resources and activities ± SE (in ZAR) and percentage (%) (in parentheses) of total natural resource-based income stratified by income quintile for sampled San households

Natural resource or resource-based activity	Income quintile					All households (n=100)
	Poorest (n=20)	Poorer (n=20)	Poor (n=20)	Less-poor (n=20)	Well-off (n=20)	
Crafts	1711±808 (47)	1170±753 (29)	3374±1437 (36)	2173±887 (13)	454±255 (1)	1776±413 (13)
Fuelwood	1494±299 (41)	1503±357 (37)	4206±1405 (45)	11334±2667 (67)	21125±6122 (43)	7232±1658 (53)
Wild food plants	5±3 (0)	10±5 (0)	0 (0)	8±4 (0)	8±3 (0)	6±2 (0)
Medicinal plants	1±0 (0)	0 (0)	361±358 (4)	619±595 (4)	25±23 (0)	201±139 (1)
Bush meat	0 (0)	120±119 (3)	135±119 (1)	815±339 (5)	10015±393 (20)	417±115 (3)
Livestock income	457±450 (12)	1294±689 (32)	1184±736 (13)	2050±880 (12)	17866±5888 (36)	4570±1369 (34)
Mean natural resource income per annum	3668	4097	9260	16999	49493	14202±2125
Total household income per annum	9032	15924	26790	38746	72797	32658

The above calculations are based on income from natural resource and natural resource-related activities only.

By contrast, livestock income (61 %) and fuelwood (33 %) were the main sources of total natural resource income for all Mier households (Table 5.9). Game farming was only practiced by and important for well-off Mier households. With regards to livestock income, well-off San and Mier households derived a high proportion of their total income (more than poor to poorest households) from livestock (ZAR17866 ± 5888 and ZAR14758 ± 6402), with this constituting roughly 36 % and 62 % of mean annual natural resource income (Tables 5.8 and 5.9). Though households in the less-poor to poorer categories had higher dependencies on livestock income, the actual value derived was substantially lower than that of well-off households. Livestock income was comparatively more important for the Mier than the San, as illustrated by high dependence across all quintiles and the total income generated (Table 5.9). The contribution of wild food plants and medicinal plants was generally low and only to the San, while bush meat also contributed less but to both communities (and especially for the Mier), though some income quintiles relatively depended more on these resources than others (Tables 5.8 and 5.9).

Table 5.9: Mean annual income of different natural resources and activities ± SE (in ZAR) and percentage (%) (in parentheses) of total natural resource-based income stratified by income quintile for sampled Mier households

Natural resource or resource-based activity	Income quintile and mean income bracket					All households (n=100)
	Poorest (n=20)	Poorer (n=20)	Poor (n=20)	Less-poor (n=20)	Well-off (n=20)	
Game farming	0 (0)	0 (0)	0 (0)	0 (0)	2405±1495 (10)	481±310 (5)
Fuelwood	1692±491 (74)	2166±371 (46)	1743±495 (29)	2508±510 (29)	6831±4458 (29)	2988±928 (33)
Wild food plants	2±1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Medicinal plants	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Bush meat	0 (0)	40±27 (1)	300±258 (5)	120±119 (1)	20±20 (0)	96±57 (1)
Livestock income	601±961 (26)	2484±1142 (53)	3877±1481 (65)	5958±1819 (69)	14758 ±6402 (62)	5536±1462 (61)
Mean natural resource income per annum	2295	4690	5920	8586	24014	9101±1684
Total household income per year	7075	17537	26272	37829	104313	38606

The above calculations are based on income from natural resource and natural resource- related activities only.

Consistent with the emerging trends in the preceding sections, Tables 5.8 and 5.9 show that well-off households derived more total income from fuelwood and livestock than poor to poorest households though poor households depended more on such income. For example, San and Mier well-off households made up 53 % and 46 % of all the income generated from fuelwood consumption respectively. Thus while, fuelwood was generally of high importance across all income quintiles in both communities as demonstrated by high dependence levels, well-off households tended to accumulate more total value from its use and sale. Well-off households were in this case interested in fuelwood harvesting because it offers good cash income opportunities (it has an attractive local market amongst tourists who visit the Park) as well as being a source of energy for home use, while the poor to poorest largely used it for subsistence purposes. Both communities obviously depended on fuelwood, though the Mier to a higher degree used fuelwood in cash generating strategies and to minimise electricity costs. Fuelwood was the primary source of energy (for cooking, heating and at times lighting) for more than 80 % of San households as they did not have access to electricity and for the poorest Mier households who could not afford other energy sources. Also of importance is the fact that fuelwood is the only wild resource that can be harvested in abundance considering the arid nature of the Kalahari region.

With regards to quantities of fuelwood used, the average weight of a bundle of fuelwood needed for daily needs was about 10.25 ± 7.55 kg for both the San and the Mier. The mean annual consumption of fuelwood for a rounded mean household size of six was estimated at 3741 kg during non-winter months. Assuming an increased usage of 30 % of fuelwood in winter months (May to August), annual usage per user household added up to 4115 kg (or 686 kg per capita per year). This mean is not far from 687 kg per person per year found by Shackleton (1993) and Williams and Shackleton (2002).

5.3.4 Households dependence on value of and incomes from livestock

The range of benefits derived through livestock ownership is well documented from several countries in Southern Africa, but seldom within a livelihood framework, or a complete valuation of all goods and services provided (Shackleton et al., 2000b). Shackleton et al. 2000b argue that the contributions of livestock goods and services to rural households have been consistently underestimated in economic and livelihood security terms for several reasons including a focus on productivity, limited consideration of non-monetised products or

services and a neglect of small stock, such as goats, sheep or poultry. This study considers livestock (including small stock) as an important source of livelihood (supported by wild natural resources) in terms of both direct household subsistence use or cash savings (meat, milk, draught power) and trade for cash income.

The results illustrate a high degree of variation in livestock ownership and diversity, and the value attached to livestock among households both within and between the two communities. More than half (55 %) of the interviewed San households were livestock owners. However, if poultry, donkeys, mules and horses are excluded, only 38 % of households were livestock owners. Out of these, only 18 % owned cattle, while the rest kept small stock (sheep and goats). The number of cattle, sheep, goats and poultry per household ranged from 2-14, 3-180, 4-150 and 1-50 respectively. By contrast, relatively more Mier households owned livestock (59 %) or about 52 % excluding poultry, donkeys, mules and horses. Out of the 52 %, approximately 37 % households owned cattle.

Table 5.10: Number of livestock and direct use-values (in ZAR) of livestock (excluding poultry) for San and Mier households in 2009

Category	San			Mier		
	Cattle	sheep	Goats	Cattle	Sheep	Goats
Total number of stock per stock type for all households (n=100)	160	1354	699	371	8461	2825
Mean \pm SD for all households	3 \pm 14	25 \pm 46	13 \pm 24	6 \pm 15	143 \pm 236	49 \pm 66
Total value per livestock category	400,000	609,300	314,550	927,500	3,807,450	1,271,250
Total value of livestock herd by community	1,323,850			6,006,200		
Mean subsistence value (e.g. milk, meat) per household for all households	2059			2965		
Mean cash income value per household per year for all households	2511			2571		
Mean livestock value per household per year across all households	4570			5536		
% of livestock-owning households	38			52		
Mean livestock value per household per year for livestock owning households	8213			9383		

Mean livestock value per household for all households are derived from Tables 5.5 and 5.6. Cash value refers to value from commercialisation of livestock and livestock products and services such selling of beasts, skins, and hiring.

The number of cattle, sheep, goats and poultry per household varied from 1-84, 10-1400, 2-200 and 1-30 respectively. In both San and Mier communities, livestock-owning households generally had more sheep than cattle and goats (Table 5.10). In case of the Mier, farmers with access to larger pieces of land generally showed high total livestock income and dependence. For example, about 46 % of interviewed livestock owners had large pieces of land (at least 1900 ha) either privately owned or rented from the Mier Municipality. These farmers accounted for approximately 75 % of all livestock (out of a total of 11286 excluding donkeys, mules, poultry and horses). Small stock production was a common activity among many households as illustrated by not only a high number of owning households but also higher number of sheep and goats than cattle (Table 5.10).

Mean livestock income for the year was around ZAR4570 and ZAR5536 for all San and Mier households, but these figures respectively increased to ZAR8213 and ZAR9383 if only livestock-owning households were considered (Table 5.10). There were costs related to livestock production for the Mier averaging about ZAR2316 for all households or ZAR3926 per year for livestock-owning households. These costs included among other things, purchasing of additional feed (during dry spells), fence maintenance, purchasing medicines and paying for herd boys. The overall mean direct-use value of livestock per year to all households and disaggregated by livestock-owning households (Table 5.10) is within the range of findings from similar studies elsewhere summarised in Table 5.11.

All the San and Mier cattle-owning households interviewed said that cattle were the best form of savings due to their large size, minimal care needed for the calves, the ability to produce more milk and meat than small stock and the high price fetched on the market. Sheep rearing was regarded as the second best form of savings by cattle owning households and the best form of savings by non-cattle owners followed by goats. The main reasons highlighted included that sheep grew faster and therefore reproduced earlier and that less attention was needed once the lambs could walk. The delicious taste of mutton and lamb was frequently mentioned by many respondents. This is supported by the high average numbers of sheep across all households as shown in Table 5.10. As highlighted earlier, there was no significant difference between the San and Mier mean livestock income (income from the flow sale of livestock products and services). However, as expected, the mean value of the livestock herd

(total number of stock) for Mier was significantly higher than that of the San ($t = -3.88$; $p < 0.01$), showing that the Mier had larger livestock herds (Table 5.10).

Table 5.11: Estimated direct use-values (USD) and income share (%) of livestock from selected studies

Place/Region	Description of region	Value of livestock goods and services per annum	% contribution to total household income	Source
Sand River Catchment, Limpopo, South Africa	Wet and semi-arid	1180 for owning households or 260 for all households	-	Shackleton et al., 2005
Thorndale, Limpopo, South Africa	Semi-arid	656	23	Dovie et al., 2006
Chivi, Zimbabwe	Semi-arid	144	-	Campbell et al., 2002
Makana Municipality commonages, Eastern Cape, South Africa	Semi-arid	148	4	Davenport, 2008

Overall, livestock production was a key economic activity, though its mean value and proportion of total livelihood income was variable across households as has been noted in preceding sections. All the interviewed livestock-owning households considered livestock production as a form of savings. As expected, all San and a high proportion (73 %) of the Mier livestock owning households interviewed had no other form of savings. These households also had no other jobs, so livestock income was their only source of income (subsistence and cash income).

Some of the respondents interviewed highlighted the cultural importance of livestock (and its fostering of social ties) as their motivation for livestock production (see also Chapter 6, Section 6.4.4.2). Many respondents said they often used their livestock for socially-important ceremonies such as weddings, birthdays and funerals instead of buying meat or hunting which is very expensive and time consuming respectively. Well-off households valued livestock as a source of extra cash income. Some of the heads of these (Mier) households were professionals such as teachers, nurses and social workers among others.

The main value of donkeys, horses and mules was provision of transport. All households who owned either a donkey or mule or horse, used them for transportation purposes to carry fuelwood, construction material, fetch water, get to their farms/fields, shops and clinic and other day to day needs. Only two out of all the livestock owning San households hired out their livestock to generate income and this amounted to ZAR2840 per year. Sometimes non livestock-owning households were offered livestock transport services ‘free of charge’ by livestock-owning households and in return they brought back the cart with fuelwood as a token of appreciation. Though the value of saving on transport (due to the availability of draught power) was not calculated, many households used livestock for transport services. This is especially important in this arguably remote area, where public transport is either scarce or beyond the reach of many. Therefore the economic value of livestock, in terms of household saving on public transport (and provision of daily transport needs), is potentially high and should ideally be recognised.

Overall, the findings demonstrate the importance of livestock income (and the importance of grazing and browsing resources for livestock production in the region) as a key important source of livelihood for many households. The Kalahari communal livestock farming sector has multiple production outcomes, such as milk and meat for home consumption and is important for food security, financial capital storage, insurance, and cash income while donkeys, mules and horses provide transport services around the scattered small settlements.

Benjaminsen et al. (2008) findings in Namaqualand are pertinent to this study’s findings. They illustrate that for most households, livestock keeping is but one of several livelihood sources, which often include other sources of income such as wage labour, remittances, pensions, and social security grants. In a relatively recent study of livelihoods in the drylands of Botswana and Kenya, Madzwamuse et al. (2007) and Burrow and Mogaka (2007) respectively, concluded that livestock production provided a substantial source of income for many rural households. Livestock was an indicator of social status, source of food and means of establishing social ties within such communities. This is especially important for people in drylands where generally chances and choices are limited (Anderson et al. 2004) and in particular crop production is often non-existent (as in this case study). As demonstrated above, there is no single reason behind livestock production – the reasons are not only economic but also social. Therefore, it may also be problematic to separate one value from the

other as many households generally consider all the above-mentioned reasons equally important. The Grasslands Carbon Working Group (GCWG) (2011) aptly affirms that livestock production, which greatly depends on rangelands for its growth, is socially, culturally and economically critical to rural livelihoods.

5.3.5 Natural resource income (direct natural resource and livestock and livestock products sales) for cash generation

Table 5.12 illustrates the mean cash income derived from the sale of natural resources (wild natural resources and livestock) as a percentage of total natural resource-based income (cash and subsistence value) across different income quintiles for San and Mier per year. Yearly mean cash income derived from natural resources for all San households was ZAR7885 per household per year compared to a total natural resource income of ZAR14202 (Table 5.12) which means that roughly 56 % of all natural resource income was in the form of cash. The mean natural resource cash income per Mier household was ZAR4977 compared to a total natural resource income of ZAR9101 which means that some 55 % of total natural resource income was converted into cash income. Overall, the cash income component of natural resources constituted slightly more than half of total natural resource income which is consistent with other studies (e.g. Vedeld et al., 2004).

Table 5.12: Mean natural resource-cash income (in ZAR) and percentage (%) of total natural resource (NR) income stratified by income quintile for San and Mier samples

Community	Income quintile					
	Poorest (n = 20)	Poorer (n = 20)	Poor (n = 20)	Less-poor (n = 20)	Well-off (n = 20)	All households (n = 100)
San: Total NR income	3668	4097	9260	16999	49493	14202
Cash income	1712	1985	5562	4979	25186	7885
% of total income	(47)	(48)	(60)	(29)	(51)	(56)
Mier: Total NR income	2295	4690	5920	8586	24014	9101
Cash income	1337	705	2812	8110	11920	4977
% of total income	(58)	(15)	(48)	(94)	(50)	(55)

Total natural resource income figures (including livestock) for San and Mier are derived from Tables 5.8 and 5.9 respectively.

However, the results should be interpreted with caution since only well-off households showed high levels of cash income derived from natural resources. Further analysis revealed that well-off households generated the highest total cash income from natural resources while the poorer income groups largely used these incomes for subsistence needs. However, given that only a few households (see Table 5.7) in both communities openly declared that they sold fuelwood as a livelihood strategy; statistical comparison of incomes earned by well-off and poorer households could not be made.

Natural resource-based cash income was predominantly generated from fuelwood and livestock commercialisation. With regards to dependence on natural resource cash income, analysis by income quintiles revealed mixed outcomes. Poor households (middle income) showed the highest dependence (60 %) on cash income derived from the sale of natural resources, while less poor Mier households showed a very high dependence (94 %). However, in both communities well-off households still derived more total cash income than poor to poorest households – consistent with trends and patterns in the preceding sections. It is important to note that natural resource income could vary dramatically due to several reasons from year to year. For example, in good years (with good rainfalls) total natural resource income may be lower than during periods of drought because during droughts cash need is high and households are likely to sell more livestock to recover from drought stresses and shocks. Furthermore, natural resource income may be higher in years with big celebrations such as weddings, or during funerals of loved ones (livestock such as goats and sheep are usually slaughtered for these family events).

The preceding findings generally concur with findings elsewhere that also demonstrate that wealthier households derive more income (both subsistence and cash) from natural resources and natural resource-based activities (such as livestock production) than the poorest households, though poorer households sometimes show a higher dependence (e.g. Cavendish, 2000; Fisher, 2004; Vedeld et al., 2007). For example, well-off households benefitted more from activities such as livestock production, fuelwood sales and game farming. This is perhaps due to the initial capital required (to buy stock and wild animals) in the case of livestock and game farming, which the poor cannot afford. Fisher (2004) found out that dependence on low return activities decreased with wealth, while high return activities increased with wealth in Malawi. Similarly, Kamanga et al. (2009) found that poor households had the lowest forest

income and concluded that poor people are almost destitute and not able to participate in resource collection activities because they often lack labour, time and good health among other constraints.

This study also shows that well-off households were attracted to certain resources such as fuelwood rather than medicinal and food plants among others. This is probably due to the fact that the latter were on the one hand less attractive due to the high opportunity costs (scarcity), and on the other hand they did not have substantial markets and were therefore not attractive in terms of cash income generation. Further, well-off households normally owned or had access to transport that could facilitate more resource harvesting. For example, donkey carts owning households could harvest more resources such as fuelwood (at least 300 kg per load) than households who had to carry the fuelwood (at least 10 kg per bundle). In case of bush meat, the illegal nature of hunting activities probably meant that respondents deliberately underreported benefits from bush meat, hence the low value.

Furthermore, key informant interviews revealed that wealthier households had more political connections at local levels, and were able to influence both access and use of resources and even prices could vary which may be responsible for the differences in the value derived from natural resources. For example, poor people said they are often marginalised in terms of access and use of resources and community assets and often they do not access benefits such as income from eco-tourism enterprises, water for their livestock and transport (there is only one community vehicle) to access the Park (see Chapter 7, Section 7.4.5.2). It was also reported that development agencies often look for influential locals (who are likely to be well-off households, well known and powerful) to get rapport into the society. In the process, such households have more say in and benefits from resource access as illustrated in this study (see also Ambrosi-Oji, 2003).

5.3.6 The safety net function of natural resources (wild natural resources and livestock)

Roughly 60 % of all the San and Mier respondents interviewed reported that they turned to natural resources to raise cash in times of hardships. About 28 % of San and 80 % of Mier livestock owning households said that livestock income (through sales) provided much needed cash income in times of stress. In particular, owners of just a few animals regarded livestock as a safety net against misfortune, a store of wealth to be used during times

hardships such as funerals and illnesses, to pay for school fees, repay debts and for prolonged dry seasons (see Shackleton et al., 2000b). Shackleton et al. (2000b) highlight that in some cases families that lose a breadwinner can meet their annual cash needs for several years by selling a few livestock each year. Benjaminsen et al., (2006; 2008) confirm that livestock keeping represents a safety net against fluctuations in other incomes as a bank account that people can dip into to make up for regular seasonal shortages or when other sources fail since some of the livelihood sources are insecure (see also Cavendish, 2000).

Related to the safety function is the non-cash income role played by natural resources in rural livelihoods, especially in relatively subsistence, remote and marginalised economies such as in this case study. The cash income component of natural resources was slightly more than half of the total natural resource-based income for all San (56 %) and Mier (55 %) households, illustrating that almost half of the income from natural resources was in the form of 'in-kind' values (see Table 5.12). Income quintiles show that less-poor San households (29 %) and poorer Mier households (15 %) had the least share of cash income from natural resources – displaying considerable 'in kind' values of natural resources to the income groups (Table 5.12). For instance, a majority (88 %) of San respondents revealed, during surveys, that they used fuelwood as the only and primary source of energy, since they neither had electricity nor could afford the costs of buying substitutes such as candles (for lighting), paraffin and gas for cooking and generating warmth during winter. In addition, a substantial proportion of Mier respondents with access to electricity indicated they still used fuelwood. When asked why they used fuelwood even though they had electricity in their households, a majority (94 %) of respondents said that they wanted to reduce the costs of electricity. They further said that electricity was mainly used for lighting and other low-power consuming appliances such as fridges, fans, televisions and radios among others, while fuelwood was used for heating and cooking. In fact the per capita fuelwood use per households was almost equal between the sampled San and Mier households (see Section 5.3.3). Most of the surveyed San and Mier households also said consumption of bush meat reduced the costs of buying meat in local butchereries.

Thus, though the proportion of cash income from natural resources varies between income quintiles, overall the findings parallel findings elsewhere that own or in kind use of 'free' resources result in considerable reductions in cash expenditure, a crucial livelihood strategy

for poorer households (e.g. Shackleton et al. 2000b; Angelsen and Wunder, 2003; Sen, 2003; Kamanga et al., 2009; Mmopelwa et al., 2009). As such, one can conclude that natural resources potentially act both as safety nets for the poorest group of households and sometimes as ‘pathways out of poverty’ for less-poor and well-off households, while the use of natural resources serves to reduce costs associated with use of conventional services and products for poor and wealthy groups of households alike..

5.3.7 Links between household characteristics and natural resource use

Total natural resource income was regressed against a set of household and respondent related variables since it is often expected that households with different characteristics and access to assets may have different levels of natural resource income (Mamo et al., 2007; Kamanga et al., 2009). Household characteristics (conventional variables) such as non-farm income (i.e. wage employment, self-employment, remittances etc.), age, education, gender and household size among others are often related to natural resource income for reasons linked to both production and consumption decisions of different households (Vedeld et al., 2007). Tables 5.13 and 5.14 present the results of the Ordinary Least Squares (OLS) multiple regression analyses.

For San, age of respondents (0.026*) was negatively related to natural resource use, indicating that as age increases, there is generally a decrease in natural resource use (Table 5.13). It is often argued that the age of the household head may be positively related to natural resource consumption until a climax of physical strength is reached, where natural resource utilisation will decrease with age (see Mamo et al., 2007). Indeed, natural resource harvesting is an arduous activity considering the arid nature of the Kalahari area. People have to walk for long distances to collect important livelihood resources such fuelwood and this could only be done by the physically fit. In most cases households with older members were small (consisting of mainly husband, wife and sometimes a grandchild) and these relied more on government old-age grants than natural resources.

Table 5.13: OLS regression of natural resource income against socio-economic variables for San sample

	Expected sign	Coefficient	Std Error	t-value	p-value
(Constant)		-	-	2.093	0.039
Non-farm income	-	-0.123	0.096	-1.283	0.203
Age of HH	+	-0.271	0.120	-2.263	0.026*
Education	-	-0.133	0.120	-1.103	0.273
Gender	+	0.231	0.094	2.446	0.016*
HH size	+	0.215	0.098	2.203	0.030*
Membership in organisations	+	0.057	0.094	0.604	0.547
Livestock (herd) value	+	0.270	0.095	2.835	0.006**

N = 99; $R^2 = 0.2122$; $R^2_{\text{adjusted}} = 0.1516$; $F = 3.502$; $p < 0.002$

*Represents statistically significant values

Gender (0.016*), household size (0.026*) and the value of livestock herd (0.005**) were all positively related to natural resource income (Table 5.13). However, the correlation coefficients were very low, illustrating weak relationships between the chosen variables and natural resource income. With regards to gender, there were no significant differences in the mean natural resource income between male and female-headed households ($t = 1.06$; $p > 0.05$). This is perhaps because some female-headed households had male members (such as older sons and relatives) who could harvest resources such as fuelwood. Further, in the absence of mature male members, all members in female-headed households were sometimes engaged in natural resource collection activities. Indeed, only a few households and in most cases female-headed ones reported that all household members had fuelwood collecting roles. Field observations in the study area generally showed that men were the predominant harvesters fuelwood for the majority of both San and Mier households, followed by women and children, in contrast to findings in many other places where women harvest for household use while men may still be the primary harvesters of fuelwood for sale (e.g. Shackleton et al., 1999; Masekoameng et al., 2005). This difference may be partly cultural, but could also be because there is more hard work in dry areas as trees are more dispersed, and the fact that people use donkey-drawn carts (often operated by men) to carry the fuelwood (see also Chapter 6, Section 6.4.5).

Hunting was an entirely male activity, while collection of wild food and medicinal plants was the responsibility of both adult men and women for both the San and Mier. Children were in many cases not involved in wild plant, food and medicinal plant harvesting as they often could not distinguish between edible and non-edible plants. In addition, since the collection of wild food plants was largely opportunistic for many users, the main fuelwood and livestock herders were normally the main wild food and medicinal plants collectors. Planned wild food and medicinal plants harvesting were seldom reported. However, joint natural resource activities existed for the San. A typical example is the craft business that comprises essentially all family members. The whole family usually spends the entire day along the road leading to the Park, sharing duties, from collecting natural resource products (inputs), curing, shaping and designing them up to the final product ready for sale to tourists.

With regards to household size, households with many members were sometimes seen to use more natural resources than households with fewer members. This is obviously because the more members a household has, the more the natural resource harvesting capacity and demand. However, in both positive and negative relationships, it is often the overall composition of individual households that influence resource use. For example, detailed examination of natural resource use by individual households revealed that in most instances, households with more males and healthy adult members utilised more natural resources than households who were female-dominated or with very old, young and sick members.

For Mier, only the value of livestock herd (0.000***) had a significant positive association with natural resource income while non-farm income, age, education, gender of household head, household size nor membership in organisation were not related to natural resource income (Table 5.14). This perhaps confirms the fact that the Mier's overall natural resource income is largely derived from livestock income rather than from direct natural resources consumption. Analysis of livestock-owned households illustrated a systematic relationship between access to land, size of livestock herd and the value and level of dependence on livestock income among the Mier. Farmers on private land showed significantly higher mean livestock income $ZAR13899 \pm 2392$ than farmers on communal areas $ZAR4568 \pm 655$ ($t = 2.05$; $p < 0.05$). Livestock obviously need fodder and therefore Mier households with more land (rented and private land) often had larger livestock herds thus depending more on

grazing, reflected in higher such natural resource income (see also Ambrosi-Oji, 2003; Adhikari, 2004).

Table 5.14: OLS regression of natural resource income against socio-economic variables for the Mier sample

Variable	Expected sign	Coefficient	Std error	t-value	p-value
Constant				0.460	0.647
Non-farm income	-	0.017	0.112	0.153	0.879
Age of HH	+	-0.018	0.125	-0.142	0.887
Education	-	0.003	0.119	0.028	0.978
Gender	+	0.069	0.097	0.716	0.476
Household size	+	-0.007	0.098	-0.069	0.945
Membership in organisations	+	0.066	0.098	0.671	0.504
Livestock (herd) value	+	0.473	0.096	4.932	0.000***

N = 95; $R^2 = 0.2533$; R^2 adjusted = 0.1939; F = 4.2638; $p < 0.000$

*Represents statistically significant values

Non-farm incomes, level of education of household head and membership in organisations all had no relationship with natural resource income in both communities. However, an analysis of individual households showed that better asset endowment allowed households the capacity to exploit more resources, though this cannot be generalised for all well-off households (see Mamo et al., 2007).

With regards to education of household head, the absolute value derived from natural resources among some educated San and Mier households heads generally increased with improved opportunities that came with a higher education level. Households with higher education tapped more into income flows from natural resources. This is because they were in a better position to benefit from natural resources due to financial capital needed to invest in livestock production and game farming and assets such as cars and donkey carts for resource harvesting (see Section 5.5). A higher level of education normally improves opportunities for getting a better paid job which decreases dependence on resource income though the total value derived from natural resource income could be higher (see Cavendish, 2000, Adhikari, 2004).

With regards to membership in organisations, while some members benefit by being a member of an organisation, other households interviewed said being a member actually constrained them from using natural resources such that it is strategic and beneficial not to either become members or to participate in certain community meetings.

Results in Tables 5.13 and 5.14 show R^2 adjusted values of 0.1516 and 0.1939, implying that approximately 15 % and 19 % of variation of mean natural resource income (consumption) is explained by some explanatory variables for San and Mier respectively. The results indicate a significant relationship between households' socio-economic explanatory variables and natural resource use ($F = 3.50$; $p < 0.01$ for San and $F = 4.26$; $p < 0.01$ for Mier). Consistent with the general findings emerging from this study, it can therefore be concluded that at least one of the considered explanatory variables (predictors) is useful in predicting natural resource use – which is important in natural resource use programmes and conservation planning in the Park and surrounding farms. However, the relatively low R^2 values for San and Mier suggests that there are many other factors that affect variation in natural resource use.

Thus, as generally expected, household socio-economic characteristics were related to natural resource use in complex ways. It is also important to note that, in reality different factors may influence resource use jointly and may be household-specific. Therefore, while the OLS tests have given an idea of the influence of several explanatory variables on natural resource consumption, the results should be used with caution since many other elements could explain resource consumption by the rural poor in the Kalahari. In other words, the results show that while the San and Mier natural resource use strategies fundamentally revolve around their respective assets (such as age, gender, education, livestock, household size, other sources of income, land etc.), natural resource use cannot be disconnected from the issues and problems of access associated with socio-cultural and institutional circumstances (see e.g. Wallman, 1984; Kamanga et al., 2009). Therefore, variations in resource use and overall livelihood strategies within and between households could also be partly explained by the existing cultural factors (Chapter 6) and social institutional dynamics (Chapter 7) that often are beyond the control of individual households.

5.4 CONCLUSION

In conclusion, the findings show that natural resources represent an important livelihood source for both San and Mier communities of the Kalahari, among other livelihood sources such as wage income, remittances and government social grants. Despite little variation in the socio-economic characteristics of the San and Mier, there are still substantial differences in livelihood strategies, both in total household income and in composition of the livelihood portfolio. On the one hand, the San show a significantly higher dependence on direct natural resource consumption than the Mier, and on the other hand, the Mier show a significantly higher livelihood interest in livestock production as demonstrated by the high asset values of livestock. This clearly demonstrates that, the extent and forms of natural resource use and the overall significance of natural resources for local people's livelihood vary between and within different San and Mier household groups.

The overall picture that emerges from the Kalahari region is one where natural resources are utilised not only as a safety net, but as an important perennial source of livelihood for both poor and well-off San and Mier households. Considering that wealthier San and Mier households derive more income from natural resources than the poorest, the study argues for a pro-poor approach where special attention should be paid to those poor groups most dependent on natural resources, yet often also with the most limited access. These are extremely vulnerable households that conservation initiatives should support to improve their livelihoods. A failure to recognise such variations in natural resource use may result in designing inappropriate conservation policies that do not embrace local livelihood needs, are inequitable and fail to contribute to reducing vulnerability and poverty.

CHAPTER 6

CULTURE, CULTURAL VALUES OF NATURAL RESOURCES AND THE CONSERVATION LINK

6.1 INTRODUCTION

Criticism has been levelled against work on natural resources and livelihoods because of its failure to consider culture, which is considered essential in order to fully account for the various ways in which different groups of people make use of and find value in biodiversity (e.g. Cocks and Dold, 2004). There is now recognition that the environment is often a site of conflict between competing notions of cultural values of natural resources and interests of different people (Byers, 2006). Literature demonstrating not only the cultural values of wild natural resources but also how cultural values shape resource use spatially and temporally is gradually growing (Mandondo, 1997; Byers et al., 2001; Harmon and Putney, 2003; MA, 2003; Hamilton 2004; Cocks, 2006; Kanowski and Williams, 2009; Crane, 2010; Chapter 3, Table 3.1). Indigenous and local people use natural resources to sustain their cultural identity and therefore may have systems (such as indigenous knowledge) in place that ensure these resources are conserved (e.g. scared forests) or sustainably managed. Some of the literature shows that many areas of highest biological diversity are inhabited by indigenous people, providing an ‘inextricable link’ between biological and cultural diversity (e.g. Posey, 1999 cited in Cocks et al., 2006).

However, the cultural meaning of nature and natural resources (in terms of both direct-use and non-use values) (see Chapter 3, Section 3.2.2; Figure 3.1) in South Africa is still poorly explored and often misunderstood (Cocks and Dold, 2004; 2006). This means that conservation and development decisions normally based on economic calculations alone – comparisons of the costs and the benefits of any planned initiatives on natural resource use for livelihoods – often omit or glance over cultural dynamics of natural resource use. Yet, incorporating local cultural values into projects can help ensure that conservation initiatives are compatible with local concerns and build respect and trust between local communities and project managers (Ntiamao-Baidu et al., 2001). Harmony and Putney (2003) assert that traditionally and community-managed areas of wild natural resources can contribute meaningfully both to the conservation of biological diversity and to the maintenance of cultural identity if they are properly managed.

It is therefore important to better understand not only the daily use of natural resources for livelihood and economic purposes (Chapter 5), but also the cultural significance associated with or underlying such uses. An understanding of the complex and often diverse cultural meanings of nature in everyday life and how this influences access to and management decisions may improve perspectives on the contribution of natural resources to rural livelihoods (Crane, 2010).

There is no question that the economic (utility) aspects of natural resource use are key components of rural livelihood systems. However, the cultural dimensions of natural resources (that include the cultural values attached to direct use of plants and animals, traditional knowledge, non-use values such as bequest and existence values and sacred sites) are similarly important for livelihoods for a number of reasons. First, there are cultural uses and values attached to medicinal plants, wild foods and wild animal species that ultimately influence the way such resources are used for some communities and social groups (Cocks et al., 2006; Pretty, 2006). Second, indigenous knowledge of natural resource use and management, accumulated over thousands of years, often becomes encoded in everyday cultural practices (Berkes et al., 2000). Third, bequest values (value of leaving use and non-use values to offspring) and existence values (value from knowledge of continued existence or preservation of certain plant and animal species) (see Chapter 3, Section 3.2.3; Figure 3.1) are important elements of culture that ensure natural resources are conserved for future generations. Last, sacred sites are often closely related to indigenous knowledge where elements such as taboos and myths ensure the sustainable use and management of natural resources.

These various aspects of culture represent the *cultural services* of ecosystems (MA, 2003; Chapter 3, Sections 3.2.2 and 3.2.4; Table 3.1). Crane (2010) identifies crucial reasons why cultural factors are fundamental in understanding the importance of natural resources to different people. First, the concept of biocultural diversity, which includes language, norms, taboos, myths and belief systems, is valuable because it represents the range and richness of biodiversity and human cultures (see Cocks, 2006). Secondly and perhaps most importantly, culturally constructed meanings create the frameworks through which the varied importance of natural resources is analysed, evaluated, and prioritised.

In light of the above, the overarching goal of this Chapter is to deepen understanding of the relationship between culture and natural resource use in the San and Mier communities, by specifically exploring the cultural values of natural resources (often undervalued) and the linkages between culture and resource use and conservation. The specific objectives are to:

- establish the levels of general knowledge of culturally important natural resources (plants and animals) and explore the cultural dimensions of natural resources used by the San and Mier and how this varies between them;
- assess the cultural values associated with the presence of sacred sites, species of plants and animals and landscapes for the two community groups;
- determine whether indigenous knowledge related to natural resource use and conservation still exists and how this is transmitted from generation to generation and;
- illustrate the important link between natural resource use and culture with a view to improving the understanding and possibility for integrating people's cultural values into conservation and development policies and approaches.

Overall, this Chapter aims to contribute to the design of innovative conceptual frameworks for the inclusive assessment of local cultural values in natural resource conservation and livelihood issues. A broader understanding of the linkages between natural resource use and culture could better inform conservation policies by integrating cultural values into conservation and livelihoods initiatives (see Mandondo, 1997; Putney, 1999; Cocks et al., 2006).

6.2 CONCEPTUALISING CULTURE AND CULTURAL VALUES

6.2.1 Culture

Culture is a complex and difficult concept to explain. It is unstable and polyvalent (Williams, 1958) and its meaning is shaped and bound up with the problems it is being used to explain or discuss. In other words it is a two way process whereby the concept of culture attempts to explain intricate aspects such as behaviour, practices, norms, myths, beliefs, etc., but culture is also shaped by these aspects in so many complex ways. Though it is often subject to many different shades of meanings, most authors such as Eide et al. (2002:89) agree that culture is "...a coherent self-contained system of values and symbols as well as a set of practices that a specific cultural group reproduces over time and which provides individuals with the required signposts and meanings for behaviour and social relationships in everyday life". One notable

feature of any identifiable culture is that it is not static but rooted in history and changes over time (Eide et al., 2002). As Eide et al. (2002:90) puts it: “Customs and traditions are inherent elements of all observable cultures, yet traditions are constantly being invented and reinvented, and customs, by which people carry on their daily lives, regularly change to conform to varying historical circumstances, even as they strive to maintain social continuity”.

6.2.2 Elements of culture

Culture consists of elements such as traditional knowledge, myths, norms, beliefs, rituals, taboos, customs and practices (such as the use and transformation of natural resources) and sacred sites. *Traditional knowledge* in this study context refers to long-standing traditions and practice of specific regions, groups or local people based on locally developed ways of natural resource use and management (Berkes et al., 2000; Pretty, 2006). It is sometimes referred to in literature as Traditional Ecological Knowledge (TEK), Indigenous Knowledge Systems (IKS), indigenous knowledge or local knowledge but this study uses the term traditional knowledge. Traditional knowledge encompasses local wisdom, knowledge and teachings of specific ways of sustainable natural resource use (Berkes, 1999). Several natural resource conserving practices of indigenous and local peoples that are drawn from their traditional knowledge systems have been described for many parts of the world and for many different cultures and environments (e.g. Berkes, 1999; Hunn et al., 2003; Cocks and Dold, 2006; Pretty, 2006). These studies document a wide variety of conservation strategies, ranging from normative ways of harvesting specific plants, cultural teachings against harvesting specific resources or harvesting at specific times or places, to selective or limited harvesting, to sanctions against waste (see Berkes, 1999; Folke, 2004). Traditional knowledge and aspects such as myths, beliefs, norms, rituals, taboos and customs are often closely linked to natural resource use and management.

Information on the definitions of myths, beliefs, norms, rituals, taboos and customs is largely drawn from the Oxford Advanced Learner’s Dictionary by Hornby et al. (2000). *Myths* are defined as sacred narratives about natural or social phenomenon that many people believe but unsubstantiated by fact. The main function of myths is to justify an existing social system and account for traditional rites and customs (Guirand, 1987). Thus myths relate to beliefs, shape thoughts and interventions and determine individual interpretations about what is wrong with

the world and its solutions (Horne, 1993; Section 6.4.4.1). Policies underpinned by myths are almost bound to succeed (Vacarro and Norman, 2007). For example, the wilderness myth is considered powerful because it invokes ideas of pristine purity, unspoilt origins, and a world not marred by people (Vacarro and Norman, 2007) and this is why it is so difficult to shift.

Beliefs are described as strong feelings (often held for a long period of time) that something exists or is true. *Norms* relate to the ways of behaving that conform to acceptable values within a given society. They are shared and internalised understandings by those involved, about the do's and don'ts involved in particular situations (Ostrom et al., 2002, cited in Jones and Boyd, 2011; Section 6.4.4.2). Closely related to norms are *customs* and *taboos*. *Customs* refer to a habitual group pattern of behaviour that is transmitted from one generation to another in a society. It is argued that all customs are basically temporary since societies are perpetually changing. *Taboos* are defined as certain bans that relate to any activities that are forbidden based on moral judgment and beliefs of a society. Often, breaking societal taboos is usually considered as deviant behaviour and sometimes warrants punishment. There are beliefs that this punishment may be imposed through supernatural means (e.g. through the ancestors). *Rituals* refer to a series of actions that are always carried in the same way and performed mainly for their symbolic value, as may be prescribed by community traditions (Section 6.4.3.2). Related to rituals is *reverence*. *Reverence* refers to a feeling or attitude of deep respect for something sacred such as plants (Section 6.4.2.1), animals (Section 6.4.2.3), and places (Section 6.4.3.1). Places where valued natural and spiritual attributes come together are referred to as *sacred sites* (Mandondo, 1997; Section 6.4.3.1). Harmony and Putney (2003) describe sacred sites as places of spiritual-self recovery that have a strong connection to nature and its sustainable management. These sites are important for the biodiversity and natural features that they preserve and the associated cultural belief systems and values.

Local norms and beliefs can bear a significant influence on land use and therefore the consequent value of a resource is a product of human interference with the landscape and its resources as shaped by taboos, traditional norms and beliefs among others (Byers, 1996; Ntiamoa-Baidu et al., 2001; Sheil and Wunder, 2002). Since traditional knowledge, norms, myths, taboos and beliefs among other cultural constituents are interlinked and provide lens

into understanding the value attached to different natural resources, a comprehensive natural resources and livelihood study should consider these aspects. However, literature shows that that modernisation and westernisation need and pressure maybe weakening these traditional belief systems and the control they assert over resources use (e.g. Pretty, 2006).

6.2.3. Cultural values

The above conceptualisation of culture is critical in understanding the cultural values of natural resources. However, there is need to understand ‘value systems’ before one can appreciate the meaning of value (Farber et al., 2002). According to Farber et al., 2002, a ‘value system’ is defined as the intrapsychic (internal psychological processes of the individual) constellation of norms and precepts that guide human judgements and actions (see Chapter 3, Section 3.2.1 for different types of values). A society’s value system thus refers to the normative and moral frameworks (or discourses) people use to assign importance and necessity to their beliefs and actions (Kepe, 2002; 2008a). Literature on cultural values (including spiritual and heritage aspects) underlines that these can exert a strong influence on local preferences for natural resources (Davidson, 1990; Henning, 1998 cited in Sheil and Wunder, 2002; Posey, 1999 cited in Cocks and Dold, 2006; Putney, 1999). However, the specific value, degree and order of importance placed on biodiversity may vary from region to region and from people to people hence the need to study specific local scenarios. As Byers (1996) maintains, people make decisions about how to use the natural resources in their environment in the context of their cultural values. This means that each community and culture has its own array of values. In this study context, cultural values are understood as beliefs and customs that are related to the usefulness and importance of natural resources within a particular group (including traditional knowledge of harvesting and protecting natural resources and landscapes, myths, taboos, rituals, sacred sites and reverence) that form the foundation for habits and actions.

The argument is that community-managed resource initiatives need to be particularly sensitive to the cultural values of many rural people, especially regarding the ways in which these influence their perception and use of certain resources and features of the landscape. Thus the concept of culture and its associated aspects such as practice, spirituality and rituals, myths and beliefs are seen as constitutive elements of conservation and development (Vacarro and

Norman, 2007). South African National Parks (SANParks) to some extent has recognised the culture and cultural values of San people in the land claim agreement through giving access to the Park for cultural activities (see Chapter 4, Section 4.2.2.2). When dealing with issues of land and natural resource use, it is imperative to understand the complex notion of landscape, which embraces a wide range of social, spiritual, political, ontological and historical meanings (Mandondo, 1997). As a result sustainable livelihood approaches (Chapter 3, Section 3.2.3) are increasingly challenged to meaningfully integrate culture into conservation and development thinking and practice as an essential dimension. The holistic approach of a livelihood focus provides insights into 'how culture matters' in natural resources management. People-oriented conservation and development calls for approaches that further our understanding of the roles of these cultural aspects of natural resource use and sustainable livelihoods.

6.3 RESEARCH METHODS

The study used both quantitative and qualitative methods employed in two different stages of the study. The first stage involved a set of a structured questionnaires (Appendix 5) which had questions guided by different foci namely (a) culture and identity, (b) the importance and perception of the environment as a whole, (c) plants and animals species used and revered and (d) sites of cultural and spiritual significance (also myths, taboos, norms, etc.) This was administered to 200 households, 100 in each community (San and Mier) (see Chapter 3, Section 3.5).

Structured questions allowed a documentation of a species list of all the plants and animal species that individual households were aware of (see Appendices 1 and 4), followed by ranking of the commonly used plant and animal species used for various purposes. The ranking was conducted in terms of importance on a scale of 5, with 1, 2, 3, 4, and 5 equalling most important, second most important, important, slightly important and not important respectively, for the purposes of enabling a comparison of the relative importance of species with cultural significance. Open-ended questions were asked to pave way for deeper discussions on the cultural aspects of natural resources.

In the second stage, informal key informant interviews with community elders, certified herbalists, traditional healers, and traditional leaders (for triangulation purposes too) were

conducted. San and Mier elders were approached to recount their life stories in such a way as to indicate their clan and family relationships, understanding of traditional knowledge, rituals, stories, myths, healing and medicinal practices, hunting and gathering practices and places, land marks, burial sites, sources of food and sustenance. Chennells (2001) argues that a concrete proof of a common cultural identity (related to myths, beliefs, norms, etc.) among the San became a tangible and central core around which the community began to recognise their interconnectedness as a cultural community. Informal interviews were also conducted with the youth to assess if there were differences in levels of cultural knowledge on resource use between the young and the old and as a way of finding out if traditional knowledge is passed successfully to younger generations.

Information and insights were also drawn from various (and abundant) secondary sources of data that look at subsistence living conditions of the San (e.g. Hitchcock, 1987; Lee, 2001), including a recent complementary study by Mannetti (2010) entitled “Understanding plant resource use by the Khomani Bushmen of the Southern Kalahari”. The cultural characteristics of the San and the Mier were compared to illustrate how culture influences and shapes resource use and dependence.

6.4 RESULTS AND DISCUSSION

6.4.1 Knowledge of culturally important plants and animals

In keeping with their cultural identity, the San depended more on direct natural resource utilisation in general and specifically for consumption of wild foods, medicinal plants and bush meat, while the Mier showed a higher dependency on livestock production (see Chapter 5). Consequently, it was expected that the San would have a wider knowledge of the uses and cultural significance of wild plants and animals. Overall, a wide variety of culturally important plants and animals were used by the San, with a total of 63 plant and 20 animal species compared to the Mier’s total of 22 plant and four animal species (see Appendices 1 and 4 for a list of the plants and animals used). The plants used (based on growth forms) include dwarf shrubs, shrub, grass, herbs, succulents and trees.

The most preferred plant species (cited by 70 % and 50 % of San and Mier households respectively) was *Acacia erioloba*, because of its multiple uses. First and foremost, it is the only abundant hardwood of a high quality that does not burn fast and generates lasting

charcoal. Its pods are used for making crafts and as fodder for both livestock and wildlife. Apart from providing shade, the tree's bark, leaves and roots have many medicinal properties valuable to people, livestock and wildlife. *Acacia erioloba* therefore is considered important both for subsistence and cultural purposes (including making of crafts) by the San. Other species such as *Boscia albitrunca*, *Acacia tortilis*, *Acacia erubescens*, *Acacia karoo*, *Parkinsonia africana*, *Carissa haematocarpa* and *Acacia mellifera* have varying degrees of importance.

Respondents had varying knowledge and understanding of cultural values attached to wild natural resources. For example, only 53 % of the San survey respondents considered natural resources to be culturally important. The remaining 41 % had no knowledge about cultural values while 6 % said there were no cultural connections at all. Out of the respondents who considered natural resources to be culturally important, roughly 27 % of the households cited medicinal plants only as culturally important. The remaining portion either attached cultural values to all the plants and animals they used or only mentioned specific plants and animals as culturally and spiritually important. However, the fact that people continue to use plants such as medicinal plants (83 % of sampled San households, see Chapter 5, Table 5.7) despite the availability of modern alternatives is often because it is part of their culture and they like to use these even though the main purpose is utilitarian – for treatment when they are sick. The Mier respondents revealed that their cultural values were more related to livestock production and traditional cuisines (e.g. mutton and beef dishes) rather than direct resource consumption. Only 36 % of sampled Mier households used medicinal plants (Chapter 5, Table 5.7).

6.4.2 Cultural values related to direct-use (values) of plants and animals

6.4.2.1 Medicinal plants

With regards to medicinal plant use, a majority of the San (83 %) used medicinal plants when members of their households are sick in contrast to only 36 % of Mier households (see Chapter 5, Table 5.7). Approximately 65 % and 27 % of San and Mier households respectively indicated that they collected the plants from the wild, while a few households got medicinal plants from friends, relatives and traditional healers (Chapter 5, Table 5.7). A wider variety of plants were used for medicinal purposes (38 out of 63 plant species) rather than for other uses (Appendices 1; see also Mannetti, 2010) and on average the San used more plants (37 plant species) for medicines than the Mier (17 species). The San elders and the Traditional

Council (see Chapter 7, Section 7.4.2.2) said, during key informant interviews, that they used indigenous plants as medicines as part of their cultural beliefs, norms and practices, despite the availability of a mobile clinic. Furthermore, some survey respondents said it was sometimes cheaper and more convenient, particularly if a household member fell sick at night and considering that the nearest local clinic is located about 20 km away from their settlements and they generally have no transport.

Medicinal plants were largely harvested in the surrounding resettlement farms. Only 5 % of the survey respondents reported collecting medicinal plants from the Contract Park corresponding to a few herbalists who had limited access for medicinal plant harvesting only (see Appendix 3 for a list of plants that can be harvested in the Contract Park). A local small herbal shop (at Andriesvale) sells a number of proprietary traditional (herbal) products. The average annual direct-use value of medicinal plants for a user household was very low ZAR201 (see Chapter 5, Table 5.8). However, though the value and contribution of medicinal plants to local people’s lives was low in absolute quantitative and monetary terms, their cultural significance is important, especially for the more traditional groups of San. This very low value illustrates the limitations of using money as a proxy for measuring resource value. Access and use of traditional medicines is considered integral to San culture and identity.

Table 6.1: Main medicinal plants used by San and Mier communities

Plant species	San	Mier
	% users out of 83 total users	% users out of 36 total users
<i>Harpagophytum procumbens</i>	67	53
<i>Aptosimum albomarginatum</i>	52	25
<i>Dicoma capensis</i>	31	28
<i>Solanum</i>	29	22
<i>Galenia</i> sp.	19	19
<i>Hoodia gordinii</i>	17	17
<i>Senna italic</i>	14	25

Some of the most frequently used medicinal plants by the San and Mier were *Harpagophytum procumbens*, *Aptosimum albomarginatum*, *Dicoma capensis* and *Solanum spp* among others (Table 6.1). The specific quantities of the harvested plants, the frequency of harvest and value of specific plants used varied within households and between the two communities. These top

plants are said to cure most common ailments such as headaches, stomach-aches, colds and flu. In particular, *Harpagophytum procumbens* was referred to as an ‘all cure’ plant. In cases where households did not get plants of prime choice, other plants (substitutes) were used. There are unconfirmed claims that some San traditional healers know traditional cures for HIV/AIDS and cancer-related sicknesses. The plant species used for specific and complex health problems are beyond the scope of this study, though they are highly recognised.

Medicinal plants have symbolic and spiritual significance for the Bushmen and are an important cultural element of their society. During early days, the San solely depended on traditional medicinal plants, but with the changing of the physical and socio-economic environment today, many people are turning to modern medicines. Despite this, many San still use medicinal plants for health and cultural reasons. Most ‘traditionalists’ interviewed argued that the farms designated for traditional resource use (see Chapter 4, Figure 4.1 and Section 4.2.3) were important to protect medicinal plant species since livestock grazed on medicinal plants (without observing biological limits to use) and could therefore deplete the resource stocks and flows. Goats and donkeys were highlighted as being chiefly responsible for destructive grazing. As one respondent interviewed said:

“It will be difficult to reflect back (in San history) if the medicinal plants are all depleted by livestock”.

Conversely, some San and Mier livestock farmers said the medicinal plants were important for their livestock such that they did not have to buy expensive modern veterinary medicines (see Section 6.7).

6.4.2.2. Wild food plants

Thirty-eight percent of San households sometimes utilised wild food plants in contrast to the Mier’s 8 % (Chapter 5, Table 5.7). The bulk of households who used wild foods said wild foods provided food and water for their livestock such as goats, horses and donkeys. Amongst the San households who did not use or harvest wild plants most indicated “they did not eat wild plants” while 11 % said “they were modern San and not interested” or “they did not know anything about wild food plants at all”. A majority of Mier non-user households indicated they were either “not interested” or “did not have time to harvest wild food plants”.

Hoodia gordinii was the most commonly used plant species by the bulk of San households using wild foods (79 %) followed by *Citrullus lanatus* (47 %), *Cucumis africanus* (45 %) and *Pergularia daemia* among others. The San have chewed *Hoodia gordinii* (succulent) for thousands of years to stave off hunger and thirst during long hunting trips in their ancestral parched Kalahari desert. Edible plants such as *Hoodia gordinii* have also been known to contribute to the health of the San people especially in harsh Kalahari environment where there was no easy access to modern medicines. The contribution of local foods to reducing health risks has always been recognised as part of the local traditional knowledge which forms a greater part of the San's complex cultural and belief system (Chennells, 2007). Like medicinal plants, the economic contribution of wild foods to total livelihoods was very low with the direct-use value estimated at a mere ZAR6 and ZAR0 per year per household for the San and Mier respectively (see Chapter 5, Tables 5.5 and 5.6). In a study of wild plant use by the San, Mannetti (2010) found out that edible plants comprised less than 20 % of all plants used – contrary to findings by Lee (1968) of the San's subsistence activities in Namibia, where vegetative products provided roughly 60 to 80 % of the annual diet by weight (see also Steyn, 1984). This perhaps illustrates the modernisation of the San way of life combined with the general scarcity of natural resources given various land-use changes that are not consistent with the San traditional ways of living. For example, the creation of KTP resulted in the loss of San way of life and knowledge as the San were squeezed out of their traditional lands (Chapter 4).

Seventy-five percent of San survey respondents who used wild plants agreed that plant species were increasingly becoming scarce, and that it was not profitable to invest time in gathering plants for food. Respondents had varied explanations for the scarcity of plant resources. Competition for plant resources with livestock and wild animals, overharvesting and that the region is getting drier were common explanations. Nonetheless, the cultural importance of wild food plants was still highly valued, because though only 38 % of households used these for subsistence purposes, almost 63 % of San respondents still maintained that wild food plants were important for their Bushmen identity and practice. Apart from a few Mier households who used wild plants for their healing properties almost all the households stated that wild food plants were important for their livestock.

6.4.2.3 Wild animals

While up to 44 % of the Mier households used bush meat for household consumption, only 16 % of households actively hunted (see Chapter 5, Table 5.7). Wild animals were important to the Mier people for their subsistence value only. The most hunted species in descending order were springbok (*Antidorcas marsupialis*), steenbok (*Raphicerus campestris*) and duiker (*Sylvicapra grimmia*) – cited by 44 %, 38 % and 31 % of households respectively. By contrast, 89 % of San households used wild meat for home consumption though only 23 % admitted that they hunted (Chapter 5, Table 5.7). This perhaps is due to the illegal nature of hunting activities. The San regarded several wild animals important for both their direct use value (meat, crafts, and medicinal properties) and non-use values (cultural, spiritual). Like the Mier, common animal species hunted for subsistence purposes were springbok (83 %), steenbok (61 %), duiker (39 %) and gemsbok (*Oryx gazella*), (13 %). In both San and Mier communities, exchange of game meat as gifts from family members and neighbours working on neighbouring game farms was common. Fifty-six percent of all sampled San households (or 63 % of bush meat consumers) and 35 % of all Mier households (or 69 % of bush meat consumers) received bush meat as gifts (see Chapter 5, Table 5.7). Exchange of gifts is considered important in building social capital (networks) by creating local connections among individuals within communities (Pretty and Ward, 2001; Chapter 3, Sections 3.2.3 and 3.4; Chapter 7, Sections 7.4.6 and 7.5). It is a vital cultural component that punctuates the San and Mier way of life. A majority of San households (74 %) indicated that wild animals were culturally important. Animals such as the eland (*Taurotragus oryx*), springbok, gemsbok and steenbok among others are held highly and stories related to how they sustained life in early days are an attribute of San folklore.

The relationship between the San and wildlife is famously depicted in their Bushmen rock art (Thomas, 1989; Lewis-Williams, 1998). In particular, the eland is considered by the San as an important meat source and a holy animal (see McCall, 2000). It is very large (perhaps the largest antelope in the world), has high amounts of fat – which is important for any foraging community – and is tasty. There is a belief among the San that the eland behaves like a human being – it can shed tears if it is persecuted and listens and understands human behaviour. As one San member aptly said during interviews:

“The secret was to stay with her in the field without interfering with her way of life. In that way the eland became very friendly and generous”.

The San reported during key informant interviews that when there were persistent droughts, the eland, apart from providing food (meat, protein and fat) to them also offered milk to lost or thirsty cattle calves to the extent that some regarded it as a god. Moreover, its blood was mixed with other substances to make durable paint for crafts and houses. Therefore, it is considered the most culturally important animal among other animal species. Though some authors argue that the faunal component of painted rock art was not a true reflection of either the faunal population of the area or the diet of the hunters (e.g. Vinnicombe, 1972), the predominant depiction of the eland among other animals such as springboks, hartebeest, gemsbok and lion, could be further proof that the Bushmen consider the eland a spiritual animal.

The springbok was also valued both for its subsistence use and medicinal properties. Knowledgeable elders interviewed maintained that its stomach had healing properties since it feeds on almost all plants that have healing properties. Springbok horns were said to have healing properties as well. Animal skin, bones and horns were also used as inputs into the local San craft-production business. Crafts-making (art, curios, wall hangings, ostrich-shell beadwork, hand-painted cards, painted ostrich-shell earrings and painted gourds) was not only an important livelihood source for the San community but attained cultural significance. According to Mhiripiri (2008) the traditional materials used to make crafts perpetuate perceived Bushmen traditions (of sustainable use and dependence on natural resources). Inputs such as ostrich egg shells, seeds, porcupine quills, skins, hooves, horns and other related natural materials are often used in making different types of necklaces, mobiles and wall-hangings sold by the roadside stalls and at the craft centres such as SiSEN crafts (see Chapter 7, Section 7.6.3).

6.4.2.4 Cultural tradition related to livestock production

Though the San reported no cultural practices associated with the management of livestock production (adoption of livestock farming is relatively new to this hunter-gather group), household surveys and key informant interviews showed that subsistence use of livestock products (particularly meat) for weddings, birthdays and funerals is a common cultural practice, perhaps substituting for wild game products. On the other side, the Mier are

traditionally livestock farmers though other sources of livelihood are becoming increasingly important (see Chapter 5). Indeed, cattle and small stock such as goats and sheep were the mainstay of the livelihoods of both communal and leasehold Mier farmers in the area. Though less than 10 % of Mier households surveyed indicated that livestock production had cultural connections, the Mier derived more income from livestock browsing and grazing than the San (Chapter 5). Key informant interviews with older household heads provided some information on the cultural values of livestock production and the importance attached to grazing and browsing. Some of the most obvious direct livelihood values to individuals, households and the community were milk production, meat, draught power, blood and fat – an important component of their way of living. The most culturally important values of livestock relate to savings, investment, security and inheritance.

First, local people reported during interviews that livestock has always been regarded as the best form of investment and security for the Mier and often the only savings opportunity available to them as there is little access to reliable banking services in the area. Secondly, livestock-owning households (59 %) generally reported that their stock function as insurance against times of adversities such as recurrent droughts, illness, debts, etc. They placed value on the herd's total size and the greater the size, the greater the chance of addressing risks and surviving adversities. Studies in drylands indicate that households with larger herds often recover faster during times of adversity (IIED, 2009). Third, households with larger herds highlighted that the inheritance value was also important for their interests in livestock rearing. They said that their livestock herds had been inherited from earlier generations such that livestock production, important for subsistence provision and establishing family ties through birthdays and other family events, was part of their family tradition (see also Chapter 5, Section 5.3.4). According to IIED (2009) inheritance value is critical for new families to establish and form a means of survival for families and societies through strengthening social networks (Chapter 3, Section 3.2.3; Chapter 7, Sections 7.4.6 and 7.5). As earlier noted, slaughtering a cow, goat or sheep for activities such as weddings and funerals is an important and common cultural practice in both the San and Mier communities, which also helps to build social ties and relationships. This illustrates that the importance of natural resources should not only be understood in terms of direct-use or consumption related values, but also in terms of the indirect support it offers to culturally important natural resource-based activities such as livestock production. The close relationship between subsistence (savings,

livelihood security and safety nets) and cultural values (inheritance, way of life) is clearly demonstrated. Livestock production as a way of life for the Mier is a feature of their culture (Chapter 4).

6.4.3 Cultural values related to intangible elements in the landscape

6.4.3.1 Sacred sites

Only 9 % of San respondents in the survey had knowledge about the existence of sacred sites. Several sacred sites were identified by respondents namely the Bush Camp, the Captain tree, Witdraai caves (*grot*) in Witdraai resettlement farm and burial sites in the Park. Spiritual rain dances were conducted (sometimes on request by tourists) at the Bush Camp. They were considered the most important way in which the spirit mediums of the San could be invited to reconnect to the present San generation. The Captain tree is the largest *Acacia erioloba* (camel thorn) tree in the resettlement area and symbolises the important economic and cultural position occupied by this tree species in the lives of the San people (see Section 6.4.1). The caves are culturally important as it is reported that the Bushmen took meat to the caves in the early days during hunting excursions. The caves were also used as hiding spots during previous wars. Burial sites both in the Park and the resettlement farms were considered highly sacred. They have a strong attachment to the modern-day San way of living since ‘the spirit of the dead continuously interacts with the present generation’. Asked where the most important history was, Dawid Kruiper, the traditional and spiritual leader of the San said:

“It is in the Park, the site of our ancestors’ graves and where I grew up looking after the sheep and goats of settlers”.

In recognition of this cultural importance, a field school known as ‘*Imbiwe*’ has been established in the Park for the purposes of reviving the deteriorating San culture. The San traditional leader and his close family members sometimes spent days in the Park, an activity that some San members were not interested in doing. Sacred sites were closely related to sense of place values – having a sense of belonging to a particular place is associated with recognised features of their environment, including cultural aspects of the ecosystem. Questions relating to whether or not a person would relocate if resources were degraded are commonly asked to measure people’s sense of place (see Shamai, 1991). Asked if they would relocate if the land was degraded, most survey respondents (> 90 %) said they would not. However, the reasons behind this were multi-dimensional. While some San households valued

a sense of place (cultural), others cited (economic) reasons associated with day-to-day survival or a combination of cultural and economic motivation. Some indicated they did not have anywhere to go and that they had to live within their means. Therefore, the reasons for staying in a place may be both cultural and economic. Moreover, the act of distinguishing cultural and economic aspects maybe problematic, since these are often interlinked.

6.4.3.2 Rituals and healing dances

Closely linked to the functioning of sacred sites are rituals. There are many interesting aspects of San culture, but historically their connection with the natural world was mostly expressed through their rock art and healing/trance dances (Thomas, 1989; Lewis-Williams, 1998). However, only 24 % of survey respondents indicated they had knowledge about rituals such as traditional healing and rain dances. Out of this, a further few actually knew what kind of wild animals (such as springbok, eland and hartebeest) were slaughtered during the dancing ceremonies. Most people indicated they did not actively participate in rain dances and that the dances did not happen often. This is in contrast to early historical times when traditional rain and healing dances were done on average four times a month (see Katz, 1982). The South African San Institute (SASI) (see Chapter 7, Section 7.6.3) confirmed that the San sometimes conducted the rain and healing dance ceremonies at Andriesvale shopping centre or at Witdraai Bushmen camp, often upon requests by tourists.

The healing dances were central to the Bushmen's way of life and a lot about their Bushmen lives could be learnt through them. 'Rain dance animals' were also recorded through rock art. When the Bushmen did their rain dances, they would go into a trance to 'capture' one of these animals. In their trance they would kill it, and its blood and milk became the rain (Bleek, 1933). As depicted in the rock art, the rain dance animals they 'saw' usually resembled an eland (Katz, 1982). The San healers held special powers but according to the Bushmen's way of living, they were not thought of as higher or better (Katz, 1982). Healing was performed not to become a more prominent and powerful person but for the good of the entire community. Healers would also go in a trance in order to get spiritual power from the ancestors. The relationship between the San and wildlife in their rituals shows the spiritual importance placed on such resources, though the findings show that this is no longer as strong as it used to be in the past.

6.4.4 Indigenous knowledge around biodiversity use

6.4.4.1 Indigenous knowledge of sustainable plant and animal use

The Mier did not have specific indigenous knowledge related to plant harvesting for households use (see next section). Their indigenous knowledge related to sustainable and traditional livestock production. With regards to the San's use of wild plants, key informants (the elderly and certified herbalists) mentioned certain norms, rules and practices that were (or are supposed to be) followed. For example, the size of the plant determines the quantity that is harvested. The bigger the plant, the more material harvested. This is done to enable young plants to reach maturity for the benefit of all community members and users. In addition, the key informants said that many people harvest wild plants (especially medicinal plants) after the rains because the plants are green and easy to identify. Therefore, it is easier to distinguish between poisonous and non-poisonous, and bitter and edible plants. During this period, it is also possible for some plants (stem) to be planted back into the ground (the ground will be wet in summer) if the roots are used. This practice was not confirmed and practiced by many though. A few respondents with a better ecological knowledge harvest plants all year round since the roots and stem normally remain fresh while the upper part is dry.

For certain plants, such as *Hoodia gordinii*, only smaller new shoots are harvested given that bigger and older parts are very bitter for consumption. Most plants are dried, grounded and mixed with other plants and water to be used for long periods of at least three months. For example, 125 g of *Harpagophytum procumbens* can be used for an average period of three months by a family of ten. This quantity is enough since household members seldom get sick simultaneously. This treatment and storage of the plants is a form of adaptation to the arid conditions where resource stocks may be inadequate at particular times of the year.

Indigenous knowledge systems are often closely linked to local taboos, myths, habits and beliefs around the use of plants and animals (Section 6.2.2). Approximately half (47 %) of San respondents had knowledge of local taboos and myths. Only a few out of these, mostly elderly people, could meaningfully explain what these taboos and myths were and what they meant for conservation of their resources and culture. However, the San elders explained that the mere awareness and belief that such indigenous knowledge systems (including myths, taboos, norms, beliefs) existed, even without a deeper understanding of what they entail, is important and forms part of their traditional conservation practices.

One such myth is that if soil is not spread/sprinkled over a plant that has been cut, the plant will not grow again, which will bring misfortune to the (offender) harvester. In fact, this is to prevent the sun from directly heating the fresh cut. In addition, there is a belief among the San that if a plant is within the home vicinity, it cannot be harvested because human shadows would have been cast on the plants. The common folklore is that the healing properties of that plant will become dysfunctional. One San respondent interviewed explained:

“This is only to make sure that such plants are protected for future generations. They (future generations) will constantly get reminded about how the Bushmen survived on wild plants and how they sustainably conserved these plants. If these plants are not in close proximity to where we stay, what will our children and grandchildren say of our conservation principles?”

It is also a common norm and practice that when a medicinal plant is harvested (bark, stem, leaves or flower), the harvester should leave something valuable (for example, a 5 cents coin) to show respect for the plant. This is seen as a way of avoiding destructive harvesting practices. As can be seen in the following testimony:

“No-one can leave anything valuable if the plant is no longer there”.

In other words, the use, existence and bequest values of plants are highly valued and respected by the San for their useful properties and just because they exist for future generations to see (Section 6.1; see also Chapter 3, Section 3.2.2; Figure 3.1; Barbier et al., 1997). Moreover, only deadwood is supposed to be harvested, according to San cultural norms. In addition, some plants such as *Walafrida saxatilis* (Moedershout, commonly known as luck stick) are believed to bring luck to individuals. Today, it is still common to find small pieces of ‘luck stick’ in a #Khomani San’s wallet or on necklaces and wrist laces. As part of the myths, it is believed that some misfortunes such as deaths to harvesters and their families and bad luck among others are consequences of not respecting community taboos such as unsustainable harvesting of plants and hunting of pregnant animals (Section 6.2.2).

Many analysts say that myths, norms and taboos are responsible for the sustainable and traditional management of natural resources (Tanaka, 1980; Katz, 1982; Pretty, 2006). For example, plant and animal species that are believed to bring luck (e.g. *Walafrida saxatilis* (Moedershout) and *Atherurus africanus* (Aardvark) respectively) are also traditionally used

for medicinal purposes and considered culturally important hence the users are likely to harvest them in a sustainable way – because the *beliefs* state that community members will be lucky if they harvest these sustainably while *myths* say misfortunes will fall upon individuals who do not follow community *norms* and *practices* of sustainable harvesting. Further, the knowledge that both plants and animals provide both utilitarian and cultural values could act as incentives that can promote sustainable use.

Communication between trees and wild animals is also believed to be integral in the functioning and health of nature. For instance during key informant interviews one San respondent said:

“If there is a hunting leopard behind a tree, a branch may fall and the prey will be alert. The conservation principle of the San is win-win. People depend on nature and nature depends on people. If you kill an animal you must eat it but these days modern hunters (with rifles) just shoot wild animals without tracking them”.

The last statement was in reference to the report that trophy hunters did not have traditional animal tracking skills to allow them to follow wounded animals with the result that many animals died due to gun wounds well after the hunting days. It is now a requirement for trophy hunters to be accompanied by trained San trackers, though reports say this procedure is often bypassed. With regards to bush meat, hunting is only allowed in winter using dogs and bows and arrows. The reason for hunting in winter is that it makes it easier to preserve meat – meat goes off faster in summer due to high temperatures. In addition, most animals reproduce in summer, so this is a way to avoid hunting pregnant animals, or mothers feeding young ones. Key informants also said that bows and arrows are the recognised San traditional hunting methods and this legacy needs to be perpetuated.

It can be clearly recognised that the aforesaid explanations confirm the realities and elements of sustainable resource use and management behind myths, beliefs, norms and practices - aspects that epitomise the San way of living up to today (see also Section 6.6). However, it should be noted that though the above-mentioned elements of San culture may provide the basis for sustainable use and management of natural resources, not all community members shared such understanding of indigenous knowledge on sustainable use practices, due to the different perceptions on natural resource use among different social groups (see Chapter 8). For example, critics warn that the so called traditional harvesting practices are not always

sustainable (e.g. Massyn and Humphrey, 2010). Some destructive harvesting practices include the collecting of plants for their roots. For instance, approximately 40 % of all the plants used were harvested for their roots (see Appendix 2). Moreover, the fact that 63 % of the respondents reported greater scarcity especially of wild animals, wild foods and medicinal plants than before is perhaps testimony to unsustainable harvesting practices and increasing pressure on resources. However, some argue that the scarcity of wild animals is due to multiple factors including conflicts (and associated deviant behaviour such as overharvesting and poaching), poor fencing and lack of water. Some claim that most wildlife moved to nearby Mier Game farms where there is a reliable water supply.

6.4.4.2 Traditional knowledge of sustainable livestock production

The Mier indigenous knowledge related to livestock production and associated rangeland management. The Mier reported that they have developed their knowledge for the sustainable managing of livestock over the years. They have developed a rich package of traditional livestock management knowledge and practices, such as herd splitting to avoid stock loss (from droughts, diseases, poachers, wild cats). Their rich knowledge provided them with strategies of managing grazing resources in the harsh Kalahari drylands. The Mier highlighted that though they did not directly depend on natural resources for their subsistence needs (apart from fuelwood use), they highly valued the forage and medicinal plants grazed from the landscape by their livestock that substituted for expensive fodder and modern veterinary medicines.

Strategies to reduce and adapt to land degradation were considered by the Mier as the embodiment of unique traditional knowledge (see PANRUSA, 2001) and some Mier members considered it as supernatural power (pers. comm.). The Mier stressed the cultural importance of traditionally rearing livestock in the challenging harsh climatic conditions of the Kalahari. They further argued that unsustainable livestock grazing management practices (such as overstocking) presented a threat or pressure on livestock production as a whole, and therefore on the integrity of their spiritual and cultural resource values. Traditional responses to droughts and dry periods and reduced forage included livestock rotation to avoid pressure on wild resources and the use of *Citrullus lanatus* (tsamma melons), especially after heavy rains (which reduced pressure on pasture and water points since tsamma melons are a source of both food and water). The choice of small stock (sheep and goats over cattle) was also

considered as a way of adapting and managing scarce wild resources. Small stock can manage to browse more readily than cattle (PANRUSA, 2001). Thus, a healthy livestock system that supports a culturally important livestock production business for the Mier potentially acts as an incentive to conserve their environment.

Overall, their indigenous knowledge of wild natural resources and livestock production promotes the conservation of both the environment and their cultural values. The study findings concur with findings elsewhere that assert that livestock is socially, culturally and economically significant to rural livelihoods (e.g. UNDP, 2006; IIED, 2009; GCWG, 2011). However, the low numbers of people with the cultural knowledge means that there is need to revive traditional ways of livestock management for sustainable use of resources, especially given that unsustainable practices that relate to livestock grazing and carrying capacity of Mier land have been reported. Though some relatively recent findings in similar environments such as Namaqualand (e.g. Benjaminsen et al., 2008), suggest that the reported levels of land degradation (in communal areas) from overgrazing may not be as serious as commonly imagined, there are reasons to believe that current practices, if unmanaged may potentially lead to degradation sooner than later (see Chapter 7).

As could be discerned from the preceding sections, indigenous knowledge related to sustainable resource use and livestock production (grazing) have been the hallmark of San (Bushmen) identity (Hitchcock, 1982) and Mier cultural heritage, though it is no longer fully intact. Despite this, cultural knowledge (and differences in traditional knowledge) still shapes natural resource access, use and management particularly in the San and Mier resettlement farms. Therefore, there is a need for traditional knowledge not only to be revived but also to be meaningfully harnessed within existing conservation programmes (see next section).

6.4.5 The transmission of cultural knowledge from generation to generation

As noted, less than half of the San respondents indicated that they were aware of traditional knowledge on plants and animal use. This is also supported by the fact that a relatively higher percentage of both the San and Mier households used prepared plant based medicines than those that actually harvested (Chapter 5, Table 5.7). Interviews showed that traditional knowledge generally increased with age and decreased with higher levels of education (see Mannetti, 2010). Male headed households also tended to have more knowledge than female

headed households on indigenous plants and animals. Contrary to the findings of Lee (1968, 1979), men were the dominant gatherers of plants (for fuelwood, food and medicines). The situation (also highlighted in Chapter 5) is somewhat different from findings elsewhere (e.g. Shackleton et al., 1999; Masekoameng et al., 2005) possibly because of the ever increasing dryness of the environment and diminishing resources. This means longer distances have to be travelled, bigger trees for fuelwood have to be felled and more time should be spent in the field for a worthwhile gathering or hunting trip. All these activities are arduous and potentially risky hence naturally become designated for males (Chapter 5, Section 5.3.7). Therefore, their contact with plants and animals is generally more than women.

Moreover, KTP Management (through SANParks) offered training to male trackers and park guides on local plants and historical Bushmen plant use which could be responsible for the differences between men and women in terms of knowledge of plants (Mannetti, 2010). Some respondents interviewed said the trends showed that things were changing and that the forces of modernisation could not be escaped. For example the loss of the native language was highlighted as partly explaining the loss or lack of understanding of traditional knowledge. Less than 5 % of the San respondents could speak their native language, partly resulting from historical factors – where the San were assimilated into the Mier community through the Group Areas Development Act of 1955 that classified people according to colour and almost lost their identity (Chapter 4). The majority of the San spoke Afrikaans, an adopted modern language. Pretty (2006) documents how the loss of language can lead to the extinction of traditional knowledge. David K Harrison, the author of “When languages die” (cited in Makhanya, 2011) simply puts it: “When a language is lost, centuries of human thinking about time, seasons, edible plants, landscapes, myths, the unknown and the everyday are all lost. This is the hub of the matter, the destruction of knowledge.” Indeed, as has been noted earlier, many of the #Khomani San people living in this Kalahari region today do not have a long-standing tradition and knowledge of surviving in a harsh environment as their livelihoods have been bolstered by government social grants for many years.

Furthermore, not so many school-going children had time to spend in the field to acquire traditional knowledge related to collection of wild plants and hunting of animals. This perhaps shows the delicate nature of traditional knowledge against the rapid pace and forces of cultural erosion and acculturation in rural landscapes (Pretty, 2006). Nevertheless, it is

perhaps a combination of different factors that explains the variations in the understanding of indigenous knowledge between different age groups and gender (including historical, physical, economic, and external factors).

An overwhelming majority of plant users (> 90%) answered that they had learned about wild plants during their childhood, with the remaining respondents stating that they acquired this knowledge only once reaching adulthood. Most respondents said that their knowledge of wild plants and animals was acquired through field excursions with elders (especially parents and grandparents), highlighting the importance of family networks given the community's isolation. Some claimed they have used plants for their entire lives as a Bushmen custom. All responses showed that the plant users within the San community learned by doing, by participant observation and by sharing activities, corresponding to the results of Lozada et al., (2006) (cited in Mannetti, 2010). This means in spite of the San's turbulent history of dispossession from their ancestral lands and subsequent isolation, transmission of traditional knowledge on wild plant and animals has occurred within this community, though it has been decreasing. The transmission of this wisdom entails learning traditional ecological knowledge as found in other cases (Berkes et al., 2000), in addition to the sharing of traditional knowledge (Ohmagari and Berkes, 1997). This is especially relevant in the case of both the San and Mier communities since they now own land in an area that is highly important for wild natural resource conservation in the Kalahari region. In light of this, a field (cultural) school was established in the Contract Park in an effort to transmit and preserve San traditional knowledge

6.4.6 Imbiwe field school

The motivation behind the establishment of Imbiwe cultural school was the recognition that the rich San culture was being lost due to different forces. The main goal of the cultural field school was for the transmission of traditional knowledge to the younger San generation through spending time in the field with senior knowledge holders. This was premised upon the fact that for generations, face-to-face transfer of wisdom and practical know-how, from animal husbandry to plant use, had sustained the livelihood and identity of rural communities in Africa. In the field school, the younger generation learns and observes traditional custodianship and respect of the land while the elders nurture an enthusiasm for cultural and natural resource management practice in them. The ultimate purpose was to develop an

understanding of the complex traditional relationships between land and the people, providing a clearer understanding of traditional land and natural resource management. For example, dissemination of information on traditional medicines is expected to encourage the younger generation to use medicinal plants in health care, and to facilitate ongoing sustainable use of medicinal plants (Mannetti, 2010). Consequently, this would avoid the loss of the knowledge through diminishing use of plants as medicines. Traditional San language and wild animal tracking are also part of the cultural training programme. The traditional San elders praised their tracking skills and boasted that there is hardly evidence that any San member has lost his or her life to wild animals such as lions in the wild. This is because there was enough prey for carnivores (due to sustainable management of the resources) and the San had special ways to avoid confrontation with wild animals. The Bushmen often disguised themselves as animals so they could get close enough to grazing herds to spear them. The head of an animal was an important part of this disguise and was also used in dancing and miming of the actions of animals.

However, evidence (demonstrated in preceding discussions) on the variability of indigenous knowledge and interest on various aspects of natural resource use may serve to illustrate that the old visions of the San as a hunter-gatherer society and the Mier as entirely traditional livestock farmers are no longer valid. The differences in knowledge may probably be enough evidence of diminishing or threatened indigenous knowledge. Alternatively, this perhaps represents a candid reflection of how poor rural people adapt to the ever-changing social, physical, economic conditions (market economy) by diversifying their livelihood options – that may mean a movement from specialising on certain type of resources. Therefore, successful conservation needs to incorporate information on how the value of resources is culturally perceived by all the different groups of social actors present in the area designated for conservation and development (see Hunn et al., 2003) and how this is changing. Notwithstanding the place occupied by traditional cultural practices in modern day conservation, the findings do not only challenges stereotypes associated with indigenous communities but also brings to the fore the importance of considering how the values associated with different ways of life and adapting to changing physical, social and economic environments affect material subsistence strategies.

6.5 CONCLUSION

The Chapter has explored culture, cultural values attached to natural resources and the nexus of culture and resource use in the light of natural resources and livelihood studies. Local community groups regularly use wild plants and animals, making the use of nature inseparable from their cultural identity. Thus the findings are consistent with similar findings elsewhere that demonstrate that culture is a combination of the material and non-material activities and products of a given social group which separates it from other groups. The findings demonstrate that knowledge on culture is variable, and that the cultural values assigned to certain natural resources are often unpredictable and at times contradictory. For the San, it may be that they were dispossessed of their land and with it came the erosion of their culture and a dependence on government social welfare grants. Thus, their history of dispossession has had an impact on how they give cultural meaning to natural resources and places. As has been noted, culture is not static, but regularly and gradually changes to conform to changing circumstances. Therefore, there is a need for a careful cultural analysis of different communities for conservation programmes aimed at conserving both biological and indigenous cultural diversity.

It has also subsequently been illustrated in line with other studies that, the value of natural resources for some groups (e.g. the San traditionalists) cannot be solely understood in monetary or quantitative terms. This is because natural resource use is culturally-inspired and is connected to complex cultural systems such as myths, norms, beliefs and spirits that contain key symbols of natural resource importance. Thus, many of the most important issues facing the local rural communities, their identities, perceptions and beliefs for example, cannot be meaningfully reduced to numbers or adequately understood without reference to the immediate cultural context in which they live. The study further illustrates that such traditional and cultural practices can have influence over natural resource management if given support and where possible revived, in that they can act not only as pivots around which communities make decisions on resources use but also as powerful constraints to the misuse of resources, standing-in as *guardians* of the land (Schoffeleers, 1978).

In sum, culture is inextricably bound up with the use and management of natural resources, and aspects such as conservation and local belief systems form part of a way of living. Despite the fact that few San and Mier households have knowledge of, and fewer uses of

traditional resource management strategies, traditional conservation practices of indigenous people remain an important foundation and component for future sustainable conservation strategies that should be revived along cultural restoration initiatives such as the Imbiwe Field (Cultural) School. Conservation approaches should recognise that cultural meanings and values of natural resources among users is diverse and people are a combination of more 'modernised' and 'traditional' resource users that co-exist. Hence, conservation approaches should be flexible and adaptive by factoring in traditional conservation strategies in combination with modern science (see Ostrom et al., 2007).

CHAPTER 7

ACTORS AND INSTITUTIONS GOVERNING NATURAL RESOURCE ACCESS AND MANAGEMENT IN THE DIFFERENT LAND PARCELS

7.1 INTRODUCTION

Globally, a myriad of national parks and their surrounds continue to be the traditional homelands of indigenous and local communities. These lands are endowed with different types of wild natural resources (firewood, grass, medicinal plants, bush meat, fodder, etc.) that support rural people's livelihoods. In some cases, co-ownership, collective and collaborative management of parks and communal areas are legally recognised. Given that most poor rural people directly depend on natural resources for their livelihoods, more effective local governance of these resources through local institutions has long been considered key to tackling conservation challenges (Ostrom, 1990; Hulme and Murphree, 2001; Berkes, 2008a), as well as for improving livelihood security (Fabricius et al., 2004; Pretty, 2006). Yet despite an ever increasing compilation of work on issues related to institutions and sustainable natural resources management, the challenges of understanding the relationship between institutions, governance of natural resources and local livelihoods remain complex, multi-stranded and salient, particularly in intricate arrangements where parks have to be ideally managed in unison with surrounding communal lands (e.g. Ascher, 2001; Blomquist, 2009).

While the integration of conservation and development needs of local people has occupied centre stage in the last decades (see Hulme and Murphrey, 2001; Adams et al., 2004; Hayes, 2006; Sunderland, 2006; Sunderland et al., 2008; Chapter 2, Section 2.2), these strategies encounter problems at the local scale that relate directly to the institutional and governance frameworks within which they are nested (Watts, 2006; Homes-Watts and Watts, 2008). Furthermore, local level implications of institutional and governance arrangements on natural resources management and livelihoods often receive little focus (Brown and Lassoie, 2010). In many conservation projects worldwide, local institutions and organisations have been crafted to govern natural resources both in parks and communal areas (Ostrom, 1990; Young, 2002; Vatn, 2005; Hayes, 2006; Kepe, 2008b).

However, many such attempts have demonstrated limited success and even failures, and park-people conflicts are more the rule than the exception (Ntiamoa-Baidu et al., 2001; Brockington, 2004; Holmes-Watts and Watts, 2008; Brown and Lassoie, 2010). As Sayer et al. (2000:14) puts it: “There are still very few clearly successful cases where local people’s development needs and aspirations have been reconciled with protected area management” despite the continuous establishment of conservation projects. Consequently, the governance of parks and adjacent communal lands has come under scrutiny and debates about appropriate local institutional arrangements for natural resources management have emerged (Poteete and Ostrom, 2002; Watts, 2006; Berkes, 2007).

The Kgalagadi Transfrontier Park represents the first ‘Peace Park’ on the African continent that integrates conservation and local livelihood needs and is lauded as a model for acceptable future conservation approaches (Chapter 4). However, local level impacts, and in particular, aspects related to institutions, interactions among actors, governance of natural resources and effect on local communities’ livelihoods have not been systematically analysed. Such an analysis is critical in understanding complex land tenure issues, institutional aspects, and natural resource governance (characterised by co-management in the Park and community-based management in the surrounding resettlement farms) to best inform respective conservation and livelihood policies.

The delivery of these policies in practice is based on understanding several related issues. As earlier highlighted natural resource value is socially constructed and contested and it is therefore critical to focus on institutions as terrains of negotiations (Kepe, 2008a; Chapter 3, Section 3.4). This includes how institutions shape individual and collective behaviour, and how individuals and groups shape institutions and the subsequent impacts on natural resource governance (Vella, 2003). Poteete and Ostrom (2002) argue that effort to promote sustainable natural resource use through effective governance depends on the application of well-grounded theories about the development, evolution, interaction, and consequences of institutions. It is hoped that findings from this study will provide lessons for a better understanding of the institutional landscapes and natural resource governance in current and future co- and community-based management practices within and beyond the South African context.

The specific objectives of this Chapter are to:

- identify the different institutions and actors (and their constituencies) responsible for governance of natural resources in the KTP (co-managed) and the surrounding resettlement farms (community-based management);
- analyse the interactions and power dynamics between these institutions and actors and local level governance of natural resources in the Park and resettlement farms; and
- provide lessons and propose core strategies for improving governance of natural resources important for sustainable natural resource management both within and outside of the Park.

7.2 CONCEPTUAL DEVELOPMENT: PARKS, PEOPLE AND RESEARCH FRAMEWORKS

7.2.1 Transfrontier Parks (TFPs) and Contract Parks

Generally, the concept of conservation with people in parks is now common currency in international conservation literature and debates (Chapter 2). The principal idea in such initiatives is to integrate ecological integrity (conservation) and local development needs. Subsequently, the establishment and management of Transfrontier Parks (TFPs) in Africa is increasingly shaped by and premised upon the current co-management principles that are at the heart of people-parks debates (Chapter 2, Section 2.2.2). In line with the above view, the idea in the KTP was to allow local San and Mier communities, access and sustainable resource use rights in the various zones of the Park, against a background of land dispossession (Chapter 4, Section 4.2.2). As earlier discussed, the advent of Contract Parks (in TFPs) worldwide was seen as a way of involving local people in the management of natural resources that they have traditionally relied upon and improving people-park relations (see Chapter 2, Section 2.2.2). This is undoubtedly a realisation that local community relations do impact parks, particularly in the diverse and complex relationships for negotiating land tenure and resource use arrangements as in this study.

7.2.2. Frameworks and approach

This study's analyses largely draws on the Sustainable Livelihoods Framework (Chapter 3, Section 3.2.3). The study looks at the relationship between actors, institutions and institutional contexts and how these influence resource access and use (i.e. livelihoods). In this study,

institutions are commonly conceptualised as both formal and informal constraints such as rules, laws, conventions, constitutions, norms, decision making procedures, and programmes that define social practices, and guide interactions among individuals (North 1990; Young, 2002; Vatn, 2005), by stipulating what actions are required, permitted, or forbidden in particular situations (Poteete and Ostrom, 2002; Chapter 3, Section 3.4.1). Organisations and individuals will be considered as actors that typically emerge as players whose activities are guided by the rules of the game (institutions) in which they participate (Young, 2002; Chapter 3, Section 3.4.1).

In order to systematically identify and understand multiple institutional arrangements, nested actors and the complex interactions in this study, the study makes use of the IAD framework by Ostrom et al., (1994) (Chapter 3, Section 3.3.3; Figure 3.2). To the researcher, the framework recognises multiple levels of decision making, while preserving the capacity to study a particular level. This simplifies the task of studying an institutional governing system without addressing all of the influences that conceptually can be linked to behaviours and outcomes (Richardson, 2004). The Chapter also draws on political ecology (Peet and Watts, 2004) to analyse interactions among actors and their institutions. Political ecology is broadly defined as the study of power relations in land and natural resources management (Benjaminsen et al., 2008). At the heart of political ecology is a focus on asymmetries of power among actors providing valuable perspectives for understanding social dynamics (Robbins, 2004). Such a comprehensive approach provides a much more flexible conceptual platform for understanding livelihoods through analysing socially-rooted interactions, explicitly focusing on access to opportunities and natural resources and the workings of power among actors.

In addition, the study also draws on common property resources theory (Ostrom, 1990), to analyse natural resource arrangement in the communally-owned San and Mier resettlement farms. Common property resources (CPRs) refers to natural resources to which more than one individual has access, but where each person's consumption reduces availability of the resource to others (Ostrom, 1990). Further, while more than one individual has access under common property resources, the resources may be excludable. Ostrom's design principles highlight how common property resources could be managed without falling prey to the 'tragedy of the commons' (see Hardin, 1968). The 8 design principles are summarised in

Table 7.1. First, rules should clearly define who has what right to natural resource access and use. Second, adequate conflict resolution mechanisms should be in place, and third, an individual's duty to maintain the resource should roughly match the benefits. Fourth, monitoring and sanctioning should be carried out either by the resource users (local people) or by someone who is accountable to the users. Fifth, sanctions should be graduated, lenient for a first violation and stricter as violations are repeated. Sixth, governance is more successful when decision processes are democratic, in the sense that a majority of users are allowed to participate in the design and amendment of the rules and seventh the right of users to self-organise is clearly recognised by outside authorities. Lastly, where common property resources are part of larger systems, appropriation, provision, monitoring, enforcement, conflict resolution and governance activities can all be organised in multiple layers of nested enterprises.

Table 7.1: Summary of Ostrom's design principles (Adapted from Ostrom, 1990:90)

Principle	Explanation
1. Clearly defined boundaries	Individuals or households with rights to withdraw resource units from the common pool resource and the boundaries of the common pool resource itself are clearly defined.
2. Congruence	<ul style="list-style-type: none"> a. The distribution of benefits from appropriation rules is roughly proportionate to the costs resulting from provisional rules. b. The rules governing the contribution required of each user must mirror local conditions
3. Collective choice arrangements	Participation by all affected individuals in deciding on and modifying operational rules should be possible
4. Monitoring	Either the local users themselves or persons accountable to the local user are responsible for monitoring compliance with collective decisions.
5. Graduated sanctions	Sanctions should be graduated to reflect the severity, frequency, and context of resource use violation.
6. Conflict resolution mechanisms	Low-cost and readily available conflict-resolution mechanisms must exist to mediate conflicts among resource users and between users and officials.
7. Minimum recognition of rights	Users must have recognition of their own rights to organise institutions
8. Nested enterprises	Appropriation, provision, monitoring, enforcement, conflict resolution and governance activities are organised in multiple layers of nested enterprises.

In sum, Ostrom's framework highlights the problems arising from common property resource use and management and identifies the complex system of variables, rules, and external constraints that affect the design of common property resource management regimes. This is consistent with the preceding frameworks and conceptualisation, in the sense that it recognises that conservation sites are characterised by existence of multiple actors and institutions, where overall conservation and livelihood outcomes are shaped by interactions and power dynamics within these socio-ecological systems.

The above conceptualisation provides a framework within which to understand the San and Mier cases. The community-owned and managed San and Mier resettlement farms exactly suits the above conceptualisations. Further, the two communities are not isolated, but are subject to externally initiated interventions with regards to financial resources, logistical aspects, tourism partnerships, capacity development, livelihood issues and cultural revival programmes among others (see Thondhlana et al., 2011). Hence, the sustainability of natural resource use, particularly in the resettlement farms (common property resources) remains a challenge – providing *raison d'être* for a broader understanding of current resource management arrangements to better inform policy for good natural resource governance.

7.3 RESEARCH METHODS

The study drew on both primary (household questionnaire interviews, key informant interviews, observations) and secondary data sources (books, articles, journals, minutes, rules and regulations documents and local newspaper reports). Information was collected for both the Park co-management arrangements as well as governance and management processes for the resettlement farms. The first phase of field work involved the administration of 100 questionnaires in each community (see Chapter 3, Section 3.5). The first set of household questionnaires covered local people's general access to natural resources in and outside the Park and provided insights into the actors and institutional arrangements in both communities including aspects such as membership in organisations, participation in community meetings and perspectives on effectiveness of organisations such as SANParks (Kgalagadi Transfrontier Park Management) and other local actors (Chapter 3, Section 3.5). Some respondents did not give comments and answers to certain questions asked during interviews because they did not use any natural resource from the Park other than from getting firewood (and other resources) in the resettlement farms for subsistence purposes.

In the second phase, 50 questionnaires (Appendix 7) were purposely administered (to respondents who had indicated that they had knowledge about the various actors responsible for natural resources management in the resettlement farms and the Contract Park) from a list of respondents created from the initial survey of 100 San households. The second set of questionnaires was specifically tailored to capture indicators of community governance performance (such as participation, decision making, attitudes towards leaders and accountability) and indicators of socioeconomic benefits provided by the Park and farms such as whether respondents had received benefits or whether community projects had been implemented as promised and points of conflicts (see Collomb et al., 2010). The Mier were not covered in the second phase since a majority of households (92 % out of 100) indicated (in the first phase) they were either not a member of any governance body or did not have any idea about existence of any local institution (except for the Municipality). Instead, informal interviews were conducted to get people's perceptions about the performance of the Municipality.

Personal interviews (see Appendix 6) with key informants such as South African National Parks (SANParks) (KTP management), Department of Land Affairs, eco-tourism business partners, Traditional San Council, Mier Municipality and local NGOs captured general information on the characteristics of local institutional regimes, local actors, who and what they represent and their values. Identified officials from the above-mentioned organisations provided insight into the nature and economic impacts of different institutions in the area. Much of the primary data related to how different land parcels are managed, conflicts arising from conflicting interests and what this means for future conservation efforts was largely obtained through personal interviews. The Contract Park *Constitution* (i.e. The !Ae!Hai Kalahari Heritage Park Bundle) was an important source of information on aspects related to general agreements, authority, roles and responsibilities of the principal stakeholders (i.e. Park Management, San and Mier communities) responsible for co-management in the Park (see Borsch and Hirshfeld, 2002).

7.4 RESULTS AND DISCUSSION

7.4.1 The actors: roles, constituencies and governance arrangements

Several actors are involved in natural resources governance, development and livelihood interventions in the Park and the resettlement farms. Table 7.2 shows the different actors and

institutions that are responsible for governance of natural resources in the different land parcels. The actors include government departments and agencies, NGOs, private operators, community-based operators, local community members and committees and individual stakeholders.

Table 7.2: Various actors and institutions responsible for natural resources governance

Land parcel and actors	Institutions (rules)
Contract Park and rest of Park	(Formal/informal)
<ul style="list-style-type: none"> • Kgalagadi Transfrontier Park Management • Joint Management Board • Private Safari Operator • Technical advisors • Department of Land Affairs • San Park committee • San Elders (Traditional Council) 	<ul style="list-style-type: none"> • National Environmental Management: Protected Areas Act 57 of 2003 • The Ae!Hai Kalahari Heritage Park Agreement (2002) • Communal Property Association Act • Protocols for sustainable resource use (2007) • Kgalagadi National Park Management Plan 2006 • Indigenous knowledge systems
San Farms	
<ul style="list-style-type: none"> • CPA committee • Department of Land Affairs • Traditional Council • San Technical Advisors • South African San Institute (SASI) • Bushmen Farming Association 	<ul style="list-style-type: none"> • Communal Property Association Act • CPA constitution • Indigenous knowledge systems (informal rules)
Mier Farms	
<ul style="list-style-type: none"> • Mier Municipality • Mier community • Town Forums (not active) • Livestock farmers cooperative 	<ul style="list-style-type: none"> • Indigenous knowledge systems (informal rules) • Municipal by-laws e.g. in terms of renting land

The predominant rules governing natural resource access and use are largely formal though unwritten informal indigenous knowledge systems are used in the respective resettlement farms (see Chapter 6, Section 6.4.4). Indigenous knowledge systems are also expected to be part of the rules regulating natural resource harvesting in the Park. The actors and their respective institutions have multiple objectives that address conservation and livelihoods from

a diversity of angles, such as law, policy, wildlife management and ecosystems and local livelihoods. It is these actors, their institutional affiliations, constituencies and roles in natural resource governance that will be described and analysed in the following sections.

7.4.2 Park and Contract Park actors and institutions

7.4.2.1 SANParks and Kgalagadi Transfrontier Park Management (KTPM)

South African National Parks (SANParks) is the principal and leading conservation authority in all national parks in the country. It is an organisation supported by the government through the Department of Environment and Tourism and its main mission and responsibility is to develop and manage a system of national parks that represents the biodiversity, landscapes, and associated heritage assets of South Africa for the sustainable use and benefit of all (see SANParks, 2006). Kgalagadi Transfrontier Park Management (KTPM) is responsible for achieving these objectives on behalf of SANParks. KTPM is made up of the Park Manager, Game Rangers and the 'People and Conservation' Officer.

In all the co-management initiatives in the Park, the National Environmental Management: Protected Areas Act 57 of 2003 supersedes all the formal rules regulating resource protection, access and use (see Act No. 10, 2004, Section 8). According to the !Ae!Hai Kalahari Heritage (or Contract) Park agreement (hereinafter the agreement), KTPM has the power to regulate natural resource access and use within the Commercial Preference Zone (V-Zone) and the San Symbolic and Cultural Zone (S-Zone) (see Figure 4.1; Chapter 4, Section 4.2.2.2) and is responsible for performing all duties that the agreement enforces upon it. Though the Contract Park is under the management of a Joint Management Board (JMB) (see next Section), KTPM has unrestricted right of access to any part of the Contract Park for nature conservation-related responsibilities such as infrastructure maintenance, security of the Contract Park, monitoring and taking control measures with regards to fauna and flora, veterinary services, general rehabilitation of damage caused by natural causes and any activity related to conservation functions though ownership rights rest with the San and Mier communities (see Bosch and Hirshfeld, 2002).

In addition and in line with the agreement, KTPM agree to facilitate on request by communities development in support of the Contract Park, training of field guides, designing of management plans and assistance with game management. According to KTPM, the

Contract Park is so far properly managed under the JMB and meeting the primary conservation objectives. There is also a general willingness by KTPM to contribute their experience and expertise (as part of its social responsibility) in sustainably managing natural resources in the San farms to improve local people's livelihoods, buoyed by nuanced understanding and realisation that parks cannot be managed as distinct units from their local ecological, social-political and economic surrounding areas. Further, there is understanding that natural resources will be depleted if the surrounding farms are not sustainably managed, and this is likely to create future pressure on Park resources.

7.4.2.2 The Joint Management Board (JMB)

The Contract Park Agreement requires the formation of a Joint Management Board (JMB). The JMB is a forum where representatives of SANParks (i.e. KTPM), San and Mier communities take decisions on the management of the Contract Park. KTPM and the Mier are each represented by three members (including the Park Manager for the former and Mayor for the latter). The San community is represented by a Park Committee, with the advice of Traditional Council and Technical Advisors (see Section 7.4.2.3). The Park Committee is a group of San members who represent the common interests of the San constituency or Communal Property Association (CPA) (see Section 7.4.3.1). The Traditional Council consists of a group of knowledgeable and well respected San elders who give wisdom and advice on sustainable natural resource practices and bring knowledge of informal institutions (within the indigenous knowledge system framework) both in the Park and the San farms (see Bosch and Hirshfeld, 2002; Chapter 6, Section 6.4.2.1).

In general terms, the JMB is responsible for the formulation, implementation and monitoring of an effective framework for the management and development of the Contract Park (Holden, 2007; Grossman and Holden, 2009). The functions of the JMB include among other things informing other parties about actual or intended development in the Contract Park and rest of Park, to generally manage the implementation of the Contact Park agreement, promote integrated management between the San and Mier with the aim to achieve balanced eco-tourism related development, and to prevent and resolve disputes between stakeholders. Community representatives in the JMB are responsible for ensuring that their respective constituencies support the co-management agreement by disseminating key information and decisions relating to the Contract Park management and development (Bosch and Hirshfeld,

2002). The San Park Committee (or representatives of the San constituency in the JMB), for example, is supposed to report back to all San members through the various Ward Committees of the respective farms such as Witdraai and Scotty's Ford. Ward Committees are contact points within the different San farms whose main duty is to get and disseminate information from the JMB representatives and on various management issues in the San farms. The Mier Municipality is supposed to disseminate information to Town Forums (elected town representatives) who should later circulate this information to their respective constituencies. However, in both communities poor levels of accountability were evident (see Sections 7.4.7.1 and 7.4.7.2). In the case of the Mier, Town Forums were either non-existent or basically inactive.

However, it is important to note that despite the above-mentioned JMB functions, the JMB is not a legal entity that can be either sued for failing to meet its contractual agreements or to be held responsible for its actions. For example, the JMB has the right to approve or amend management plans, though KTPM has the overriding right to make decisions on natural resource use in the Park. This means the JMB does not have power to make independent decisions on resource use in the Contract Park, without SANParks approval though there is room in the agreement for the principal parties (KTPM, San and Mier) to establish the JMB as a legal entity by written agreement. With regards to handling profits generated from the Contract Park community lodge, the Department of Land Affairs (DLA) is responsible for administering the profits on behalf of the San community as per a court agreement (see Section 7.4.3.1), while the Mier Municipality administers the Mier community profits (see Section 7.4.3.2).

7.4.3 Actors and institutions in the resettlement farms

7.4.3.1 The San Communal Property Association (CPA)

The restitution of communal land rights procedure in South Africa involves an observance of the *Communal Property Associations Act 28 of 1996*. The Act enables communities to form juristic bodies, known as Communal Property Associations (CPAs), in order to acquire, hold and manage property on a basis agreed to by members of a community in terms of a written CPA constitution (SAHRC, 2004). Accordingly, members of the #Khomani San claim are collectively known as the San CPA and the assets of the community are supposed to be managed by an elected CPA executive committee.

However, there is no functional CPA committee at the moment due to reasons related to internal conflicts, mismanagement of funds and corruption (see Robins, 2001; Ellis, 2010; Thondhlana et al., 2011). The term of the first CPA committee ended in April 2001 after an audit initiated by the Department of Land affairs (DLA) found the committee guilty of gross mismanagement of funds. A new CPA committee was later elected in July 2001. It is reported that this committee's term of office also ended controversially during 2002 with the DLA having to step in to prevent the sale of the farm Erin to cover debts incurred by executive members (Makomele, 2009, per comm.). The DLA lodged an application to the High Court to place the San CPA under its administration in terms of the CPA Act. The San CPA was subsequently placed under the DLA administration in November 2002. The DLA administrative offices are located in the Northern Cape provincial capital, Kimberley, more than 600 km away from the San community farms. It is reported that a new executive committee was elected in 2003 (and other committees later) but these committees were under the administration of the DLA and therefore did not have the normal powers of such a body in terms of the CPA Act.

The DLA was expected to appoint a Farm manager to oversee day-to-day management of different farms (Bosch and Hirshfeld, 2002) but this is reportedly still outstanding. Further, the DLA has not yet introduced an alternative management structure or system to date, a worrisome development for most San members who thought their situation was going to improve. The duration of external administration is still unclear due to the absence of an explicitly set time-frame and conditions under which administration will become internal. While the constitution is reasonably clear on the substantive rights that individuals may have, the practice has been that land users disregard these stipulations, amid heightened internal conflicts and the committee has been powerless to address the matter (see Section 7.4.6). Informal traditional rules are used in the management of natural resources in the farms (sustainable plant harvesting, hunting, etc.) but not everyone understands how these rules operate or follow them (Chapter 6, Section 6.4.4).

7.4.3.2 The Mier Municipality and community

There is an absence of an active, well defined community organisation for the Mier community. The Mier Contract Park, game farms and farmland are *de facto* communal property but *de jure* Mier Municipality property. The Municipality is the legal owner and

leases farms to individual farmers. The farmers have a chance to buy the leased farm in a given number of years after convincing the authorities that he/she can manage the land and run a livestock business viably. The Mier Municipality is also responsible for providing services such as water, sanitation and other social services to the San but do not have a natural resource management role in San farms. According to Grossman and Holden (2009), with regards to natural resource management and other livelihood initiatives within the Mier community, the situation is simpler than the San's in that the Mier community is a relatively more cohesive one, with a functional institution (a Local Municipal Council) in place and has greater capacity and experience. Furthermore, the Mier have among other things successfully managed a relatively lucrative hunting and tourism operation on their land bordering the KTP for a number of years and there are a number of successful small livestock farmers (Chapter 5) and entrepreneurs in the area. Therefore, they have arguably fewer expectations and less reliance on the outcome of what happens in the Park as compared to the San community.

7.4.4 External organisations supporting institutional, development and governance arrangements

Table 7.3 shows the main NGO actors who have been involved in natural resources management and key livelihood activities in one way or the other. Apart from the principal JMB parties, there are other independent NGO's, private operators and individuals interested in indigenous people aspects, conservation and rural livelihoods, who have been actively involved in natural resource governance and management issues both in the Contract Park and the farms, through provision of advice and funding support to the San.

Table 7.3: NGOs and independent actors and their primary areas of focus

NGOs/other actors	Focus
SASI (for San)	<ul style="list-style-type: none"> • Cultural and linguistic issues • Miershoop Pan Game farm management • Witdraai Bush Camps management • Traditional guiding and tracking • Development of the handcraft sector (SiSEN)
Technical Advisors (for San)	<ul style="list-style-type: none"> • Traditional plant monitoring and evaluation in the Park and farms • Cultural preservation (Park and farms) • Ecotourism (Park and farms)
African Safari Lodge Foundation (for San)	<ul style="list-style-type: none"> • Ecotourism initiatives (Park and farms)
Farm Africa (San and Mier)	<ul style="list-style-type: none"> • Land care project in the area and livestock production on the San and Mier farms
Peace Parks Foundation (for San)	<ul style="list-style-type: none"> • Cultural preservation and eco-tourism (in the Park)

7.4.4.1 South African San Institute (SASI)

South African San Institute (SASI) is an independent NGO that operates with the various San groups in South Africa. SASI also works in partnerships with wider groups that represent minorities such as the Working Group of Indigenous Minorities in Southern Africa (WIMSA), whose responsibility among others is to promote the rights of the San people. Some of the initiatives that have been used to promote the livelihoods of the San people in their ancestral lands include; promotion of rights, community mobilisation, fund raising, lobbying and networking, training and capacity building, cultural heritage and language development, health and social development and income generating programmes. SASI is responsible for the financial management (together with DLA) of the San game farms (Miershoop Pan game farm) and community Bush Camp in Witdraai Farm, training of guides, SiSEN crafts, health shop and the information centre. SiSEN craft is a San craft project where San members make traditional crafts that are sold at a common market. The respective members are supposed to get a certain percentage of the profits later after a deduction of administrative, technical and organisational (marketing) support costs by SASI. SASI has been playing various supportive and advisory roles for the San pre- and post the 1999 land claim.

7.4.4.2 San Technical Advisors and Africa Safari Lodge Foundation

The San technical advisory team consists of two individuals who have been working with the San community before, during and after the 1999 land claim process. African Safari Lodge Foundation is a non-profit organisation interested in aspects of conservation and livelihoods by local and indigenous communities. Both the San Technical Advisors and African Safari Lodge Foundation have been involved in the Imbiwe cultural school initiative (Chapter 6, Section 6.4.6), monitoring and evaluation of natural resource stocks in the Contract Park and designing of the Erin Development Plan (an eco-tourism initiative in the farms) among other things – related to conservation and livelihood for the San both in the Park and the farms.

7.4.4.3 Peace Parks Foundation, Farm Africa and Private operator(s)

Peace Parks Foundation is an NGO that is responsible for facilitating the establishment of Transfrontier Conservation Areas (TFCs) and developing human resources, thereby supporting sustainable economic development (that improves local livelihoods), the conservation of biodiversity and regional peace and stability. Farm Africa is an NGO that focussed on key livelihood and enterprise projects in the area, though it is no longer active in the area. It embarked on a livestock production project for interested livestock and ‘would be’ livestock farmers and developed a ‘sheep bank’ whereby a prospective farmer was able to start a flock of sheep. However, at the time of research neither Farm Africa nor the ‘sheep bank’ initiative was functional. A private operator, runs the community lodge (!Xaus) in the Contract Park on behalf of KTPM, San and Mier communities. The profits generated by the lodge are shared equally among the three principal parties of the JMB and the private operator. All the NGOs and the private operator mentioned do not have decision making responsibilities in the Park and resettlement farms, though they sometimes attend JMB and other meetings in advisory capacities.

Figure 7.1 summarises the main actors that are involved in natural resource governance aspects in the different San and Mier land parcels. As can be seen from Figure 7.1 and the preceding sections, the study areas represents a complex arrangement – where nested actors and various institutions responsible for natural resources management in the Contract Park and the resettlement farms, operate at different and multiple levels (local, external, civil, government, horizontal and vertical) with multiple objectives. More often than not, some of the various actors have management responsibilities or interests both in the Park and the

farms, making natural resource governance aspects interlinked, multifaceted and therefore essential for local livelihoods and conservation both in the different land tenure arrangements. In outlining the framework for this Chapter's analyses (Section 7.2.; see also Chapter 3, Section 3.3.3) it was especially highlighted that typically, various and multiple levels of decision making by various actors exist and that everything is connected to everything else (see Richardson, 2004), adding to the complexity in understanding conservation and livelihood challenges.

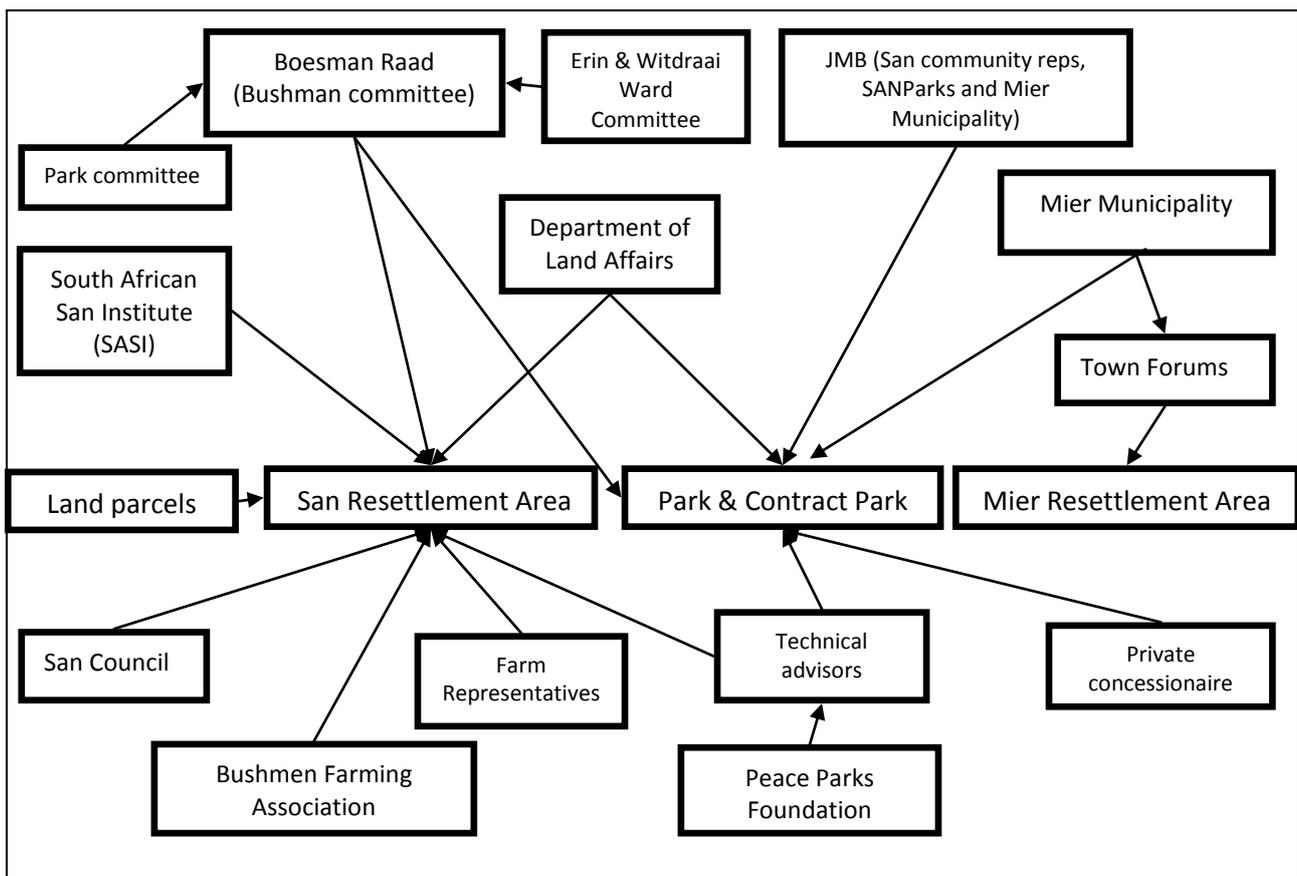


Figure 7.1: Nested actors involved in land and natural resources governance (Adapted from Thondhlana et al., 2011)

7.4.5 Interactions among actors and governance of natural resources in the Park and resettlement farms

The governance front of natural resources in the Contract Park and farms is characterised by various degrees and forms of cooperation and conflict. Different actors have different natural resource use interests and pursue sometimes conflicting goals in line with their institutional

affiliations and values. This section looks at the different actors and structures described above, their approaches to natural resource management and how this impacts on conservation and livelihood issues. The main institutions (rules, constitutions, norms) that are used to regulate resource access and use in the different land parcels by different actors are highlighted as well as the challenges associated with heterogeneity, access to benefits, accountability and conflict resolutions among others. The main aim is to demonstrate the complex network of inter-linkages among actors and institutions, the performances of various actors and impacts on local conservation and livelihood outcomes and the possibility of strengthening existing natural resource governance systems or crafting new ones where the existing ones are failing.

7.4.5.1 Kgalagadi Transfrontier Park Management (KTPM) and resource governance in the Park

Though, the KTP co-management arrangement represents a step forward towards integrating ecological and livelihood needs of the San and Mier (as compared to many parks worldwide), the situation is not without problems and challenges related to resource access and benefits. In all its dealings with communities, KTPM has been very unequivocal in its primary objective. For example, in the Protocols for Sustainable Resource Use (see #Khomani San, 2007), KTPM reiterates that it is important to make the distinction that resource use within the Park will ultimately not be towards the support of livelihoods but rather serve as a way by which the San (young and old, men and women) can re-connect with their cultural heritage. Natural resource use as a livelihood strategy will take place on the eight farms outside the Park (Chapter 4, Figure 4.1) because KTPM mandate is conservation and this will always come first.

Suggestions about growing plant species from seeds or bulbs collected within the Park on the farms awarded to the San, so that access to the Park is minimised have been made. Furthermore, there is always suspicion that local people cannot be trusted to use resources sustainably. For example, KTPM stated that an underlying threat to sustainable resource use is that people may over-utilise resources for fear of not being 'allowed' to harvest them again. Yet the San are considered highly traditional and the Traditional Council (committee of San elders) is seen as key to advisory services on sustainable use in the Park, drawing on indigenous knowledge. This raises challenging questions of whether Park regimes have

changed or plan to change the way they deal with local communities and if they can meaningfully support local livelihoods.

Park institutions (including their actors) have historically held the view that human beings and natural resources should be separated (e.g. Oates, 1999; Terborgh, 1999; see also Wilshusen et al., 2002). Elements of this world view are not far from reality on the ground in the KTP. Some San members interviewed argued that KTP regulations (that are ironically approved by the Traditional Council) did not represent the interests of all community members. While the land restitution and the co-management attempts between KTP authorities and local communities attracted a high political profile, KTPM and some NGOs may have achieved regional and global mileage from this project that does not fully include local communities. A KTP management staff commented on the matter:

“Kgalagadi Transfrontier Park is in the spotlight, with this conservation with people, SANParks get mileage and overseas markets are attracted”.

Analysis of the !Ae!Hai Kalahari Heritage Park agreement showed that the conditions for making the rules were somewhat restrictive since they were largely in the hands of KTPM. It was evident that the KTPM largely used the ‘traditional’ narrative to minimise or restrict resource use in the Contract Park. For example, hunting in the Contract Park is not allowed without culture and traditional dance. Rules in the Park state that traditional rituals are supposed to be respected and applied, and youths will be included according to custom. Traditional hunting methods (bow and arrow) and materials should be used, including assegai and knobkerries while long bows are prohibited. Taking hunted meat out of the Park is also forbidden. KTPM ironically deal closely with ‘traditionalist’ proponents (Section 7.4.6) (respected elders) in the area.

Some local members interviewed complained that local leaders were co-opted and seemingly used to champion resource preservation rather than resource conservation, in the name of preserving culture (see also Finer et al., 2009). The so called ‘modernists’ (Section 7.4.6) argued that KTPM traditional thinking was at best an effort to exclude San members from resource access and at worst a conscious approach to imagine that the San still lived in the past as hunter-gatherers, where they could assemble in the Park (as a family) for the purposes

of consuming bush meat (Section 7.4.6). Moreover, the respondents were against a romantic hunter-gatherer world view that refers to lack of interest shown by such groups in attaining material wealth, which they said only served to further marginalise them. Thus a ‘hunter-gatherer’ world view of the San culture is seen by other San members as a strategy to either allow or restrict access to natural resources – demonstrating how different interpretations of culture by certain institutions are used to gain power to control resource access and behaviour of users. According to Ramutsindela (2002, 2007) and Kepe et al. (2005), landownership and authority over land is not just about having ownership rights but is about who uses the land or who dictates the rules of land use. The San and Mier communities are autonomous entities in the agreement but not independent hence they cannot make decisions in their own right.

As highlighted in Chapter 4 (Section 4.2.2), there is a further agreement between KTPM and the San community in the rest of the Park for cultural visits and symbolic purposes for interested members. However, normal provisions with regard to access to rest of the Park (e.g. normal access fees, etc.) apply to San members who may want do their ‘walk abouts’ for rekindling their cultural and spiritual connections to their ancestral land. This arrangement potentially restricts access to natural resources, since most communities may not be able to raise Park entry fees, considering that they also have to meet the costs of travelling from the farms located approximately 60 km away. There is also concern that while KTPM prohibits the San and Mier people from collecting dead fuel in the Park, it actually buys fuelwood (at ZAR0.60/kg) from the surrounding San and Mier farms for selling (at ZAR5/kg) to tourists who visit the Park. Field evidence and surveys showed that KTPM actually provides an incentive for unsustainable harvesting of fuelwood in the San farms for meagre incomes – which increases the likelihood of future pressure on Park resources once fuelwood, a key livelihood source, is depleted in the resettlement farms.

These findings align with the widely argued opinion that conservation agencies have conservation objectives uppermost in their corporate goals and conscience, with their expertise and experience focused on biodiversity conservation (e.g. Wilshusen et al., 2002; Kepe et al., 2005, Berkes, 2007). This is supported by the fact that more staff are assigned to resource protection (wardens and guards) as compared to ‘People and Conservation’ (just one officer). Overall, the findings illustrate that power dictates the ability and capacity to make rules and without the power to make rules, decision making is compromised which is

consistent with one of this study's conceptual frameworks, political ecology – that highlights that asymmetrical power relations among actors shape natural resource access and management. During personal interviews, some San respondents said that they do not trust their community leaders (and to a lesser extent SANParks), since their (modernised San) interests (e.g. hunting in the Contract Park for subsistence uses) are considered as not being part of San cultural practices. Loss of trust among community members in co-management initiatives is a dilemma since it is argued that if people trust each other and expect others to cooperate, they are likely to contribute to collective action, form groups, attend and participate in meetings, making it easier to delegate tasks, share information or to devolve power to local levels (Pretty and Ward, 2001; Berkes, 2008b). Ntiamoa-Baidu et al. (2001) emphasise that trust particularly appears to be a determinant of success in many cases of co-management, as a prelude to building a working relationship that improves natural resource governance. However, as one can discern from the preceding discussions, the situation is far from the desired one. The findings imply that imposing blue-print co-management approaches (such as the one solely based on traditional or cultural practices in the Contract Park) that do not factor in the various preferences and perceptions of different people is likely to fail in the long run.

7.4.5.2 NGOs, interactions with community groups and natural resources governance

In many communities worldwide, NGOs have active and leading roles in aspects related to conservation, particularly in co-management, community-based natural resource governance arrangements and rural livelihoods. Of the NGOs in the Kalahari area (Table 7.3), all have traditionally focused on cultural preservation aspects and eco-tourism opportunities for the San, whilst Farm Africa has played a smaller role, predominantly focusing on a Land Care project in the area and livestock on the farms owned by the San and Mier (Grossman and Holden, 2009). Kepe et al. (2005) mention that the Mier have been overlooked largely due to the much-publicised discourses on indigenous peoples and campaigns internationally for recognising aboriginal rights, such that the San claim was highly publicised and held a high political profile. Indeed, from being one of the most powerless and marginalised groups in the region, the San now have significant national and international support through organisations such as SASI, Government (Department of Land Affairs), Technical advisors and other interested actors.

Literature shows that NGOs' can easily get funding both locally and globally if they work along traditional and cultural land rights issues (Finer et al., 2009). The findings illustrate that traditionalists receive much administrative and financial support from NGOs, SANParks and other like-minded agencies. For instance, the National Lottery Trust Distribution Fund donated ZAR4.8 million (US\$685,714) in support of the communities to pursue their livelihood opportunities and cultural regeneration through sustainable use of resources in their Contract Park (see also Section 7.5). The money was administered by the Peace Parks Foundation and locally through the San Technical Advisors. However, many local communities argued that this and other donor money was not really benefiting the communities. Instead, it only benefited certain individuals who were known to be strong traditionalists while little attention was, paid in understanding what livelihoods mean for other social groups.

Indeed, most actors such as the Park Committee, Traditional Council and to a certain extent NGOs such as SASI, Technical Advisors among others identify strongly with the San culture, identity and (traditional) subsistence use of resources. Their predominant aim is to establish conditions that restore and protect their traditional values. Therefore, there are concerns raised that the CPA Traditional leaders and other subsidiary committees arbitrarily decide on issues of land administration, allocation and applicable land use rights that only benefit 'traditionalists' (see next Section). Though these NGO actors sometimes have common values, each of them had distinct goals and ways of achieving them and sometimes the actors' goals and the performances were not consistent with the expectations of various groups of the San community. For example, a significant proportion of San respondents (60 %) generally complained about how community money was spent by SASI. Though SASI reported that profits raised from hunting quotas in 2010 were used to pay for community members' debts at local shops, many people claimed that they did not benefit from the scheme and further questioned the criteria that was used to select members in need. Some community members interviewed claimed that the money benefitted well-off households (due to their influence in the community) rather than the needy (see Chapter 5, Section 5.3.5). A further 24 % had no idea at all about any decisions made or profits raised since they were 'minding their own business'. Some San members were not happy about the criteria by which hunting quotas were allocated or the high hunting fees that were gazetted without their consent.

Moreover, during field work it became apparent that the local health centre (that is operated by SASI and sells traditional medicines) was open albeit intermittently and the training of local San guides had apparently stopped or was not in full throttle as before. In addition, a field visit to the community Bush Camp in Witdraai showed the facility was in a state of disrepair with a serious need for a substantial face-lift. In addition, many crafters preferred to sell their crafts directly along the road to the Park than to SîSEN crafts, since they did not get their profits as per agreement with SASI. Such issues serve to confirm the concerns highlighted by respondents and therefore do not only question the effectiveness and accountability of SASI in particular but also other actors such as DLA and NGOs, who work closely with the San community.

Field evidence supports Robins's (2001) argument that community divisions could have been deepened by contradictory NGOs and donors' single-sided objectives to provide support for traditional leadership, San language and cultural survival and to inculcate modern ideas such as livestock farming. Finer et al. (2009) assert that even such seemingly benign entities such as NGOs contribute to a vicious cycle that undermines the development of effective local community bodies and institutions, since they tend to work with specific individuals or groups of individuals. They further argue that local communities are often antagonistic to each other, and in their dealings with outsiders they can be disorganised, unruly, easily co-opted, and unpredictable. This perhaps highlights the challenges of multiple NGO actors and pitfalls of externally initiated interventions.

7.4.6 Conflicting interests and heterogeneity within communities

Homogeneity may have a bearing on collective action. For example, sharing important social, cultural, or economic characteristics may increase the desire to co-operate (Ostrom, 1990; Cleaver, 1999). The challenge is that heterogeneity can exist along multiple dimensions as will be illustrated. As noted in Chapter 4, the present day #Khomani San people, due in a large part to their history of forced removals and separation, are not a homogeneous society but a collection of different people brought together to make up the required number for the land claim. They are united only by their ancestors' experience of being hunters and gatherers in the Kalahari region and by their dispossession and marginalisation (Chennells, 2001; 2009).

Key informant interviews with SANParks officials, San traditional leaders and Technical Advisors revealed that while prior to the land claim community solidarity, social cohesion and cultural continuity were somewhat evident, leading to a successful land claim, the post settlement period was and continues to be characterised by social fragmentation and intra-community conflicts between so-called ‘traditionalists’ and ‘modern Bushmen’. Interviews with traditionalists (groups of people who follow customary practices) showed that on the one hand, traditionalists want land to be reserved for traditional purposes such as hunting, gathering of medicinal and food plants and cultural connection to land such as walks and rituals. The traditionalist group wishes the original agreement (where San resettlement land was designated for specific purposes such as livestock production, traditional use and wildlife farming) to stand. Their argument is that specific pieces of land should be protected to preserve and revive San cultural heritage. Livestock destroy culturally important plant species such as medicinal plants. The traditionalists group further argues that, though they may not use the medicinal plants as before due to the availability of modern health facilities such as mobile clinics, protecting their heritage is of paramount importance for the benefit of future generations. Their argument is supported by emerging evidence that wild game is disappearing due to uncontrolled and unsustainable hunting practices in the community-owned San resettlement farms (Erin and Miershoop pan) (SANParks, 2009, pers. comm.; Massyn and Humphrey, 2010). Given this, they strongly argue that there is need for some form of protection; for instance game farms that could protect culturally important species such as springbok, gemsbok and eland that will not only preserve cultural practices and heritage values but also bring income to the community through eco-tourism activities.

On the other hand, personal interviews with the modernists (loosely described as modernised San including those interested in livestock farming) revealed that this group of people wanted more land for livestock production and housing. The livestock and housing proponents, on the other hand argue that their land has so far been unproductive and therefore, a ‘white elephant’. They said that more land, including that earmarked for cultural purposes, should be made available for livestock production, income generation and housing development. This group believes that things have changed and that the bush can no longer sustain the old Bushmen lifestyle. Rather the resettlement land should be used in line with their changed lifestyles. These internal differences within the San have led to, for example, about ZAR15 million (US\$2.14 million) housing project funds (for the San) lying idle in government coffers

because they cannot agree on where to build the houses (Makomele, 2009, per comm.). They further argued that traditional conservation only benefited the traditionalists. For example, many local members complained that some traditionalists hunted illegally since they did not apply for hunting licenses as per the rules and hunt outside the hunting season (between May and August). Most respondents (within the modernist group) claimed that a large number of springboks have been unlawfully and unsustainably harvested in the name of 'traditional hunting' that excludes some CPA members, often labeled modernists. Subsequently, these contestations have initiated a debate about who has the right to manage and make decisions about the game and other resources on the San resettlement farms.

Further, some San members said during interviews that conflicts between San social groups are as a result of opportunities that come up with external players. A case in point relates to the South African Council for Scientific and Industrial Research (CSIR) who together with an American pharmaceutical company, Pfizer, wanted to develop an indigenous plant called *Hoodia gordinii* into an appetite suppressant drug (see Chennells, 2007; Chapter 3, Section 3.6; Chapter 8, Section 8.4). Though the conflict involving the developing a drug was finally resolved (CSIR had conducted research on and patented Hoodia without prior informed consent by the traditional owners, the San, who had used the plant for many years), claims of deepened conflicts resulting from CSIR one-sided approach of working with the San Traditional Council only were reported. Robins (2001) argues that the traditionalist versus modern Bushmen dichotomy is itself at the heart of donor and NGO development agendas, and ultimately widens the differences already present in the community. The internal conflicts and divergent meanings at the heart of this struggle are well reflected in the following statement by one San member interested in livestock production:

“. . .but things have changed; there is no more food in the veld to eat. The truth is the Bushmen cannot go back to the bush to live like their forefathers. Today the Bushmen buy coffee from the shop but used to make coffee in the bush (from the witgatboom roots). They also buy meat from the shop rather than relying on bush meat. The important thing is to know where you come from. I am a real Bushman in my thinking and in my blood. In the past, the Bushmen did not drink alcohol like what is happening today. Money is also important now and you can never go anywhere in the world without money. Today being San is determined by traditional regalia not by their values. There is nothing like traditional and modern San”.

However, some argue that this is also partly due to the Department of Land Affairs (DLA) and Mier Municipality neglect and tardiness and a general lack of any post-settlement support (SAHRC, 2004; see also Andrew et al., 2003). For example, under the agreement, the Mier Municipality should provide services such as houses, water, sanitation and electricity, as well as develop hunting and tourism infrastructure and ‘Arts and Culture Centres’ (SAHRC, 2004). Nonetheless, it is unclear whether and when these projects will begin. The conflicts have manifested themselves in different forms, from absconding meetings, general lack of interest and selective cooperation to violent actions. For example, it is reported that a former commercial farmer was allegedly hit by a shovel by a local San member. Such struggles and subsequent erosion of vision and trust impact on the higher level management structures required for natural resource management. These tensions highlight the fact that natural resource governance is characterised by contestations over meanings, inherent power play and general disagreement regarding land and resource use strategies.

From a political ecology perspective discussed in this Chapter’s conceptual framework (Section 7.2.2), there is a deepening conflict and power struggle between different San social groups regarding how land is used and controlled. These findings show that the San community-owned and managed landscapes are complex, conflict-ridden and far from being homogeneous cultural constructions contrary to common beliefs and expectations. These contestations are in line with the IAD framework (Section 7.2.2) that demonstrates that the attributes of the community within which actors are embedded (e.g. common understanding, homogeneity or heterogeneity of resource use preferences and distribution of resources among members), shape actor’s choices, interactions, governance of resources and the overall conservation and livelihood outcomes.

Interviews with selected San and Mier respondents revealed that the two community groups have sharply contrasting, but also converging, views on what the Contract Park can offer them – partly an illustration of the intercultural differentiation between them. For example, the Mier, in keeping with their history, are generally more interested in livestock farming than gathering of plants and hunting of wild animals. While the San traditionalist group feel that the main importance of the land is in terms of heritage conservation and preservation of their culture, the Mier community, like the ‘modern San’, is more concerned with the economic benefits (e.g. livestock production, job creation) their land can bring. This is partly the reason

why the Mier have often been excluded from donor and other poverty alleviation and conservation initiatives and have thus come to feel neglected in favour of the San (Kepe et al., 2005). This creates problems for the Mier as they feel they are not obtaining the same support and recognition, and leaves them relatively powerless on the JMB and in other structures. At the same time, it became clear from surveys, that there is also a growing mistrust of the Mier by the #Khomani San with reports that the Mier are poaching firewood and wild animals in nearby San resettlement farms.

Within the Mier, heterogeneity is embedded in land tenure issues and status and power of individuals. Most interviewed Mier respondents who had their livestock on communal land lamented that the land was not large enough for their livestock and indicated they would want to have their own private land. They argued that well-off people (farmers) had more influence in the Municipality hence easily got private land and were overall doing better than communal farmers (see Chapter 5). There is also growing antagonism between farmers with livestock on communal farms and those without farmland at all, due to the questionable ways and procedures through which land is given. It should also be emphasised that interviews with different respondents (youths, men and women) within the San and Mier communities, showed that some San and Mier members are were not at all interested in potential land-based livelihood activities in the Contract Park and the resettlement farms as they wanted to pursue other livelihood strategies such as paid employment. As can be discerned from the preceding discussion, there is substantial heterogeneity between and within the San and Mier communities and access to land is contested. Who gets what land is a clear demonstration of the embedded power relations in land and resource allocation (see Scoones, 1998), with particular groups of people being perceived to be favoured to the disadvantage of others (e.g. the enrichment of a few influential rich Mier livestock farmers, see also Chapter 5).

Unfortunately decreasing collective action, as illustrated in this study, results in individualistic behaviour that undermines governance arrangements and results in unsustainable resource use on the resettlement farms with potential long term negative impacts on livelihoods. While it is profitable in the short-term for individuals to harvest resources, long-term impacts are depressing. For example, though a few households (just 7 % and 4 % of sampled San and Mier households respectively) reported fuelwood sales, key informant interviews and observations showed that illegal fuelwood (especially camel thorn) harvesting for commercial

purposes was taking place on both San and Mier farms. Camel thorn is a nationally protected species in South Africa. As noted earlier, uncontrolled and unsustainable hunting practices have also been reported on San resettlement farms (Massyn and Humphrey, 2010). This means there is compelling need for local communities (despite their seemingly wide differences) to unite towards the common good of improving livelihoods through good natural resource governance. As one San member echoed:

“People need to work together, understand each other and respect and trust the opinions of others. At the moment the community is very much divided”.

Given these inter and intra-community differences, it can perhaps be argued that the problems of natural resource governance in the San and Mier resettlement farms arise from the decisions based on (false) perceptions that the preferences and perceptions of the different San and Mier users are the same. As Ostrom et al. (2007) reflect, community-managed areas such as the San and Mier resettlement farms and collaborative approaches such as the joint management of the Contract Park are frequently “portrayed as cure-all”. But, the findings of this study illustrate that individuals facing the same situation (related to resource use) vary in their needs, behaviour and reactions.

Thus, in keeping with the Sustainable Livelihoods and the Institutional Analysis and Development Frameworks, the findings illustrate that the different nature of communities in which different actors operate, transforming structures, relationships and institutions shape access to opportunities, and produce multifarious forms of social, economic and environmental outcomes. The present study shows that social systems for conservation and livelihoods are complex, involving multiple actors and institutions, with different and sometimes overlapping set of goals that results in resource use-related conflicts.

7.4.7 Accountability and benefit perceptions

This section is based on the surveys administered among the San and Mier communities to measure aspects related to accountability and perceptions of benefits among others. Empirical evidence based on proxies used to measure good governance such as accountability, participation and benefits perceptions (Section 7.3) are discussed in detail. According to Collomb et al. (2010) accountability and benefits perception are indicators of good

governance and socio-economic benefits because they identify observable signs that particular elements of sustainable natural resource management are being met by the available actors and institutions.

7.4.7.1 Accountability aspects within the San community

According to Collomb et al. (2010), indicators of good governance and socio-economic benefits (such as horizontal accountability and benefits perception respectively) identify observable signs that particular elements of sustainable resource management are being met (by institutions). Most San respondents interviewed (60 %) said the CPA leaders generally made decisions without telling them, and they were only told what was happening. Out of this, only 12 % said the decisions were good, while 64 % felt that the decisions made were bad and selfish. According to the CPA constitution, CPA members have certain rights and responsibilities related to drafting and understanding of the constitution, use of their land (for residence, agriculture, and natural resource use such as using wild plants and hunting), choosing of committee members, standing in elections and information feedback (on general progress of community activities, assets, finances and management issues) through the CPA executive committee but they have not been able to exercise these rights since the CPA committee was disbanded (see Section 7.4.3.1).

However, slightly more than half of San respondents (52 %) indicated they were consulted during the constitution building process, while only 44 % said the constitution had been explained to them earlier or in the past 12 months. This is perhaps understandable because since the land restitution in 1999, new members have gradually settled in the area. As a matter of fact ever since the commencement of this project in 2009, newly resettled San members have been continuously encountered. Predictably, a majority of the respondents (72 %) generally perceived that the constitution did not organise the community well. Out of this, 50 % said the constitution was either bad or very bad, 14 % (reasonably well) or 16 % (neutral). Seventy-eight percent said that most people did not follow the constitution as demonstrated by reported cases of corruption, poaching, heightened intra-community conflicts among other issues. Twenty-percent had no knowledge of the constitution at all, perhaps representing the newly resettled members.

Respondents were asked if they had knowledge of their rights related to standing in an election, making decisions on the use of wildlife or CPA money, remove incompetent/corrupt officers, or choosing leaders among others in accordance with the local constitution. Table 7.4 shows the proportion of respondents who had knowledge of such rights. As can be clearly observed from Table 7.4, knowledge of certain rights such as the right to stand in an election, vote for CPA leaders and remove corrupt leaders or employees is generally high. However, less than half of the respondents had knowledge about rights related to checking financial accountability, amending the constitution, demand for a meeting and choosing local safari operators or tourism partners. While some of the rights are not explicit, they are implicit in the CPA constitution.

Table 7.4: Knowledge of local constitutional rights among San respondents

Right	Proportion (%) of respondents
Stand in an election definite	100
Vote / choose CPA leaders	98
Remove incompetent/corrupt employees	66
Amend the constitution	44
Make decisions on the use of wildlife/CPA money	42
Check how CPA money was spent	30
Demand for a meeting (e.g. for explanation of committee performance)	26
Set animal quotas for hunting	22
Choose your tourism partners (Joint Venture)	18
Choose your hunting safari operator	16

Ninety percent of San respondents did not have any knowledge of financial reports. Most respondents (86 %) perceived that CPA finances were badly accounted for (since there was no annual budget and expenditure showing sources and amount of income generated). Among other things, about half of both the San and Mier respondents interviewed did not know how and how much money was spent, progress of projects, hunting quotas, how many animals were shot in the previous year, the price of animals sold to the hunters, the income generated from community campsites and the generated income from the Contract Park community lodge.

Responses on questions related to local community meetings, attendance, agendas and outcomes, overall revealed that most people felt this was unsatisfactory. Only 22 % of the San respondents indicated they had attended both the monthly and annual general meeting, while the rest of the respondents either did not know there was a meeting or did not feel like attending. Out of those who attended, a majority (64 %) felt the meetings were generally neutral to less than satisfactory. Many respondents claimed that there were so many uncoordinated meetings such that most people had no time to attend, especially considering that the outcomes of the meetings did not directly benefit their households. It is the nature of human behaviour to abscond activities that do not benefit them. Asked if they knew the CPA chairman or leader and financial manager, several names were mentioned (in the Department of Land Affairs, SASI, Traditional Council, Technical Advisory Team among others). This confirms and illustrates the effects of the existence of many actors and their divergent interests and the consequent cumbersome and uncoordinated meetings, as this testimony by one San respondent illustrates:

“Leaders change after every meeting, people are confused”.

Twenty percent of respondents (who attended meetings) said conflicts masked and derailed the purpose of most meetings. Respondents cited information dissemination (78 %), corruption (44 %), lack of jobs and nepotism issues (12 %), no benefits and empty promises (40 %) as the predominant reasons behind conflicts and general lack of interest in CPA meetings and activities. Aspects related to culture, in particular ethnic identity and the associated traditionalist – modernist debate (see Section 7.4.6) were also said to be at the heart of community conflicts. Referring to the lack of access to information on the Contract Park by ordinary community members, one San respondent commented:

“I need a permit before going to the Park, but I don’t know the procedures of how to get it”.

Indeed, many respondents were not aware of how the Park and Contract Park functions and how they could get permits for visiting it. Some of the respondents said they did not get feedback because administrators perceived that they could not understand financial issues.

This stereotyping is clearly illustrated in one member’s (Traditional leader’s son) comments on the matter:

“We are the true Bushmen. We do not get feedback on monetary issues because they think we are the true Bushmen and we do not understand figures but we need those figures. Only the Mier people take high positions (referring to the local SASI financial administrator).”

However, the lack of easy access to information is perhaps and partly due to geographic location. For example, people in Rietfontein and Welkom are far from Andriesvale (the main San location where administrative offices are located) and hence do not get informed in time. Nonetheless, those people claimed that they only got informed when the authorities needed them most.

7.4.7.2 Accountability aspects within the Mier community

Very few respondents (ranging from 0 - 29 %) knew about the existence of a community Contract Park and game farms and how these land parcels were governed (Table 7.5). A few households who knew about their existence had visited them. However, they did not know how much conservation-related income was generated from the game farms and Contract Park for the Municipality annually.

Table 7.5: Proportion of Mier respondents with knowledge on different land parcels and their management

Respondents	Land parcel	
	Contract Park	Game Farm
% respondents with knowledge of the existence of community land parcels	29	25
% respondents with knowledge land parcel management responsibility	10	11
% respondents who attended or have knowledge of feedback meetings	0	0
% respondents with knowledge of income raised annually from Contract Park and game farms	0	0

Though differences within the Mier community are not as conspicuous as their San counterparts, they have their own unique problems. For example, the preconditions under which one is awarded land by the Municipality has lately come under scrutiny as many

landless members believed it only benefitted the rich, senior municipal workers and their relatives (see Section 7.4.6). All Mier households (54 % of livestock owners) who grazed their livestock in communal farms perceived that communal farms were too small to accommodate the number of livestock they had or wished to have. In addition, cultural differences were noted between the older and younger Mier generations. Though historically, the older generation almost entirely depended on livestock production, a significant proportion of the youth was not at all interested in livestock farming (see also Koster, 2000). The youth are getting more educated and their wishes for a 'good life' transcend livestock production as a livelihood activity. They want to see development projects that generate job opportunities.

With regards to benefits perception, most Mier members interviewed mentioned that they did not get any meaningful benefits promised from the resettlement farms and Contract Park. In actual fact, they said they did not know they were supposed to benefit (in some way) from the Contract Park and game farms. Households interviewed generally felt that game hunting fees were too high for them, though local members paid less than external hunters. They further argued that the hunting fees were unaffordable and only benefitted well-off households. The Mier Municipality said it used these hunting fees and other proceeds from the Contract Park to develop the area under its jurisdiction and help lower taxes paid by community members. Nevertheless, all households did not know how much money was generated by several game farms and the Contract Park per year, or what they would have paid in taxes if the game ranches did not exist (Koster, 2000). An analysis of membership in organisations revealed that only a few Mier respondents (8 %) were members of an organisation. Most respondents said that they were not interested in joining organisations or attending meetings because only community (political) leaders benefited from participation in such meetings.

As can be learnt, the communities are characterised by heterogeneity, differential or zero-access to critical information and a general lack of knowledge about how their resources are governed. However, without accountability, transparency and access to information can be compromised and therefore the influence that communities may potentially have on decision making. When people lack information, coordination becomes difficult despite common goals (Collomb et al., 2010).

7.4.7.3 San and Mier perceptions of benefits

San households were asked if they perceived to have had benefitted from the land restitution programme (Contract Park and farms). The respondents gave mixed responses, though many people felt the benefits were relatively worthwhile in the farms but either non-existent or curtailed in the Contract Park. Table 7.6 shows the respondents' overall perceptions of benefit. Forty-one percent of the San respondents (Table 7.6) did not give comments because they either did not use any resource from the Park or did not know what form of benefits were supposed to be derived from the land parcels apart from getting fuelwood (in the farms) for subsistence use (Section 7.3). Thirty-one percent perceived that they had not benefitted from the land restitution. This group of respondents said that things were not so different from before they got land. They cited lack of basic services including perennial water shortages, lack of toilets, houses and electricity as indicators that their situation has not yet improved. Some members highlighted that they had become poorer than before and that this was leading them to unsustainable resource use practices such as commercialising camel thorn and allowing outsiders to graze their livestock in communal property for a small fee.

Table 7.6: San respondents' general benefit perception from the Park and farms

Benefit perception	% respondents (n=100)
No comments, do not know if we are supposed to benefit in any way	41
Empty promises, nothing has changed, no benefits at all	31
Benefitted but not satisfied, still need improvement	16
Land restitution improved lives (has access to land and livestock)	4
Only benefitted a few individuals	4
Benefitted but conflicts are drawing us back	3
No money is getting to the community	1

Indeed, reports and surveys showed that while rules that prevent members of the San community trading their rights to utilise benefits on the communal farms exist, some members reportedly did so. Apart from selling the natural resource products they individually produced from utilising natural resource rights, some members allowed non-members to, for example, bring livestock onto San community farms for the purposes of generating extra cash income. In the process some poor San members have become labourers in their resettlement farms –

looking after third party livestock. The following comment illustrates that some community members have become herders of outsiders' livestock in their own community farms:

“We have become servants in our own father’s house.”

Other San members interviewed believed they were used in the land claim to make the required numbers and have since become increasingly neglected and marginalised by their leaders. They further alleged that job opportunities in the Park and within the surrounding resettlement farms primarily benefitted people from Andriesvale, in particular those who are politically powerful (such as the community leaders and traditionalists). One case in point relates to the *Imbiwe* field school (Chapter 6, Section 6.4.6) where it is claimed that most beneficiaries originate from Andriesvale.

Further, at the moment, Tourism Development Plans for the San community are being drafted for the other sections of the Park and resettlement farms. However, many people either did not know about this arrangement or believed that it was going to be a replica of the Contract Park where no cash benefits really trickled down to local communities. Such benefits are supposed to be in the form of infrastructural development but almost all households said there were no development projects in the communities arising from the Contract Park's profits. Both the San and Mier perceived that apart from seasonal employment opportunities and selling of crafts, the cash benefits from the Contract Park did not necessarily benefit them. Some 16 % of the respondents said they had benefitted but there was need for improvement, while a few were completely satisfied. A community member expressed the following on the matter:

“The land restitution improved our lives because some people are working for SASI, SANParks and local lodges (as guides).”

Lack of land management capacity by local communities (especially those interested in livestock production) was highlighted as a critical hindrance to successful livestock production. The following comment was said by one of many community members interested in livestock farming:

“There are empty promises. The government just gave us land without skills, capacity and animals (referring to cattle, sheep and goats) for livestock production for a living”.

The above testimony was also a reaction to the fact that the government, through the Department of Land Affairs has not yet appointed a Farm Manager as promised since the land claim and has not allowed a local committee to be appointed since it was disbanded in 2002. In an SABC 2 News Interview (dated 22 February 2010), the Premier of the Northern Cape, Hazel Jenkins indirectly noted the lack of skills and capacity issues when she said that Municipalities were financially strapped in order to support land reform through skills development, training and farming support for resettled households. Institution and capacity building and knowledge sharing among local members and other actors could help in improving the lives of local communities and towards achieving the goal of self-sufficiency. However, taking into account positives and negatives the San and Mier overall perception towards wildlife and how it could improve their lives was strongly positive for all the respondents. Surprisingly, when asked if SANParks (KTPM) respected community views (in light of limited access and expected benefits from the Contract Park), a significant proportion (47 %) said “yes”, while, 26 % and 27 % said “no” and “don’t know” respectively. Those who said yes perceived that KTPM should be hailed for allowing resource use by the local people in the first place, and that KTPM was more organised than their local leaders, generally provided feedback through their local leaders who did not disseminate the information, created job opportunities and markets (for crafts) and showed effort to involve them. Some of the respondents further said that they could not go to the Park due to the long distance (at least 65 km from areas around Andriesvale).

As could be learnt from the above sections, resource benefits are either curtailed or non-existent for both San and Mier, which has overall resulted in lack of cooperation in community-based related projects. Cleaver (1999) asserts that where communities do not benefit from community-based initiatives, non-participation in collective activities is rational and beneficial since it reduces costs and other structural constraints of resource use. Ostrom (1990) design principles (Section 7.2.3) also stress that among other things, the distribution of benefits should be roughly match the costs of one’s commitment and that collective choice arrangements are dependent on and should enable participation of all affected individual in resource management activities. Ostrom further adds that institutional change is incremental and sequential, enabling users to realise the benefits of change before moving on to new and desirable institutional arrangements. Therefore, unfulfilled expectations, combined with suspicion of committee leaders and coordination problems, discourage cooperative norms and

thus capacities for collective action for governance of common property resources, as illustrated in this study. Hence, individual members find it profitable to override and illegally harvest (sometimes unsustainably) natural resources. This raises questions such as; do the institutions and their actors meaningfully represent the interests of all the community members?

7.5 CORE STRATEGIES FOR IMPROVING NATURAL RESOURCE GOVERNANCE IN THE PARK AND RESETTLEMENT FARMS

Is co-management successfully being achieved in the Contract Park? Is community-based management working as expected in the farms? These are some of the questions arising from the various discussions in the preceding sections. The answer has to be partly no because of the conflicts and challenges discussed and a cautious yes given the emerging opportunities and promising advances from the different land parcels.

Recent events inside the Contract Park provide good opportunities for strengthening co-management. The government's decision to build a community lodge (!Xaus Lodge) in the Park shows the positive and encouraging efforts towards the welfare of the community through ecotourism and therefore the creation of jobs and income generating opportunities such as craft sales. The lodge is seen as a means of earning rent from the concessionaire, providing jobs to community members and teaching traditional skills to both San youths and tourists. At present, a private operator is running the lodge on behalf of the two communities. The concession fee is divided between the three parties (SANParks, San and Mier) and the private operator and must be used for the development and maintenance of Park and Mier area infrastructure.

Furthermore, the National Lottery Trust Distribution Fund made available ZAR4.8 million (US\$686 000) for the Contract Park in support of the communities to pursue their livelihood opportunities and cultural regeneration through sustainable use of their ancestral land (Section 7.4.5.2). Sustainable resource use protocols for the Contract Park have been developed and the development of a monitoring and evaluation system (using cyber trackers) for sustainable resource use is being undertaken by the San Technical Advisors (see #Khomani San, 2007). This will help show *what* resources are *where* and *when*. Cultural protection and enhancement programmes such as the *Imbiwe*, *Bobbenjanskop* and *Tierwyfie* field schools in the Park and

the Bushmen camp in Witdraai farm are further positive enterprises, but need immediate monitoring and further expansion if they are to meaningfully benefit the #Khomani San. Also encouraging is the completion of a Development and Management Plan for farm Erin, a 5000 ha farm outside the Park, to manage it as a fenced game farm. This is intended to benefit the #Khomani San community through employment and reconnection to the 'wild' as experienced Bushmen trackers and hunting guides will provide a unique hunting experience for visitors (EMDP, 2009).

However, while the Contract Park provides a window of opportunity for the local communities, ecotourism initiatives have been criticised for not improving livelihood security, in particular the tendency to create temporary employment and largely benefitting external players instead of local communities (see Laudati, 2010). Further, whilst the conservation objectives of the Contract Park are less directly compromised than in the farms, in the medium to longer term they may be compromised if anticipated social and economic benefits do not accrue to the community and if areas of conflict are not adequately addressed (see Grossman and Holden, 2009). Given the presence of many actors with multiple and conflicting objectives, divided communities, uncoordinated conservation and livelihood goals and unsustainable natural resource use practices, some strategies that may improve the governance of natural resources are suggested (see also Chapter 8, Section 8.3).

First, the *rights* of community members and *responsibilities* of actors should be revisited where the agreements in the Contract Park and farms clearly define community members' rights and the responsibilities of actors. Second, the various actors need to become entirely *capacitated* to address, become aware and respectful of the access and rights held by local San and Mier people. Actors need to recognise the different power dynamics, needs and aspirations embedded in the broader societal relationships. Adaptive actors and institutions are necessary in the context of this case study, where changes in the economic, social, political processes and structures of the San and Mier people may substantially alter the ways in which access to wild resource use is dealt with (see Folke et al., 2005).

Third, with regard to natural resource management in the farms, farm-specific *rules* need to be written down by the San and their representatives through a negotiated process to define and get a buy in into these rules, especially given the composition of the communities (a mix

of traditionalists and modernists). Though rules and regulations give a narrow understanding of what happens on the ground, they guide actions and form a framework for monitoring use. Fourth, given that the San CPA is still under DLA administration, there is need for the *government* to take an *active role* (not necessarily a leading one), in order to spearhead the need for conservation and meaningfully contribute to local livelihoods in both the Park and the resettlement farms (e.g. appointing a Farm Manager and electing a CPA Executive Committee). A willingness to gradually devolve authority and the embracing of the principle and ethic of community-based and co-management in the farms and Park respectively is the key to potentially unlock all the benefits that may arise from cooperation among all the actors involved, in particular for the San and Mier communities.

The fifth issue relates to *coordination* and *collective action*. Apart from providing information (on finances, resource stocks, quotas, etc.), actors must overcome coordination problems, distributional struggles and the incentive problems associated with access to resources. Constructing effective co- and community-based management arrangements is not only a matter of building actors and institutions, it is also a matter of building *social capital* in general (Pretty and Ward, 2001; Section 7.4.6; Chapter 3, Section 3.2.3; Chapter 6, Section 6.4.2.3) and in particular *trust* between the parties (see Berkes, 2008b). Lastly and perhaps most importantly, the above suggestions come with high *transaction costs* for both communities and actors. Therefore, the San and Mier communities should cultivate a high degree of *tolerance* and *commitment* while at the same time there is need for urgent provision of the necessary *resources* for capacity building and skills transfer and the willingness to do so by the responsible actors.

7.6 CONCLUSION

Given multiple actors, with multiple and sometimes conflicting objectives, effort towards the establishment of appropriate local institutions and improvement of relationships among actors should consider that natural resources can only be managed at multiple levels, with vertical and horizontal interplay and accountability among actors (see Berkes, 2007). Good natural resources governance should be measured against meaningful involvement of the San and Mier members making sure that effective user participation, bridging of organisations, partnerships and local leadership are integral to the process. However, in light of the differences that often characterise communities (as illustrated in this Chapter), ‘situation-

specific' and 'tailor- made' rather than 'rigid' and 'blueprint' approaches are likely to be more successful in future natural resource governance arrangements involving local communities. In other words, co-management and community-based natural resource governance arrangements should be based on a broader understanding of the diverse interests of different actors in order to strike a balance between ecological integrity and local livelihood needs.

PART III: INTEGRATION, ANALYSIS AND CONCLUSION

CHAPTER 8

NATURAL RESOURCES, LIVELIHOODS, GOVERNANCE AND COMPLEXITY IN THE KALAHARI: A SYNTHESIS OF FINDINGS

8.1 INTRODUCTION

How significant are dryland system natural resources from the Kgalagadi Transfrontier Park and the surrounding resettlement farms to the San and Mier communities? What are the cultural values and the culturally-inspired uses of natural resources to the two community groups? What institutions govern natural resource access and use in the different land parcels and how effective are they? These are some questions that have been addressed in Chapters 5, 6 and 7. This Chapter attempts to analyse the meaning of the findings in Chapters 5, 6 and 7 for conservation, sustainable natural resource governance and livelihood outcomes for the #Khomani San and Meir within the KTP and surrounds. It further suggests issues and questions that need to be considered for an improved understanding of these complex issues in future research.

To do this, first, the Chapter develops a framework (Figure 8.1) to enable an integrated analysis of how one set of results from the empirical chapters informs another, thereby drawing together the different findings of this research. Second, and in light of the findings, specific practical and local level recommendations for sustainable natural resource management in the Contract Park, the rest of Kgalagadi Transfrontier Park and the resettlement farms are suggested. Third, a framework (Figure 8.2) for conceptualising natural resource use-related conflicts highlighted in this study is presented and discussed. Fourth, a broader integrated framework and ideas (Table 8.1) that provide a holistic way of conceptualising the role of natural resources in conservation and livelihood research, are presented. The last section presents concluding remarks.

8.2 UNDERSTANDING THE SIGNIFICANCE OF NATURAL RESOURCES TO RURAL LIVELIHOODS IN THE KALAHARI

8.2.1 Introduction

The following propositions related to natural resource use (see Chapter 1, Section 1.5) by the San and Mier people have been addressed in the foregoing Chapters:

- Natural resources play an important role in the livelihoods of rural dwellers in the Kalahari area and make a significant contribution to the broader livelihood portfolio of local San and Mier households (Chapters 5).
- Cultural values shape the importance attached to and the uses of natural resources and therefore cultural values represent a framework in which the value of natural resources is negotiated, contested and interpreted (Chapter 6).
- The interactions, different interests and unequal power relations among different actors (groups, individuals and organisations) generally shape the institutional landscape and governance of natural resources, particularly resource access for livelihood use by different San and Mier users (Chapter 7).

Particularly, the last two key points, otherwise referred to as social (conditional) factors, have a critical influence on how resources are used and hence on the overall significance of natural resources to livelihoods. Therefore, a better understanding of how these factors interact and influence the contribution of natural resources to rural livelihoods is critical in conservation planning.

8.2.2 The relationship between cultural values, institutional arrangements and the contribution of wild natural resources to rural livelihoods

The findings suggest that the role that wild natural resources play in local San and Mier livelihood portfolios is important, as shown by high levels of natural resource use and the diversity of natural resources used. However, the use and contribution of natural resource to the livelihoods of the San and Mier communities is not uniform and simple, rather it is varied and complex between and within the two communities, partly resulting from multiple perceptions, preferences and interpretations of what these resources can offer.

This study has shown that the contribution (direct-use value) of natural resources (A, Figure 8.1) to the San and Mier communities is not only shaped by conventional household-related attributes (B) such as access to land, cash income and demographics (age, household size, level of education, gender) but is more importantly conditioned by cultural dynamics (C) and institutional arrangements and actors (D).

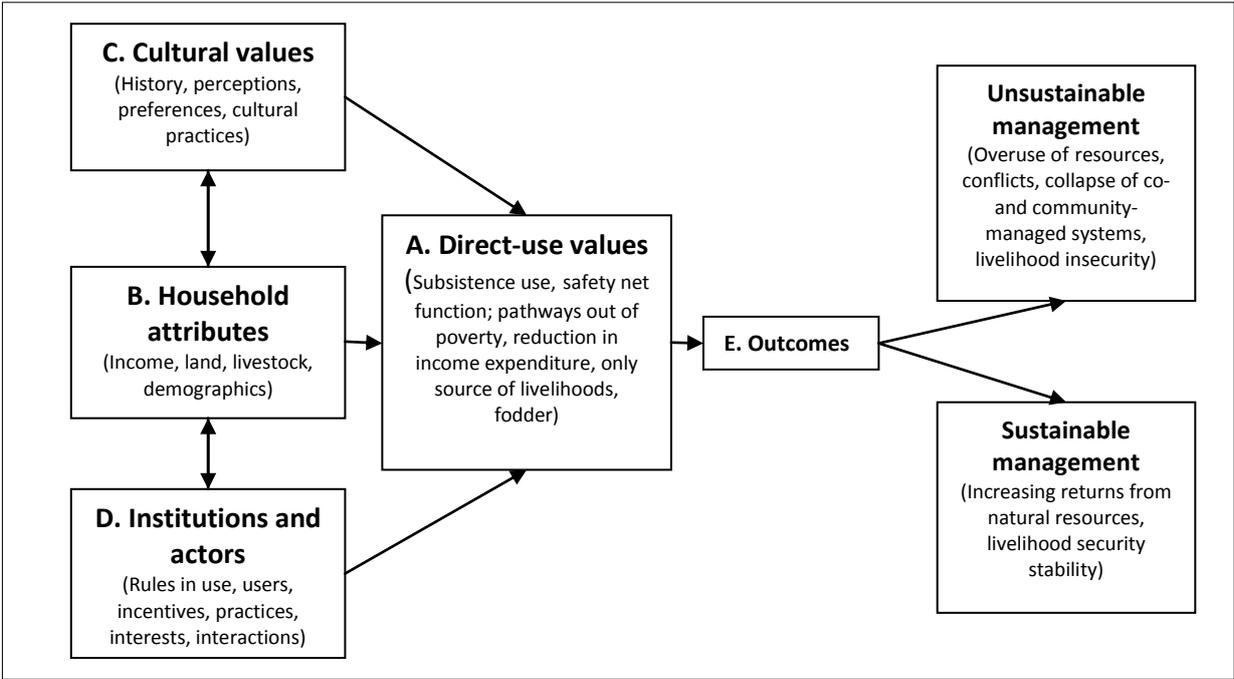


Figure 8.1: Framework for understanding the contribution of natural resources to livelihoods

8.2.1.1. Household attributes (B)

Different patterns of use and dependence on natural resources were observed between and within the San and Mier communities in relation to different (conventional) household attributes (B, Figure 8.1) (see Chapter 5). For example, for the poorest San and Mier households, natural resources were important and regarded as continuous safety nets that also prevented them from falling deeper into poverty – suggesting that the value of natural resource use is higher for those with few alternative livelihood sources (Chapter 5, Section 5.3.6). The poorest members of the community tried to diversify their livelihood options through engagement in low-cost entry activities such as craft making, subsistence resource use, low-income temporary jobs and self-employment for livelihood security. Further, apart from enhancing households’ cash income, notably for well-off households, the main role of

natural resources was also to provide for the subsistence needs of local people, particularly of poor households (Chapter 5, Section 5.3.6). With regards to access to land, the study demonstrated a systematic pattern where less-poor Mier households with more livestock benefitted by more grazing access. However, the relationship between some household attributes (such as age, gender, household size, etc.) and natural resource use was weak although a high degree of resource use variability was observed. This is indicative of the fact that natural resource use and benefits to users were also affected and mediated by cultural dynamics (C) and institutional arrangements (D), factors beyond households' immediate sphere of influence.

8.2.1.2. Cultural values (C)

The San reported a high total income and dependence on natural resources use while the Mier were more involved in livestock production in line with their respective cultural traditions and practices. Some of the natural resources were used for making crafts, an important cultural activity (since it perpetuates the San tradition) and a source of cash income for the poorest San. However, the cultural values attached to natural resources were not homogenous across all San and Mier members. Cultural values were characterised by conflicts over meaning and preferences of resource use. For example, while natural resources such as bush meat, medicinal plants and wild plant food constituted low proportions of total natural resource income (Chapter 5, Tables 5.7 and 5.8), they were still highly valued for their cultural and spiritual values especially by the more 'traditionalist' San groups, making the use of nature inseparable from their cultural identity. In contrast, the San 'modernist' group preferred that land and natural resources be used for generating income, livestock production and for housing development. This group of San people argued that there were no differences between cultural and natural landscapes as their use was a reflection of their past and present history. They further said that the continued use of resources for livelihoods was part of their historical cultural practices and that while some San 'traditionalist' viewed them as 'non-San' or 'modernised San', they used resources in non-traditional ways in response to present day needs (changing economic systems). Similarly, key informant interviews revealed that older Mier generations were more interested in livestock production –an important cultural practice, but a substantial proportion of young households were increasingly getting educated, and therefore, more interested in formal job opportunities.

These competing interests and meaning over use of natural resources affect how resources are used and hence its importance (A) to different groups of people – ultimately affecting the overall resource management outcomes (E) (Figure 8.1). Conflicts concerning resource use and management constitute a threat to the availability and access, and thus to livelihood security. This means that livelihood strategies, and the contribution of natural resources to livelihoods in particular should be understood within the cultural history of the communities concerned, as this often shapes resource use. Cultural values (including differences over meaning) of resources are dynamic and provide the framework within which decisions about natural resource use are negotiated, contested and shaped. Cultural practices (based on strict subsistence use) and contemporary conservation approaches (based on principles of meeting all livelihood needs) form part of the communities' way of living.

In sum, the San and Mier culture is inextricably bound up with the both harmonious and conflicting views on use and management of natural resources. As noted above, divergent views on traditional and cultural values can exist in co- and community-managed areas, resulting in conflicting decisions on natural resources use and management between different social groups within communities. Therefore, one of the key aspects in the framework is that cultural values (interactions among cultural practices, preferences, perceptions and present day needs etc.) influence how natural resources are interpreted and hence used. Understanding such interactions and influence may help in understanding the contribution (direct use values) of natural resources (A, Figure 8.1) to livelihoods and designing natural resource management systems that are compatible with local people's needs, knowledge systems and livelihood interests (see Mandondo, 1997; Berkes, 2007). It is equally important to also recognise that the traditional cultural landscape is changing (as demonstrated by the San and Mier cases) and the challenge is to reconcile traditional cultural values and the realities of being part of a changing (modernising) world. Consequently, this would help avoid, minimise or resolve conflicts between conservation managers and local people, in and beyond the KTP. Such an approach is likely to lead to better decisions on the management of co-managed parks and community-managed areas.

8.2.1.3 Institutions and actors (D)

Institutions and interactions and power relations among actors (D, Figure 8.1) have influence over access to and use of natural resources, and thus the importance and contribution of resources (A) to different households. For example, as demonstrated earlier in Chapter 7, SANParks has conservation interests as their principle objective while private operators prioritise tourism development and communities prefer natural resource use (in traditional and non-traditional ways). As noted, multiple interests arising from different perceptions and understanding of people's cultural history and meaning over resources have impacts over the design of institutions for natural resource management. Thus, multiple interests and actors within resource systems such as the Contract Park and resettlement land, and how these actors influence decision and rules over resource access are crucial in understanding the value of resources to livelihoods and vice-versa. According to the co-management agreement in the Contract Park, natural resource use (wild plants harvesting and wild animal hunting) is allowed, but in practice resources use is curtailed. In fact hunting is still prohibited pending final negotiations. Most interviewed San members perceived that the Park management may never allow them to hunt in the Park for subsistence purposes since Park management say this will disturb the tourists' experience in the Park. Perhaps the low contribution of wild meat to the San and Mier livelihoods is indicative of limited access in the Park and game farms due to restrictive rules and hunting fees and scarcity of wild animals. Further, in the San and Mier game farms, hunting of wild animals is allowed upon payment of a hunting fee, which was considered unaffordable by poor households. The situation in the San game farm (Miershoop Pan) is different and more complex in the sense that while hunting rules are in place, some members did not follow them and most San members perceived that wild animals are scarce due to overhunting and corruption by community leaders. Other members reported that poorly maintained fences and lack of water sources in San game farms meant that some wild animals moved to nearby Mier game farms.

It can also be argued that the co-management arrangement and rules in the Contract Park are based on false assumptions that the San people are a united group with homogenous cultural values, given that cultural attachment to natural resources (and revival of their lost culture) was a key motivation in their land claim. Some authors argue that presentation of a traditional and united San people was a strategic arrangement to make the land claim bid uncomplicated (e.g. Robins, 2001). Therefore, an appreciation of the institutional landscape and the actors

involved in natural resource management is critical in understanding the contribution or value (A) of natural resources to people's livelihoods. These institutions are often shaped by and represent the various interests of different actors (with different backgrounds, understanding of cultural values and practices, preferences etc). In turn such institutions shape access to resources and the cultural values (C) attached to natural resources.

8.2.1.4 Outcomes (E)

The outcomes (E, Figure 8.1), whether positive or negative conservation and livelihood outcomes, it seems, is a function of how cultural values (C) and institutional arrangements (D) interact and condition resource access and use. Lack of understanding of differences over cultural meanings of resources may lead to hegemonic planning (as in the Contract Park) which will favour certain groups of people (for example traditionalists over modernists). Consequently, such approaches are likely to result in governance problems and probable unsustainable natural resources management (e.g. overuse of resources, heightened conflicts and collapse of community-based resource management), as the situation in the resettlement farms indicates. Considering the importance of natural resources to both the San and Mier, any decline in these, whether through restricted access, rules or dwindling resources, will have negative effects on the livelihoods of users, some of whom depend significantly on natural resources.

8.2.1.5 Interactions amongst components of the model

Overall, the study illustrates that the use of wild natural resources by the San and Mier rural people in the Kalahari is influenced by social factors encompassing cultural and institutional dynamics, apart from ecological and conventional household attributes. Conservation and livelihood outcomes are a result of the interaction (or lack thereof) amongst different institutions and actors with different interests such that conservation and livelihood approaches should not be hegemonic (Ostrom et al., 2007) but inclusive and pluralistic, consistent with the needs of managing complexity (see Agrawal and Gibson, 1999; Ascher, 2001; Berkes, 2008a). Therefore, addressing natural resource use and governance challenges in the co-managed Contract Park and the community-managed resettlement farms could be enhanced by a careful examination of how natural resource value manifest to different communities and households given their cultural and institutional backgrounds.

The above framework (Figure 8.1) has been used to synthesise the interaction between the conditional factors (cultural and institutional dynamics) that either promotes or constraint resource use and thus can explain the value and contribution of natural resources to livelihoods (A). In practice these attributes (C and D) of a resource system are nested, with multiple interactions and feedbacks and jointly affecting how households use resources (given their own set of attributes, B) and result in certain conservation and livelihood outcomes (E). A set of institutions informed by local cultural understandings (and misunderstandings) and crafted by nested actors affect interactions, resource access and the contribution of natural resources to different households and resource management outcomes over time. Therefore, attempts that exclusively focus on the contribution of natural resources to livelihoods (A), run the risk of misunderstanding and misinterpreting this contribution, since it is interlinked with cultural (C) and institutional (D) factors. It is important to note that though the cultural and institutional factors discussed above are more important in this context and at the local level, in practice these small resource use systems such as the KTP and resettlement farms are linked with bigger economic and political systems, with multiple complex interactions and feedbacks (see Ostrom et al., 2007). As Berkes et al. (2003) argue, natural resource use systems are linked through complex webs of interdependencies.

Thus, the important issue of how and whether it is possible to involve local communities in conservation and livelihood activities with positive conservation and livelihood outcomes depends on understanding and factoring in the above interactions. To develop diagnostic methods to identify combinations of variables that affect the incentives and actions of actors under different governance systems, there is compelling need to recognise and understand these complexities (see Ostrom et al., 2007). According to Ostrom et al. (2007), the concept of nested tiers of factors that interactively affect how other factors help or do not help to explain outcomes is a challenge to the way many scholars approach theory and explanation.

8.3 SUGGESTIONS FOR ACHIEVING CONSERVATION AND DEVELOPMENT OUTCOMES IN THE PARK AND FARMS

Considering the demonstrated significance of wild natural resources to local San and Mier households, an important policy lesson from this study is that restricting local people's access to natural resources in the resettlement farms and the Park may have negative effects on household livelihoods and welfare. Limiting the rights to use, commercialise or exchange

wild resources can be a serious problem if people's livelihood depends on these. However, improved access to natural resource use may imply that the poorest will become further marginalised or resources may become over-utilised since well-off households have greater capacity to extract more resources than the poor. Therefore, increasing income from natural resources (if not well designed) may disproportionately benefit local well-off households rather than the poorest. Hence, special attention should be paid to those groups most dependent on natural resources, yet often also with the most limited access. These are extremely vulnerable households that need support from the Park to improve their livelihoods. In light of the varied interest over the use and meaning of natural resources between and within the San and Mier social groupings, the following recommendations, categorised into 3 main themes are suggested.

8.3.1 Information dissemination

First, integrating different interests in the area also means there is need for establishing networks and partnerships of various levels of government, private operators, NGOs, community-based organisations and the local San and Mier community. Second, there is need for a communication platform between the San and Mier, different groups within the two community groups and other local and external actors such as Department of Land Affairs, South African San Institute, Mier municipality, KTPM and other NGO's to facilitate better information dissemination among actors in order to meaningfully link conservation objectives and the different livelihood needs. At local community level there is need for enabling resource users to engage in face-to-face communication between rounds of decision making, which may ultimately change the possible unsustainable outcomes such as overuse of resources, conflicts, and collapse of community-based management arrangements in the resettlement farms. Communication may enable users to understand their different resource use interests to enable designing of socially best possible harvesting practices and levels that will minimise the chances of overharvesting in the resettlement farms. In the face-to-face discussions users can discuss what they all should do and build norms to encourage conformance. Third, transparency should be an integral part of any agreements on natural resource use in the Contract Park, other zones in the Park and resettlement farms in terms of cash income generated, fair job opportunities (from eco-tourism enterprises) and access to benefits. This will ensure a revival of trust and cooperation of San and Mier members in co-

management (in the Contract Park) and community-based management (in the resettlement farms).

8.3.2 Understanding preferences

The findings demonstrate that different individuals and groups of San and Mier people clearly facing the same situation vary substantially in their behaviour. Thus with regards to access to planning for resource access and benefits in the Contract Park, Kgalagadi Transfrontier Park Management (KTPM) should identify and designate these multiple interests (e.g. job creation, hunting of wild animals and harvesting of medicinal plants mainly by San traditionalists, hunting for subsistence use by ‘modernised San’, benefits from eco-tourism by Mier). In other words, more inclusive conservation and development approaches based on the integration of different livelihood activities and interests (of both San and Mier) and sharing of equitable natural resources are needed. Secondly, the benefits from the Contract Park should be clearly defined, including what can be harvested, when, by whom and how much. This should perhaps include the use of some of the wild resources (e.g. game meat, fuelwood) for subsistence or commercial use that are mentioned in the agreement but remain largely restricted in practice (Chapter 4, Section 4.2.2.2). One way to do this will be to introduce hunting quotas for the San and Mier communities, where the hunted animals will be shared among households (for subsistence purposes) or commercialised, and the cash income will be equally shared among households.

Third, while rushed processes and negotiations should be avoided, agreements (e.g. hunting of wild animals in the Contract Park, development of tourism ventures in the commercial or V-zone for San), should be implemented within a reasonable timeframe to avoid suspicions by the local San and Mier communities that biodiversity conservation leaves them worse off. Fourth, eco-tourism operators such as that running the Community (!Xaus) Lodge in the Contract Park should aim to offer more meaningful and permanent opportunities to local San and Mier communities, rather than seasonal jobs. Fifth, KTPM should allow some harvesting of dead wood in the Park and find mutually-beneficial ways of purchasing fuelwood from the local communities to avoid depletion of fuelwood in the resettlement farms, one of the main livelihood sources for most San and Mier households.

8.3.3 Natural resources management in the Park and resettlement farms

First, natural resource access and use rules should be crafted in the resettlement farms and such rules should be flexible and more integrative to cater for dynamism and modernity since the San and Mier socio-economic way of life is ever changing (a combination of traditionalists and modernists). Secondly, considering the diversity of actors in the Contract Park and farms and the related conflicts (see Chapter 7), collaborative problem solving should be central to the process of conflict-resolution. The situation should enable actors to transfer learning from one situation to another, and tackle increasingly more complex problems (see Olsson et al., 2004). Third, KTPM should support sustainable natural resource use programmes in the farms because (a) the Park and farms are interlinked ecologically; (b) unsustainable natural resource use in the farms may lead to future resource use pressure in the Park and (c) the Park has a moral responsibility to help the local San and Mier communities, who were previously forcibly removed from their ancestral land.

Fourth, a framework of relationships ranging from conflicts to collaborations between different household groups, communities and actors devoted to sustainable resource use (traditional, subsistence, commercial uses) and livestock production ought to be developed. Fifth, there is also need to build on the strengths of existing actors, craft new ones where the existing ones are dysfunctional and create conditions for devolving power to an elected Communal property Association (CPA) executive committee as per the CPA constitution. The Department of Land Affairs should appoint a Farm Manager, as per agreement, for a well coordinated management of the San resettlement farms. Sixth, as regards the Mier, there is need for the establishment of sound community-based institutions in the communal farms because none exist at the moment. One way to do that will be conducting a study to establish who stays where, with access to what and how much land and what size of livestock herds. Further, those households who are interested in livestock production but have no access to resettlement land should be identified so that community-based natural resource management decisions are based on an informed and all-inclusive foundation. Lastly, SANParks should consider initiating and supporting an annual community event (with a conservation and livelihoods theme) where local communities and other actors come up together to collectively share ideas, knowledge, highlight conflicts and problems and possible solutions through activities such as plays, songs, poems and games. Field experience (during community

feedbacks) have shown that hosting community events can be an easy but powerful way of building relations between local communities, conservation managers and researchers.

In summary, to overcome and avoid (in the future) natural resource-related conflicts (such as the traditionalist-modernist conflict) between and within the San and Mier, the Joint Management Board (responsible for resource management in the Contract Park) and other actors such as Department of Land Affairs and the San Communal Property Association (responsible for resource management in the resettlement farms) should understand (drawing lessons from scientific research) the variability of resource use interests and perceptions. Actors should not focus on one community (e.g. the San over the Mier) or one faction of a community (e.g. the San traditionalists over the modernists) so that resource use planning cannot be divorced from the wider context. This can help avoid a hegemonic planning mentality such as in the Contract Park. Overall, the findings show that the issues and problems of natural resource use in co- and communally-managed areas are not simple but complex and therefore co-management approaches in the Contract Park and community-based approaches in the resettlement farms should not be viewed as panaceas for solving resource access and use challenges. Accordingly, adopting a complex-systems approach as a foundation for designing approaches that improve natural resources and promote local development could be useful in the KTP situation and surrounds. Given multiple objectives, the interaction of factors at multiple levels and multiple actors, the Park and the surrounding resettlement farms should be understood as a system with multiple interactions and feedbacks. The main pillars for a promoting sustainable natural resources management are likely to be government support, recognition and support of community institutions and culture, including understanding of the variations. These are needed to achieve equitable, fair and sustainable natural resource management in the Contract Park and resettlement lands.

While traditional and cultural values provide a foundation for conservation by providing the opportunity for meaningful and sustainable people-nature interactions, it is also equally important to realise that 'natural resources' and 'culture' in the Kalahari area are diverse, and the landscape is a mix of more and less 'pristine' and 'traditional' cultural elements. Some of the San and Mier members are now more integrated into a cash economy and therefore need viable livelihood strategies. Therefore, an understanding and integration of the economic, ecological and cultural needs of different actors and different members within the San and

Mier communities is crucial in achieving sustainable natural resource governance and management both in the Park and the resettlement farms.

8.4 IDEAS FOR ENSURING NATURAL RESOURCE AND LIVELIHOOD RESEARCH RELEVANT FOR CONSERVATION AND DEVELOPMENT POLICY AND PRACTICE

Overall, the findings draw attention to complexity in natural resources and livelihood research implying the need for rigorous approaches for understanding the contribution of wild natural resources to rural livelihoods. A failure to recognise culturally and institutionally-shaped variations in natural resource use and livelihoods may result in designing inappropriate policies that do not embrace local livelihood aspirations and needs. Cultural factors, institutional dynamics and social differentiation are therefore both valuable and necessary for understanding the socio-economic systems of resource-dependent communities. As has been demonstrated in this study, decision making around natural resource use is based on different viewpoints which results in natural resource use related conflicts. Given such eventualities, not only as illustrated in this study, but also as learnt from growing empirical evidence from similar projects (e.g. Twyman, 2000; 2001; Madzwamuse et al., 2007), the study suggests a framework (Figure 8.1) for analysis of such conflicts drawing on work by Wilson and Bryant (1997).

Figure 8.2 is specifically designed to identify and better understand the different types, nature and forms of complex natural resource use-related conflicts (Chapter 7). The framework largely takes an actor-oriented approach. An actor-oriented approach is necessary to explore how different social actors define the problems at stake and the solutions for them (in line with Ostrom's (1994) conceptualisation). According to Ostrom (1994:29) actors in natural resource management are "*Participants in positions* who must decide among diverse *actions* in light of the *information* they possess about how actions are *linked* to the potential *outcomes* and the *costs and benefits* assigned to actions and outcomes".

As apparent in this study, everything is connected to everything else. The number (A, Figure 8.2) and type (B, Figure 8.2) of actors responsible for conservation and development in the Contract Park and farms, has a critical influence on the overall outcomes, since it has been illustrated that multiple actors, for example, come with multiple objectives and different ways

of achieving such objectives. The presence of multiple actors has a tendency to result in contradictory perspectives on how to use the resources and to distribute the benefits from resources that ultimately result in natural-resource related conflicts between and within the San and Mier communities. By looking at the type of actors, what they say they represent and what they actually do, an avenue for systematically understanding the struggles over resource access and the different types of conflicts in the Kalahari area is provided that may in turn improve the performance of conservation and development projects and interventions.

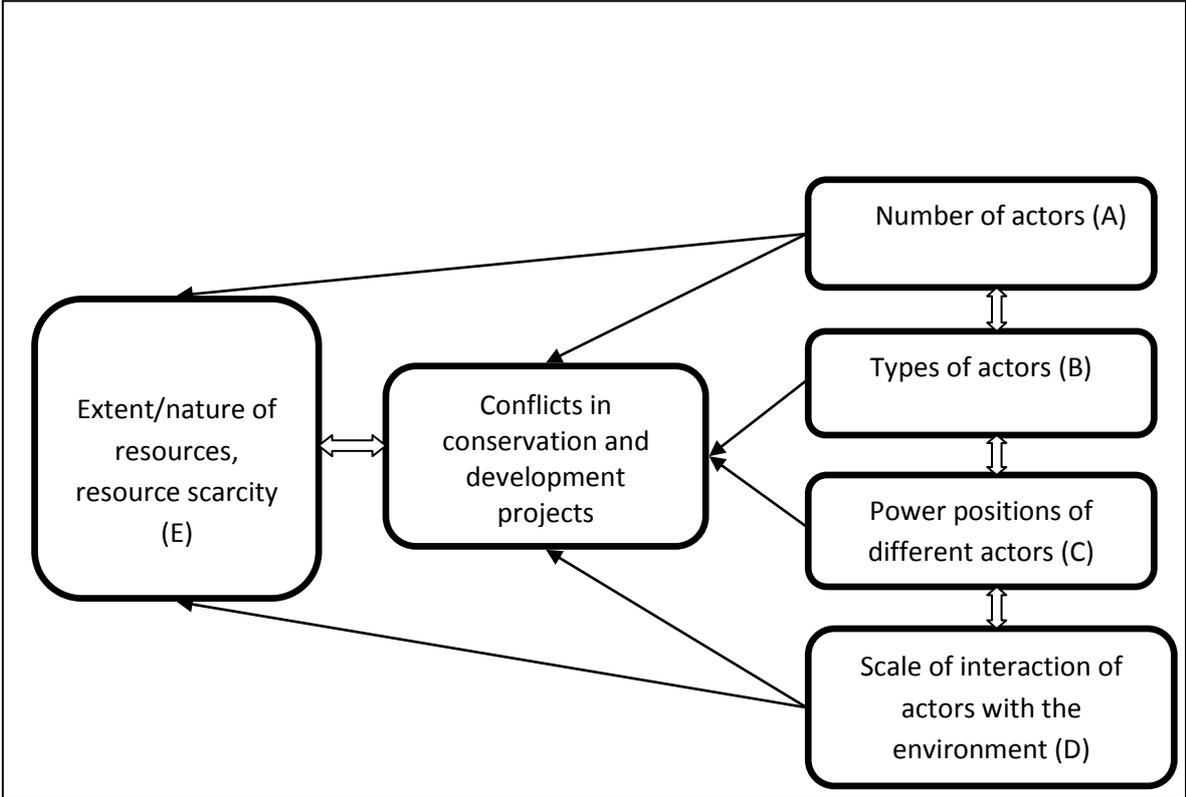


Figure 8.2: A framework for understanding natural resource-related conflicts (Adapted from Wilson and Bryant, 1997: 98)

Conflicts over resource in the Kalahari region have also been proven to arise from the power struggles among actors (C, Figure 8.2), but power struggles among actors were a consequence of multiple actors with multiple objectives pulling in different directions. The number and types of actors, and the power distribution dynamics also influence the scale of interactions among these actors and the type of conflicts. For instance, the existence of local, regional and national actors (e.g. local community members and social groups, CPA committee, NGOs, SANParks and Department of Land Affairs) means that there is vertical and horizontal

interactions at local (lower) and national (higher) levels among different actors and institutions, making an understanding of resource use conflicts a complex process and task.

The conflict situations in the Contract Park and the San farms further illustrate how actors influence interactions and outcomes. As has been noted, there are heightened conflicts within the San community in the farms as compared to the situation in the Contract Park. Therefore, one may perhaps conclude that this is a result of relatively few actors (i.e. KTPM, San and Mier representatives, the three JMB principal parties) in the Contract Park, combined with clearly defined and binding rules (though not all members are happy with the rules). In contrast, the farms are characterised by the existence of many actors, with multiple and conflicting interests that give rise to more and deeper conflicts.

Apart from actor-related factors (A, B, C and D, Figure 8.2), the nature and extent of resources also shape the nature of resource-use conflicts. For instance, for a genetic resource (e.g. indigenous medicinal plants), conflict may manifest in a conflict between a local community (owners of intellectual property rights) and external actors (e.g. the San Hoodia Case involving and CISR and American pharmaceutical company Pfizer) (Chapter 3, Section 3.6; Chapter 7, Section 4.6). On the other hand, for resources such as bush meat or grazing land conflicts may arise between different groups and sub-groups within communities or even individuals (e.g. the San traditional-modernist debate in Chapter 7). However, in reality, conflicts involving any type of resource could be both local and external due to the involvement of certain local sub-groups and various externally initiated interventions through actors such as NGOs and interested private actors for various reasons including economic and social ones.

Further, any given type, level and form of conflict results in winners and losers, who often are different groups or subgroups within communities and in any case, this at the very least serves to widen the differences and sustain conflicts rather than avoid, minimise or solve them completely. Such a scenario points to the dominant suggestion in this study, i.e. the need for establishing partnerships and collaborations among actors and institutions at multiple levels for a common goal of linking conservation objectives and local development needs. Thus, the framework (Figure 8.2) serves both as a way of improving our understanding of natural resource-related conflicts and as a way of demonstrating that actors, aspects, processes, etc. in

conservation and development projects (socio-ecological systems) are often interlinked in many complex ways. For this reason research on such issues needs to be increasingly integrative, though opportunities exist to study specific components of the whole web of interactions.

Table 8.1: A holistic way of conceptualising the role of natural resources in natural resource and livelihood research (Adapted from Baumann, 2004)

Aspect	Mainstream view	Emerging view
Resources	Material, economic, direct use-value, property	Also as symbolic, with meanings that are locally and historically embedded, and socially constructed
Community	Local, specific user groups, homogenous	Multiple locations, diffuse, heterogeneous, diverse, bounded multiple social identities
Livelihoods and resource management	Links between single and multiple resource users – focus on resource sectors (e.g. rangelands, forests, fisheries systems)	Complex and diverse livelihoods – focus on livelihoods that draw on all resource sectors
Institutions	Static, rules, functionalist, formal	Social interaction and process, embedded in practice, struggles over meaning, formal and informal, interlinked with knowledge and power
Knowledge	Linear transfer, science as sole source of expertise	Multiple sources, plural and partial knowledge, negotiated understandings
Power and control	Transaction cost focus, elites, community leaders	Differentiated actors, conflict, bargaining, negotiation and power relations central
Property regimes	Common property resource as set of rules based on collective action outcomes, clear boundaries	Practice not rule-determined, strategic, tactical, overlapping rights and responsibilities, ambiguity, inconsistency, flexibility
Legal systems	Formal legislation	Law in practice, different systems co-existing
Governance	Separated levels – international, national, local	Multi-level governance approaches, fuzzy/messy interactions, locally and globally interconnected

In order to deal with the complexity associated with natural resource use and livelihoods, Table 8.1 highlights some of the aspects that should be considered by researchers of conservation and development drawing on work by Baumann (2004). The list by no way is

supposed to be exhaustive and a blueprint, but should be taken as informative and an emphasis of critical factors. Aspects such as resources, communities, institutions, knowledge, power and control, property regimes, governance and legal systems all have an influence on resource management since they affect interactions of the various actors around conservation sites.

Table 8.1 summarises and offers a comprehensive and more nuanced way of exploring society-environmental linkages illustrating the complexity and diversity of issues that should be addressed by conservation and development interventions. The framework helps address the multifaceted importance and value of natural resources in the context of social interactions that involve multiple actors and cultural and institutional dynamics. Perhaps most importantly, the different actors with multiple objectives that characterise conservation sites, the different ways of interaction and the institutions that shape such interactions should receive more focus (see Agrawal and Gibson, 1999).

8.5 CONCLUSION

Studies looking at the contribution of natural resources to rural households and communities within broader livelihood portfolios and in combination with social factors (cultural and institutional dynamics) that shape resource access and use, particularly in dryland systems such as the Kalahari region are not common. Consequently, there is need for research that considers the link between the contribution of natural resources to livelihoods and the social factors mediating this. Therefore, the main aim of this study was to provide both empirical evidence and conceptual arguments that give conservation practitioners, managers, policy makers and researchers a better understanding of not only the contribution of wild resources to rural livelihoods but also of the social context within which this value is manifested and what this means for conservation and livelihood outcomes.

Consistent with findings in the same region (e.g. Twyman 2000, 2001; Thomas and Twyman, 2004; Sallu et al., 2010), the study shows that there is a high degree of variability in natural resource use among different groups of San and Mier households of the southern Kalahari region. Both San and Mier households are characterised by economic, cultural and social heterogeneity with regards to their (a) access to assets such as land, labour (household sizes),

livestock and financial capital; (b) levels of poverty (as illustrated by income quintiles) and motivations for natural resources use; (c) the range of income generating activities they engage in; and (d) indigenous knowledge related to sustainable natural resource use and management. Thus the use of natural resources varies from being opportunistic, planned and seasonal to permanent utilisation for different livelihood needs, as shaped by different contextual factors including household attributes and more importantly cultural and institutional ones.

Some of the factors that affect resource use in the area such as the physical (aridity) and economic climate, cultural aspects, historical and political dynamics of poverty and marginalisation and institutional aspects (e.g. legal rules and arrangements) are beyond the control of San and Mier communities and individual households. Thus, while gaining a livelihood or attempting to do so people may at the same time have to cope with constraints such as conflicts over the use and cultural meaning of natural resources and resource access rules, compounded by uncertainties and risks such as droughts, climate change, diminishing resources, pressure on the land, different and changing ways of living, HIV/AIDS among others. Such factors, as has been illustrated, are often restrictive and form a complex set of preconditions under which rural households survive and create their livelihoods, through both individual and communal decision-making and adaptation (see Vedeld et al., 2007; Kamanga et al., 2009). A combination of such uncertainties, challenges and emerging opportunities influence the choices that people make on resource use and subsequently how natural resources are governed in parks and beyond them. This implies that research on natural resource use and rural livelihoods ought to capture not only the broad general conditions and relationships but also the local social and ecological heterogeneity. As Twyman (2001:64) notes, “..the linkages between livelihood opportunities and resource availability are not simple, linear and direct. Rather they are shaped by the history of resource relationships in the settlement and are complex, fluid and dynamic. Issues of rights and control over resources have become important; clearly access to certain resources is not dictated solely by resource availability or abundance.”

REFERENCES AND PERSONAL COMMUNICATIONS

REFERENCES

- Abusabha, R. and Woelfel, M. L. 2003. Qualitative vs. quantitative methods: Two opposites that make a perfect match. *Journal of the American Dietetic Association*, **103** (5): 566-575.
- Adams, W. M. 2006. The future of sustainability: Re-thinking Environment and Development in the twenty-first century. Report of the IUCN Renowned Thinkers Meeting, 29-31 January 2006. http://cmsdata.iucn.org/downloads/iucn_future_of_sustainability.pdf. [Accessed 12 August 2011].
- Adams, W. M., Aveling, R., Brockington, D., Dickson, B., Elliot, J., Hutton, J., Roe, D., Vera, B. and Woolmer, W. 2004. Biodiversity conservation and the eradication of poverty. *Science*, **306** (5699): 1146-1149.
- Adhikari, B., Di Falco, S. and Lovett, J. C. 2004. Household characteristics and forest dependency: Evidence from common property forest management in Nepal. *Ecological Economics* **48** (2): 245-257.
- Agrawal, A. and Gibson, C. C. 1999. Enchantment and disenchantment: The role of community in natural resource conservation. *World Development*, **27** (4): 629-649.
- Agrawal, A. and Redford, K. 2006. Poverty, development and conservation: Shooting in the dark? Working Paper No. 26, Wildlife Conservation Society.
- Alpert, P. 1996. Integrated conservation and development projects. *BioScience*, **46** (11): 845-855.
- Ambrose-Oji, B. 2003. The contribution of NTFPs to the livelihoods of the 'forest poor': evidence from the tropical forest zone of south-west Cameroon. *Forestry Review*, **5** (2):106-117.
- Anderson, J., Bryceson, D., Campbell, B., Chitundu, D., Clarke, J., Drinkwater, M., Fakir, S., Frost, P.G., Grundy, I., Hagmann, J., Jones, B., Wynn-Jones, G., Kowero, G., Luckert, M., Mortimore, M., Phiri, A., Potgieter, P., Shackleton, S. and Williams, T. 2004. Chance, change and choice in Africa's drylands. A new perspective on policy priorities. CIFOR Policy Brief, Bogor, Indonesia.
- Andrew, M., Shackleton, C. and Ainslie, A. 2003. Land use and rural livelihoods: Have they been enhanced through land reform? Programme for Land and Agrarian Studies, University of the Western Cape, Bellville.
- Angelsen, A. and Wunder, S. 2003. Exploring the forest-poverty link: Key concepts, issues and research implications. CIFOR Occasional Paper 40, Bogor.

- Arnold, J. E. M. and Ruiz Pérez, M. 2001. Can non-timber forest products match tropical forest conservation and development objectives? *Ecological Economics*, **39**: 437-447.
- Araia, M. G. 2005. Revealing the forest hidden value: The case study of Eritrea. Unpublished MSc thesis, University of Stellenbosch, Stellenbosch.
- Arnold, J. and Gaeses, E. 1998. Is there hope for the San's land requests? Paper prepared for the workshop on "Land and spirituality": World Council of Churches and Zimbabwe Council of Churches, Mutare, Zimbabwe, 24-29 May 1998.
- Ascher, W. 2001. Coping with complexity and organizational interests in natural resource management. *Ecosystems*, **4** (8): 742-757.
- Attfield, R. and Wilkins, B. 1992. International justice and the Third World. Routledge, London.
- Barbier, E. B., Acrememan, M. and Knowler, D. 1997. Economic valuation of wetlands: guide for policy and planners. Ramsar Convention Bureau, Gland.
- Barnard, A. 1992. Hunters and herders of Southern Africa: A comparative ethnography of the Khoisan peoples. Cambridge University Press, Cambridge.
- Barrow, E. and Mogaka, H. 2007. Kenya's Drylands - Wasteland or an undervalued national economic resource. IUCN, Gland, Switzerland.
- Baumann, P. 2004. Poverty and access to natural resources: insight from a sustainable livelihood perspective. Livelihood Support Programme briefing notes, Number 1.
- Benjaminsen, T. A., Kepe, T. and Bråthen, S. 2008. Between global interests and local needs: Conservation and land reform in Namaqualand, South Africa. *Africa*, **78** (2): 223-244.
- Benjaminsen, T.A., Rohde, R., Sjaastad, E., Wisbourg, P. and Lebert, T. 2006. Land reform, range ecology, and carrying capacities in Namaqualand, South Africa. *Annals of the Association of American Geographers*, **96** (3): 524-540.
- Berkes, F. 2008a. Community conserved areas: Policy issues in historic and contemporary context. *Conservation Letters*, **2**: 19-24.
- Berkes, F. 2008b. Evolution of co-management: Role of knowledge generation, bridging organizations and social learning. *Journal of Environmental Management*, **90** (5): 1692-1702.
- Berkes, F. 2007. Community-based conservation in a globalized world. *PNAS*, **104** (39): 15188-15193.
- Berkes, F. 1999. Sacred ecology: Traditional ecological knowledge and resource management, Taylor and Francis, Philadelphia.

- Berkes, F., Colding, J. and Folke, C. (Eds.) 2003. Navigating social-ecological systems: Building resilience for complexity and change. Cambridge University Press, Cambridge.
- Berkes, F., Colding, J. and Folke, C. 2000. Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications*, **10** (5):1251-1262.
- Bleek, D. P. 1933. Beliefs and customs of the Ixam Bushmen. Part VI: Rain making. *Bantu Studies*, **7**: 375-392.
- Blignaut, J. 2004. Towards economic development ethics. In: *Sustainable options: Developing lessons from applied environmental economics*. (Eds.) Blignaut J. N. and de Wit, M. UCT Press, Cape Town. Pp. 408-428.
- Blignaut, J. N. and de Wit, M. P. M. 1999. Integrating the natural environment and macroeconomic policy: Recommendations for South Africa. *Agrekon*, **38** (3): 374-394.
- Blignaut, J. and Moolman, C. 2006. Quantifying the potential of restored capital to alleviate poverty and help conserve nature. A case study from South Africa. *Journal of Nature Conservation*, **14**: 237-248.
- Blomquist, W. 2009. Multi-level governance and natural resources management: The challenges of complexity, diversity and uncertainty. In: *Institutions and sustainability: political economy of agriculture and the environment - Essays in Honour of Konrad Hagedorn*. (Eds.). Beckmann, V., Padmanabhan, M., Springer, UK. Pp. 109-126.
- Bond, I. 1994. Importance of elephant sport hunting to CAMPFIRE revenue in Zimbabwe. *TRAFFIC Bulletin*, **14** (3): 117-119.
- Boonzaier, E. 1996. Local responses to conservation in Richtersveld National Park, South Africa. *Biodiversity and Conservation*, **5** (3): 307-314.
- Borrin-Feyerabend, G., Pimbert, M., Farvar, M. T., Kothari, A. and Renard, Y. 2004. Sharing power: Learning-by-doing in co-management of natural resources throughout the world. IIED-IUCN, Gland, Switzerland.
- Borrini-Feyerabend, G., Farvar, M. T., Nguingiri, J. C. and Ndangang, V. A. 2000. Co-management of natural resources: Organizing, negotiating and learning by doing. International Union for the Conservation of Nature (IUCN), Gland, Switzerland.
- Bosch, D. 2005. Land conflict management in South Africa: lessons learned from a land rights approach. <http://www.fao.org/?DOCREP/006/J0415T/j0415t0a.htm>.
- Bosch, D. and Hirschfeld, E. (Eds.). 2002. The Ae! !Hai Kalahari Heritage Park Bundle. Commission on Restitution of Land Rights, Pretoria, South Africa.
- Bradstock, A. 2006. Land reform and livelihoods in South Africa's Northern Cape Province. *Land Use Policy*, **23** (3):247-259.

- Bradstock, A. 2004. Implementing land reform in South Africa's Northern Cape Province. *Network Paper No. 137*, ODI Agricultural Research and Extension Network, UK.
- Brander, L. M., Raymond, J. G. M. F. and Vermaat, J. E. 2006. The empirics of wetland valuation: a comprehensive summary and a meta-analysis of the literature. *Environmental and Resource Economics*, **33**: 223-250.
- Bright, M. 2005. 1001 Natural wonders you must see before you die. Quintet Publishing Limited, London.
- Brinkhurst, M. 2010. Fruit sand: Complexities of Botswana's veld plant resources. *Studies by Undergraduate Researchers at Guelph*, **3** (2): 10-22.
- Brockington, D. 2004. Community conservation, inequality and injustice: Myths of power in protected area management. *Conservation and Society*, **2** (2): 411-432.
- Brockington, D., Igoe, J. and Schmidt-Soltau, K. 2006. Conservation, human rights and poverty reduction. *Conservation Biology*, **20** (1): 250-252.
- Brown, H. C. P. and Lassoie, J. P. 2010. Institutional choice and local legitimacy in community-based forest management: Lessons from Cameroon. *Environmental Conservation* **37** (3): 261-269.
- Bryman, A. 2008. *Social Research Methods*. 3rd ed. Oxford University Press, Oxford.
- Büscher, B. 2010. Seeking 'telos' in the 'transfrontier'? Neo-liberalism and the transcending of community conservation in Southern Africa. *Environment and Planning A*, **42** (3): 644-660.
- Byers, B.A. 1996. Understanding and influencing behaviours in conservation and natural resources management. Biodiversity Support Programme, Washington, D.C.
- Byers, B. A., Cunliffe, R. N. and Hudak, A. T. 2001. Linking the conservation of culture and nature: A case study of sacred forests in Zimbabwe. *Human Ecology*, **29** (2): 187-218.
- Campbell, B. M. and Luckert, M. K. (Eds.) 2002. *Uncovering the hidden harvest: Valuation methods for woodland and forest resources*. Earthscan, London, UK.
- Campbell, B., Mandondo, A. N., Sithole, B., de Jong, W., Luckert, M. and Matose, F. 2001. Challenges to proponents of common property resource systems: Despairing voices from the social forests of Zimbabwe. *World Development*, **29** (4): 589-600.
- Campbell, B. M., Jeffrey, S., Kozanayi, W., Luckert, M., Mutamba, M. and Zindi, C. 2002. Household livelihoods in semi-arid areas: Options and constraints. Centre for International Forestry Research, Indonesia.
- Campbell, B. M., Luckert, M. and Scoones, I. 1997. Local level valuation of savanna resources: A case study from Zimbabwe. *Economic Botany*, **51** (1): 59-77.

- Carney, D. 1999. Approaches to sustainable livelihoods for the rural poor. Overseas Development Institute, London.
- Carruthers, J. 1997. Nationhood and national parks: Comparative examples from the post-imperial experience. In: *Ecology and empire. Environmental history of settler societies*. (Eds.) Griffiths, T. and Robin, L. University of Natal Press, Pietermaritzburg. Pp. 125-139.
- Carruthers, J. 1995. The Kruger National Park: A social and political history. University of Natal Press, Pietermaritzburg, SA.
- Cavendish, W. 2002. Quantitative methods for estimating the economic value of resource use to rural households. In: *Uncovering the hidden harvest: Valuation methods for woodland and forest resources*. (Eds.) Campbell, B.M. and Luckert, M.K., CIFOR, Bogor. Pp. 17-66.
- Cavendish, W. 2000. Empirical irregularities in the poverty-environment relationships of rural households: Evidence from Zimbabwe. *World Development*, **28** (11): 1979-2003.
- Cavendish, W. and Campbell, B. M. 2002. Poverty, environmental income and rural inequality: A case study from Zimbabwe. CIFOR, Bogor, Indonesia.
- Cernea, M. M. and Schmidt-Soltau, K. 2006. Poverty risks and national parks: Policy issues in conservation and resettlement. *World Development*, **34** (10):1808-1830.
- Chambers R. and Conway, G. 1992. Sustainable rural livelihoods: Practical concepts for the 21st century. Institute of Development Studies, Brighton.
- Chapin, M. 2004. A challenge to conservationists. Excerpted from the November/December 2004 WORLDWATCH magazine, World Watch Institute. <http://www.worldwatch.org>.
- Chennells, R. 2009. Vulnerability and indigenous communities: Are the San of South Africa a vulnerable people? *Cambridge Quarterly of Healthcare Ethics*, **18** (2): 147-154.
- Chennells, R. 2007. San Hoodia Case. A Report for GenBenefit. <http://www.uclan.ac.uk/genbenefit>. [Accessed 15 August 2011].
- Chennells, R. 2001. Case Study 9 - South Africa: The #Khomani San of South Africa. Unpublished report, Cape Town, South Africa. http://archive.forestpeoples.org/documents/africa/s_africa_eng.pdf.
- Chennells, R. 1999. 'What have we achieved?' Unpublished report for the South African San Institute. SASI, Cape Town, South Africa.
- Child, C. 1995. Wildlife and people: The Zimbabwean success. Wisdom Foundation, Harare, Zimbabwe.
- Chopra, K. 1993. The value for non-timber forest products: An estimation for tropical deciduous forests in India. *Economic Botany*, **47** (3): 251-257.

- Claus, C. N., Chan, K. M. A. and Satterfield, T. 2010. The roles of people in conservation. In: *Conservation biology for all*. (Eds.) Sodhi, N. S. and Ehrlich, P. R., Oxford University Press, Oxford. Pp. 262-283.
- Cleaver, F. 1999. Paradoxes of participation: Questioning participatory approaches to development. *Journal of International Development*, **11** (4): 597-612.
- Cock, J. and Fig, D. 2000. From colonial to community based conservation: Environmental justice and the national parks of South Africa. *Society in Transition*, **31** (1): 22-35.
- Cocks, M. 2006. Wild plant resources and cultural practices in rural and urban households in South Africa. Implications for bio-diversity conservation. Unpublished PhD thesis, Wageningen University, Wageningen,
- Cocks, M. L., Bangay, L., Wiersum, K. F. and Dold, A. P. 2006. Seeing the wood for the tress: The role of woody resource for the construction of gender specific household cultural artefacts in non-traditional communities in the Eastern Cape, South Africa. *Environmental Development Sustainability*, **8**: 519-533.
- Cocks, M. L. and Dold, A. P. 2006. Conservation of bio-cultural diversity: The role of medicinal plants in Xhosa culture. *Journal of Ethnobiology*, **26** (1): 60-80.
- Cocks, M. L. and Dold, A. P. 2004. A new broom sweeps clean: The economic and cultural value of grass brooms in the Eastern Cape Province, South Africa. *Forests, Trees and Livelihoods*, **13**: 33-42.
- Colchester, M. 1997. Salvaging nature: Indigenous peoples and protected areas. In: *Social change and conservation*. (Eds.) Ghimire, K.B. and Pimbert, M.P., Earthscan, London. Pp. 97-130.
- Colfer, C. J., Peluso, N. and Chung, C. S. 1997. Beyond slash and burn. New York Botanical Garden, New York, USA.
- Collomb, J. G. E., Mupeta, P., Barnes, G. and Child, B. 2010. Integrating governance and socioeconomic indicators to assess the performance of community-based natural resources management in Caprivi (Namibia). *Environmental Conservation*, **37** (3): 303-309.
- Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R.V., Paruelo, J., Raskin, R. G., Sutton, P. and van den Belt, M. 1997. "The value of the world's ecosystem services and natural capital." *Nature*, **387**: 253-260.
- Cousins, B. 1999. Invisible capital: The contribution of communal rangelands to rural livelihoods in South Africa. *Development Southern Africa*, **16** (2): 299-318.
- Crane, T. A. 2010. Of models and meanings: Cultural resilience in social-ecological systems. *Ecology and Society*, **15** (4):19. <http://www.ecologyandsociety.org/vol15/iss4/art19/>.
- Creswell, J. W. (Ed.). 2003. Research design: Qualitative, quantitative and mixed methods approaches (2nd ed.). Thousand Oaks, Sage Publications.

- de Groot, R. S., Matthew, A.W. and Boumans, R. M. J. 2002. A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics*, **41** (3): 393-408.
- de Koning, M. 2009. Co-management and options in protected areas of South Africa. *Africanus*, **39** (2): 5-17.
- de Villiers, M. C., Pretorius, D. J., Barnard, R. O., Van Zyl, A. J. and Le Clus, C. F. 2002. Land degradation assessment in dryland areas: South Africa. *Paper for Land Degradation Assessment in Dryland Project*, FAO, Rome, Italy.
- DEAT. 1997. White Paper on the Conservation and Sustainable Use of Biological Diversity. Department of Environment and Tourism, Pretoria.
- Department of Environmental Affairs and Tourism. 2003. National Biodiversity Strategy and Action Plan. Department of Environmental Affairs and Tourism, Pretoria.
- DFA (Department of Foreign Affairs). 2004. Transfrontier Conservation Areas (TFCAs): History and present status. <http://www.dfa.gov.za/foreign/Multilateral/inter/tfcas.htm> [Accessed 17 May 2011].
- Dharmaratne, G. S. and Strand, I. 1999. Approach and methodology for natural resources and environmental valuation. Monograph Centre for Resource Management and Environmental Studies, University of the West Indies and Barbados Department of Agricultural and Resource Economics, University of Maryland, USA.
- DLA. 1997. White Paper on South African Land Policy. Department of Land Affairs, Pretoria.
- Dovie, B. D., Shackleton, C. M. and Witkowski, E. T. 2006. Conceptualizing the human use of wild edible herbs for conservation in South African communal areas. *Journal of Environmental Management*, **84** (2):146-156.
- Dovie, B. D. K. 2004. Economic valuation of secondary resources in the context of total livelihoods. In: *Indigenous forests and woodlands in South Africa: Policy, people and practice* (Eds.) Lawes, M. J., Eeley, H. C., Shackleton C. M. and Geach, B. S., University of Natal Press, Pietermaritzburg. Pp. 197-199.
- Dovie, B. D. K., Shackleton, C. M. and Witkowski, E. T. F. 2006. Valuation of communal area livestock benefits, rural livelihoods and related policy issues. *Land Use Policy*, **23** (3): 260-271.
- du Toit, J. T., Rogers, K. H. and Biggs, H. C. (Eds.) 2003. The Kruger experience: Ecology and management of savanna heterogeneity. Island Press, Washington DC.
- Eide, A., Krause, C. and Rosas, A. (Eds.) 2002. Economic, social and cultural rights: A text book second revised edition. Martinus Nijhoff Publishers, Dordrecht/Boston/London.

- Ellis, F. 2000. Rural livelihoods and diversity in developing countries. Oxford University Press, Oxford.
- Ellis, F. 1998. Survey article: Household strategies and rural livelihood diversification. *The Journal of Development Studies*, **35** (1):1-38.
- Ellis, W. 2010. The #Khomani San land claim against the Kalahari Gemsbok National Park: Requiring and acquiring authenticity. In: *Land, memory, reconstruction and justice*. (Eds.) Walker, C., Bohlin, A., Hall R. and Kepe, T. Ohio University Press, Ohio. Pp 181-197.
- EMDP. 2009. Erin Management and Development Plan. Andriesvale-Ashkam, Northern Cape, South Africa.
- Fabricius, C. 2004. The fundamentals of community-based natural resource management. In: *Rights, resources and rural development: Community-based natural resource management in Southern Africa*. (Eds.) Fabricius, C., Koch, E., Magome, H. and Turner, S., Earthscan, London. Pp. 3-43.
- Fabricius, C. and de Wet, C. 2002. The influence of forced removals and land restitution on conservation in South Africa. In: *Conservation and mobile indigenous peoples: Displacement, forced settlement and conservation*. (Eds.) Chatty, D. and Colchester, M. Berghahn Books, New York/Oxford. Pp. 142 -157.
- Fabricius, C., Koch, E., Magome, H. and Turner, S. (Eds.) 2004. Rights, resources and rural development: Community-based natural resources management in Southern Africa. Earthscan, London.
- Fabricius, C., Scholes, R. J. and Cundill, G. 2006. Mobilising knowledge for ecosystem management. In: *Bridging scales and knowledge systems. Concepts and applications in ecosystem assessment*. (Eds). Reid, W.V., Berkes, F. Wilbanks, T. J. and Capistrano, D. Island Press, Washington, DC.
- Farber, S., Costanza, R. and Wilson, M. 2002. Economic and ecological concepts for valuing ecosystem services. *Ecological Economics*, **41** (3): 375-392.
- Ferraro, P. J. and Pattanayak, S. K. 2006. Money for nothing? A call for empirical evaluation of biodiversity conservation investments. *PLoS Biology*, **4** (4): 0482-0488.
- Finer, M., Vijay, V., Ponce, F., Jenkins, C. N. and Kahn, T. R. 2009. Ecuador's Yasuni Biosphere Reserve: A brief modern history and conservation challenges. *Environmental Research Letters*, **2** (2009):1-15.
- Fisher, M. 2004. Household welfare and forest dependence in Southern Malawi. *Environment and Development Economics*, **9** (2):135-154.
- Folke, C., Hahn, T., Olsson, P. and Norberg, J. 2005. Adaptive governance of social-ecological systems. *Annual review of environment and resources*, **30**: 441-473.

- Forsyth, T. 2007. Multilevel, multiactor governance in REDD + Participation, integration and coordination. <http://www.forestclimatechange.org/fileadmin/downloads/realisingredd9.pdf>. [Accessed 18 March 2010].
- Francis, E. 2000. Making a living: Changing livelihoods in rural Africa. Routledge, London.
- Freitag-Ronaldson, S. and Foxcroft, L.C. 2003. Anthropogenic influences at the ecosystem level. In: *The Kruger experience: Ecology and management of savanna heterogeneity*, (Eds.) du Toit, J. T., Rogers, K. V. and Biggs, H. C. Washington, DC, Island Press. Pp 391-421.
- Gall, S. 2001. The Bushmen of Southern Africa: Slaughter of the innocent. Chatto and Windus, London.
- Garcia-Alix, L. and Hitchcock, R. K. 2009. A report from the field: The Declaration on the rights of indigenous peoples - implementation and implications. *Genocide Studies and Prevention*, 4 (1): 99-109.
- Garnett, S.T., Sayer, J. and du Toit, J. 2007. Improving the effectiveness of interventions to balance conservation and development: A conceptual framework. *Ecology and Society* 12 (1): 2. [online] URL: <http://www.ecologyandsociety.org/vol12/iss1/art2/>.
- Gartlan, S. 1998. Every man for himself and God against all: history, social science and the conservation of nature. In: *Resource use in the Trinational Sangha River Region of Equatorial Africa: Histories, knowledge, forms and institutions* (Eds.) Eves, H., Hardin, R. and Rupp, S. Yale School of Forestry and Environmental Studies, Yale, USA. Pp. 216-226.
- GCWG (The Grasslands Carbon Working Group). 2011. Rangelands and climate change: Mitigation, adaptation and co-benefits. http://typo3.fao.org/fileadmin/templates/agphome/documents/rangelands/Draft-GCWG-Brief-IRC-April2011_28-3-11rev2_3_1_2_.pdf. [Accessed 20 June 2011].
- Ghimire, K. and Pimbert, M. (Eds.). 1997. Social change and conservation: Environmental politics and impacts of national parks and protected areas. Earthscan Publications, London.
- Godoy, R., Brokaw, N. and Wilkie, D. 1995. The effect of income on the extraction of non-timber tropical forest products: Model, hypothesis, and preliminary findings from the Sumu Indinas of Nicaragua. *Human Ecology*, 2 (1): 29-52.
- Godoy, R., Overman, H., Demmer, J., Apaza, L., Byron, E., Huanca, T., Leonard, W., Perez, E., Reyes- Garcia, V., Vadez, V., Wilkie, D., Cubas, A., McSweeney, K. and Brokaw, N. 2002. Local financial benefits of rain forests: comparative evidence from Amerindian societies in Bolivia and Honduras. *Ecological Economics*, 40 (3): 397-409.
- Goebel, A. 2005. Is Zimbabwe the future of South Africa? The implications for land reform in Southern Africa. *Journal of Contemporary African Studies*, 23:345-364.

- Gram, S. 2001. Economic valuation of special forest products: An assessment of methodological shortcomings. *Ecological Economics*, **36** (1):109-117.
- Grossman, D. and Ganda, M. V. 1989. Land transformation in South Africa's savanna regions. *South African Geographical Journal*, **71**: 38-45.
- Grossman, D. and Holden, P. 2009. Towards transformation: Contractual national parks in South Africa. In: *Evolution and innovation in wildlife conservation: Parks and game ranches to Transfrontier Conservation Areas*. (Eds.) Suich, H., Child, B. and Spenceley, A. Earthscan, UK. Pp. 357-372.
- Guirand, F. (1987). *New Larousse Encyclopedia of Mythology: Introduction by Robert Graves*. Crescent Books, New York.
- Gujarati, D. N. and Porter, D. C. 2009. *Basic econometrics* (5th Edition). McGraw-Hill, New York.
- Hanks, J. 2003. Transfrontier Conservation Areas (TFCAs) in Southern Africa: Their role in conserving biodiversity, socioeconomic development and promoting a culture of peace. *Journal of Sustainable Forestry*, **17** (1/2):127-148.
- Hannon, B. 2001. Ecological pricing and economic efficiency. *Ecological Economics*, **36** (1):19-30.
- Hardin, G. 1968. The tragedy of the commons. *Science*, **162** (1): 243–248.
- Harmony, D. and Putney, D.A. (Eds.). 2003. *The full value of parks: From economics to the intangible*. Rowman and Littlefield publishers, USA.
- Harvey, D. 1996. *Justice, nature and geography of difference*. Blackwell, Oxford.
- Hayes, T. M. 2006. Parks, people and forest protection: An institutional assessment of the effectiveness of protected areas. *World Development*, **34** (12): 2064-2075.
- Heal, G. 2000. *Nature and the marketplace: Capturing the value of ecosystem services*. Island Press, Washington, D.C.
- Heinz, H. J. 1972. Territoriality among the Bushmen in general and the !Xo in particular. *Anthropos*, **67**: 405-416.
- Heinz, H. J. 1979. The nexus complex among the !Xo Bushmen of Botswana. *Anthropos*, **74**:465-80.
- Hitchcock, R. K. 2002. We are the first people: Land, natural resources and identity in the Central Kalahari, Botswana. *Journal of Southern African Studies*, **28**, (4): 797-824.
- Hitchcock, R. K. 1987. Anthropological research and remote area development among Botswana Basarwa. In: *Research for development in Botswana*. (Eds.) Hitchcock, R. Parsons, N. and Taylor, J. Botswana Society, Gaborone. Pp. 437-451.

- Hitchcock, R. K., 1996. Kalahari communities: Bushmen and the politics of the environment in Southern Africa. IWGIA document Number 79.
- Hoff, M. D. and McNutt, J. G. 1994. The global environmental crisis: Implications for social welfare and social work. Ashgate Publishing Limited, England.
- Holden, P. 2007. Conservation and human rights: The case of the Khomani San (Bushmen) and the Kgalagadi Transfrontier Park, South Africa. *Policy Matters*, **15**: 57-68.
- Holmes-Watts, T. and Watts, S. 2008. Legal frameworks for and the practice of participatory natural resources management in South Africa. *Forest Policy and Economics*, **10** (7-8): 435-443.
- Hornby, A.S., Wehmeier, S. and Ashby, M. 2000. Oxford Advanced Learner's Dictionary of Current English (6th Edition). Oxford University Press, Oxford.
- Howarth, R. and Farber, S. 2002. Accounting for the value of ecosystem services. *Ecological Economics*, **41** (3): 421-429.
- Hulme, D. and Murphree, M. 2001. African wildlife and livelihoods: The promise and performance of community conservation. James Currey, London.
- Hulme, D. and Murphree, M. 1999. Communities, wildlife and the "now conservation" in Africa. *Journal of International Development*, **11**: 277-285.
- Hunn, E. S., Johnson, D., Russell, P. and Thornton, T. F. 2003. Huna Tlingit traditional environmental knowledge, conservation, and the management of a "wilderness" park. *Current Anthropology*, **44**: S79-S103.
- Hupston, F., 2009. Khoisan - Indigenous people of Southern Africa. Early inhabitants of Kalahari region of sub-Saharan Africa. http://cultural-anthropology.suite101.com/article.cfm/khoisan_indigenous_people_of_southern_africa. [Accessed 18 May 2009].
- Hutton, J. M. and Leader-Williams, N. 2003. Sustainable use and incentive-driven conservation: Realigning human and conservation interests. *Oryx*, **37**: 215-226.
- ICEM. 2003. Protected areas and development: Lessons from the Lao People's Democratic Republic. http://www.mekong-protected-areas.org/lao_pdr/docs/lao_lessons.pdf. [Accessed 30 December 2010].
- IIED. 2009. Arid waste? Reassessing the value of dryland pastoralism. <http://www.iied.org/pubs/display.php?o=17065IIED>. [Accessed 15 August 2011].
- IIED. 1997. Valuing the hidden harvest: Methodological approaches for local-level Economic analysis of wild resources. In: *Sustainable Agriculture Programme Research Series 3*, Volume 4. IIED, London.

- IUCN 2004. 2003 Durban World Parks Congress. *The International Journal for Protected Area Managers*, **14** (2):1-64.
- IUCN Collaborative Management Working Group (CMWG) and Theme Indigenous and Local Communities, Equity and Protected Areas (TILCEPA). 2004. Governance of natural resources - the key to a just world that values and conserves nature? CENESTA, Tehran, Iran.
- Jin, J., Wang, Z., Ran, S. and Yun C. 2003. Study on coastal resource evaluation theories and methods. *Paper presented at the International Conference on Estuaries and Coasts*, Hangzhou, China, 9-11 November 2003.
- Jodha, N. S. 1995. Common property resources and the dynamics of rural poverty in India's dry regions. *Unasylva*, **46** (180): 23-29.
- Jones, L. and Boyd, E. Exploring social barriers to adaptation: Insights from Western Nepal. *Global Environmental Change*. doi:10.1016/j.gloenvcha.2011.06.002
- Jones, S. and Carswell, G. (Eds.) 2004. The Earthscan reader in environment, development and rural livelihoods. Earthscan, UK.
- Kabubu-Mariara, J. 2008. Forest dependence and household welfare: empirical evidence from Kenya. CEEPA Discussion Paper No 41. Centre for Environmental Economics and Policy in Africa, University of Pretoria.
- Kamanga, P., Vedeld, P. and Sjaastad, E. 2008. Forest incomes and rural livelihoods in Chiradzulu District, Malawi. *Ecological Economics*, **68** (3): 613-624.
- Kanowski, P. J. and Williams, K. J. H. 2009. The reality of imagination: Integrating the material and cultural values of old forests. *Forest Ecology and Management*, **258** (2009): 341-346.
- Katz, R. 1982. Accepting 'boiling energy'. *Ethos*, **10** (3): 344-368.
- Kelleher, G. and Phillips, A. (Eds.) 1999. Guidelines for marine protected areas. IUCN - Best Practice Protected Area Guidelines Series Number 3. IUCN, Gland and Cambridge.
- Kepe, T. 2008a. Beyond the numbers: Understanding the value of vegetation to rural livelihoods in Africa. *Geoforum*, **39** (2): 958-968.
- Kepe, T. 2008b. Land claims and co-management of protected areas in South Africa: Exploring the challenges. *Environmental Management*, **41**: 311-321.
- Kepe, T. V. 2002. Grassland vegetation and rural livelihoods: A case study of resource value and social dynamics on the Wild Coast, South Africa, Unpublished PhD thesis, University of the Western Cape, Cape Town.

- Kepe, T. 2001. Waking up from the dream: The pitfalls of “fast-track”. Development on the Wild Coast of South Africa. *Research Report Number 8*, Programme for Land and Agrarian Studies, University of the Western Cape, Bellville.
- Kepe, T., Wynberg, R. and Ellis, W. 2005. Land reform and biodiversity conservation in South Africa: Complementary or in conflict? *International Journal of Biodiversity Science and Management*, **1** (1): 3-16.
- Kerven, C. and Behnke, R. (Eds.) 2007. A preliminary assessment of the economic value of the goods and services provided by dryland ecosystems of the Air and Ténéré, Niger. IUCN, Gland, Switzerland.
- Keyzer, M. A., Sonneveld, B. G. J. S. and Veen, W. V. 2006. Valuation of natural resources: Efficiency and equity. Centre for World Food Studies of the Vrije Universiteit Amsterdam, The Netherlands.
- Khomani San. 2007. Protocols for Sustainable Resources use and Cultural Activities of #Khomani San in the !AE! HAI Kgalagadi Heritage Park and the Area in the Kgalagadi Transfrontier Park in which they have Cultural and Symbolic Rights. #Khomani San, Andriesvale-Kalahari.
- Kiss, A. 2004. Is community-based ecotourism a good use of biodiversity conservation funds? *Trends in Ecology and Evolution*, **19** (5): 232-237.
- Koontz, T. M. 2003. An introduction to the Institutional Analysis and Development (IAD) framework for forest management research. *Paper prepared for “First Nations and Sustainable Forestry: Institutional conditions for success,” workshop*, University of British Columbia, Faculty of Forestry, Vancouver, B.C., 23-24 October 2003.
- Koster, H. P. 2000. Livelihoods and the farming sector of the Mier community in the Northern Cape Province. Unpublished MSc thesis, University of Pretoria, Pretoria.
- Laudati, A. 2010. Ecotourism: the modern predator? Implications of gorilla tourism on local livelihoods in Bwindi Impenetrable National Park, Uganda. *Environmental Planning D: Society and Space*, **28** (4): 726-743.
- Lee, R. B. 2006. Twenty-first century indigenism. *Anthropological Theory*, **6** (4): 455-479.
- Lee, R. B. and Hitchcock, R. K. 2001. African hunter-gatherers: Survival, history and the politics of identity. *African Study Monographs Supplement* **26**: 257-280.
- Lee, R. B. 1979. The! Kung San: Men, women and work in a foraging society. Cambridge University Press, Cambridge and New York.
- Lee, R. B. 1968. The hunters: Scarce resources in the Kalahari. In *Man the hunter*, (Eds.) Lee, R.B. and Devore, I. Aldine, Chicago. Pp. 108-123.
- Levin, R. and Weiner, D. (Eds.) 1997. No more tears: struggles for land in Mpumalanga, South Africa. World Africa Press, Trenton, New Jersey.

- Lewis-Williams, J.D. 1998. Quanto? The issue of 'many meanings' in Southern African San rock art research. *JSTOR-The South African Archaeological Bulletin*, **53** (168): 86-97.
- Lewis-Williams, J.D. 1986. The last testament of the Southern San. *JSTOR-The South African Archaeological Bulletin*, **41** (143):10-11.
- Limburg, K., O'Neill, R., Costanza, R. and Farber, S. 2002. Complex systems and valuation. *Ecological Economics*, **41** (3): 409-420.
- Long, N. and Long, A. (Eds.) 1992. *Battlefields of knowledge: The interlocking of theory and practice in social research and development*. Routledge, London, UK.
- Low, A. B. and Rebelo, A. G. 1998. *Vegetation of South Africa, Lesotho and Swaziland*. Department of Environmental Affairs and Tourism, Pretoria, South Africa.
- Lynam, T., Bousquet, F., Le Page, C., d'Aquino, P., Barreteau, O., Chinembiri, F. and Mombeshora, B. 2002. Adapting science to adaptive managers: Spidergrams, belief models, and multi-agent systems modeling. *Conservation Ecology*, **5** (2): 24. [online] URL: <http://www.consecol.org/vol5/iss2/art24>.
- Lynam, T., De Jong, W., Sheil, D. K. T. and Evans, K. 2007. A review of tools for incorporating community knowledge, preferences, and values into decision making in natural resources management. *Ecology and Society*, **12** (1): 5. [online] URL: <http://www.ecologyandsociety.org/vol12/iss1/art5/>
- MA (Millennium Ecosystem Assessment). 2003. *Ecosystems and human well-being. A framework for assessment*. Island Press, Washington.
- Madzwamuse, M., Schuster, B. and Nherera, B. 2007. *The real jewels of the Kalahari: Drylands ecosystem goods and services in Kgalagadi South District, Botswana*. IUCN, Gland, Switzerland.
- Makhanya, M. 2011. Will this nation allow its languages to die out - from sheer neglect? *Sunday Times*, 1 May 2011.
- Mamo, G., Sjaastad, E. and Vedeld, P. 2007. Economic dependence on forest resources: A case from Dendi District, Ethiopia. *Forest Policy and Economics*, **9** (8): 916-927
- Mandondo, A. 1997. Trees and spaces as emotion and norm laden components of local ecosystems in Nyamaropa communal land, Nyanga District, Zimbabwe. *Agriculture and Human Values*, **14**: 353-372.
- Mannetti, L. 2010. *Understanding plant use by the #Khomani Bushmen of the Southern Kalahari*. Unpublished MSc thesis, University of Stellenbosch, Stellenbosch.
- Martens, C. 2009. *The governance and management of commonages in three small towns in the Eastern Cape, South Africa*. Unpublished MSc Thesis, Rhodes University, Grahamstown.

- Maruyama, J. 2003. The impact of resettlement on livelihood and social relationships among the Central Kalahari San. *African Study Monographs*, **24**, (4): 223-245.
- Masekoameng, K. E., Simalenga, T. E. and Saidi, T. 2005. Household energy needs and utilization patterns in the Giyani rural communities of Limpopo Province, South Africa. *Journal of Energy in Southern Africa*, **16** (3): 4-9.
- Massyn, J. and Humphrey, E. 2010. Tourism development plan: #Khomani San community. The African Safari Lodge Foundation, Parkview, South Africa.
- Matose, F. 2008. Institutional configurations around forest reserves in Zimbabwe: The challenge of nested institutions for resource management. *Local Environment*, **13** (5): 393-404.
- McCall, G. S. 2000. Why the eland? An analysis of the role of sexual dimorphism in San rock art. <http://www.rupestre.net/tracce/12/eland.html>. [Accessed 21 June 2011].
- McCusker, B. 2004. Land use and cover change as an indicator of Transformation on recently redistributed farms in Limpopo Province, South Africa. *Human Ecology*, **32** (1): 49-75.
- McNeely, J. 1995. Expanding partnerships in conservation. Island Press, Washington DC.
- Mhiripiri, N. A. 2008. The Tourist viewer, the Bushmen and the Zulu: Imaging and (re)invention of identities through contemporary visual cultural productions. Unpublished PhD thesis, University of KwaZulu-Natal.
- Milton, J. S. and Bond, C. 1986. Thorn trees and the quality of life in Msinga. *Social Dynamics*, **12**, (2): 64-76.
- Mmpelwa, G., Blignaut, J. and Hassan, R. 2009. Direct-use values of selected vegetation resources in the Okavango Delta Wetland. *SAJEMS NS*, **12** (2): 242-255.
- Muchapondwa, E., Biggs, H., Driver, A., Matose, F., Moore, K., Mungatana, E. and Scheepers, K. 2009. Using economic incentives to encourage conservation in Bioregions in South Africa. *Working Paper No 120*, University of Cape Town/SANParks/SANBI/University of Pretoria.
- Munasinghe, M. and Lutz, E. 1993. Environmental economics and valuation in development decision-making. In: *Environmental economics and natural resource management in developing countries*. (Ed.) Munasinghe, M. World Bank, Washington, DC. Pp. 17-45.
- Murphree, M. 1996. Approaches to community conservation. In: *African wildlife policy consultation: Final report*. (Ed.) O.D.A., O.D.A, London. Pp. 155-188.
- Murphree, M. W. 2000. Community-based conservation: Old ways, new myths and enduring challenges. *Key address at the conference on 'African Wildlife Management in the New Millenium' Tanzania*, Mweka, Tanzania: College of African Wildlife Management, 13-15 December 2000.

- Nemarundwe, N. and Richards, M. 2002. Participatory methods for exploring livelihood values derived from forests: potential and limitations. In: *Uncovering the hidden harvest: Valuation methods for woodland and forest resources. People and plants conservation series*. (Eds.) Campbell, B. M. and Luckert, M. K. Earthscan, London, UK. Pp. 169-196.
- Neumann, R. P. 1998. Imposing wilderness: Struggles over livelihood and nature preservation in Africa. University of California Press, Berkeley, CA.
- Neumann, R. P. 1997. Primitive Ideas: Protected Area Buffer Zones and the Politics of Land in Africa. *Development and Change*, **28**: 559-582.
- North, D. 1990. Institutional change and economic performance. Cambridge University Press, Cambridge.
- Ntiamoa-Baidu, Y., Zéba, S. and Gamassa, D.M., and Bonnhéin, L. 2001. Principles in practice: Staff observations of conservation projects in Africa. Biodiversity Support Program, Washington DC.
- Oates, J. F. 1999. Myth and reality in the rainforest: How conservation strategies are failing in Africa. University of California Press, Berkeley, CA.
- Ohmagari, K. and Berkes, F. 1997. Transmission of indigenous knowledge and bush skills among the Western James Bay Cree Women of Subarctic Canada. *Human Ecology*, **25** (2): 197-222.
- Oldham, P. and Frank, M. A. 2008. 'We the peoples...' The United Nations Declaration on the Rights of Indigenous Peoples. *Anthropology Today*, **24** (2): 5-9.
- Oliver, H. K. 1995. Estimating the value of marine resources: A marine recreation case. *Ocean and Coastal Management*, **27** (1-2): 129-141.
- Olsson, P., Folke, C. and Berkes, F. 2004. Adaptive co-management for building resilience in social-ecological systems. *Environmental Management*, **3**: 75-90.
- Ostrom, E., 2007. "Institutional Rational Choice: An assessment of the Institutional Analysis and Development Framework." In Sabatier, P., (Ed.) 2007. Theories of the policy process. Boulder, CO: Westview Press.
- Ostrom, E. 1999. Self-governance and forest resources. CIFOR Occasional Paper Number 20, Center for International Forestry Research, Bogor, Indonesia.
- Ostrom, E. 1990. Governing the commons: The evolution of institutions for collective action. Cambridge University Press, Cambridge.
- Ostrom, E., Gardner, R., Walker, J. 1994. Rules, games, and common pool resources. University of Michigan Press, Ann Arbor, Michigan.
- Ostrom, E., Janssen, M. A. and Anderies, J. M. 2007. Going beyond panaceas. *PNAS*, **104** (39): 15176-15178

- Palmer, R., Timmermans, H. and Fay, D. (Eds.) 2002. From conflict to negotiation: Nature-based development on the South African Wild Coast. Human Sciences Research Council, Pretoria.
- PANRUSA (Poverty, Policy and Natural Resource Use in Southern Africa). 2001. People, rangeland change and sustainability in the arid South West: <http://www.shef.ac.uk/panrusa>. [Accessed 21 June 2011].
- Peet, R. and Watts, M. 2004. Liberation ecologies: Environment, development, social movements (2nd edition). Routledge, London and New York.
- Peluso, N. L. 1993. Coercing conservation? The politics of state resource control. *Global Environmental Change*, **3**:199-217.
- Peters, C., Gentry, A. and Mendelsohn, R. 1989. Valuation of an Amazon rainforest. *Nature* **339**: 655-656.
- Pollard, S., Shackleton, C. and Carruthers, J. 2003. Beyond the fence: People and the Lowveld Landscape. In: *The Kruger experience: Ecology and Management of Savanna Heterogeneity*. (Eds.) du Toit, J. T., Rogers, K. H. and Biggs, H. C. Island Press, Washington DC. Pp 59-80.
- Posey, D. A. 1999. Cultural and spiritual values of biodiversity: A complementary contribution to the Global Biodiversity Assessment. In: *Cultural and spiritual values of biodiversity*. (Ed.) Posey, D. A. United Nations Environmental Programme and Intermediate Technology Publications, London. Pp. 1-19.
- Poteete, A. and Ostrom, E. 2002. An institutional approach to the study of forest resources. International Forestry Resources and Institutions (IFRI) Research Program, Indiana University.
- Pretty, J. (Ed.) 2006. Environment: Key issues for the Twenty-First Century (Volume 1). Thinking and knowing about the environment and nature. SAGE publications, London.
- Pretty, J. and Ward, H. 2001. Social capital and the environment. *World Development*, **29** (2): 209-227.
- Ramutsindela, M. 2007. Transfrontier conservation in Africa: At the confluence of capital, politics and nature. CABI, Nosworthy Way and Massachusetts.
- Ramutsindela, M. 2006. State restructuring and rural development in South Africa. In: *Globalising rural development: Competing paradigms and emerging realities*. (Ed.) Behera, M. C. Sage, New Delhi. Pp. 78-91.
- Ramutsindela, M. 2002. The perfect way to ending a painful past? Makuleke land deal in South Africa. *Geoforum*, **33** (1): 15-24.
- Ramutsindela, M. F. 1998. Compromises and consequences: An analysis of South Africa's land reform programme. *The Arab World Geographer*, **1** (2): 155-169.

- Rao, M. and Ginsberg, J. 2010. From conservation theory to practice: Crossing the divide. In: *Conservation biology for all*. (Eds.) Sodhi, N.S. and Ehrlich, P.R. Oxford University Press, Oxford. Pp. 284-312.
- Reid, H., Fig, D., Magome, H. and Leader-Williams, N. 2004. Co-management of Contractual National Parks in South Africa: Lessons from Australia. *Conservation and Society*, **2** (2): 337-409.
- Richardson, R. 2004. A conceptual framework for comparative studies of higher education policy. An AIHEPS Working Paper. New York University, New York and the Centro de Investigacion y Estudios Avanzados, Mexico City.
- Robbins, P. 2004. Political ecology: A critical introduction. Blackwell, Oxford.
- Robins, G. 2001. NGO's, 'Bushmen' and double vision. The Khomani San land claim and the cultural politics of 'Community' and 'Development' in the Kalahari. *Journal of Southern African Studies*, **27** (4): 833-853.
- Robson, C. 1993. Real world research: A resource for social scientists and practitioners-researchers. Blackwell, Oxford.
- Ross, R. 1983. Cape of torments: Slavery and resistance in South Africa. Routledge, London.
- SAHRC (South African Human Rights Commission). 2004. Report on the inquiry of human rights violations in the Khomani San community. Andriesvale-Askham Area, Kalahari.
- Sallu, S. M., Twyman, C. and Thomas, D. S. G. 2010. The multidimensional nature of biodiversity and social dynamics and implications for contemporary rural livelihoods in remote Kalahari settlements, Botswana. *African Journal of Ecology*, **47** (Suppliment 1): 110-118.
- Sandwith, T., Shine, C., Hamilton, L. and Sheppard, D. 2001. Transboundary Protected Area for Peace and Co-operation. IUCN, Gland, Switzerland and Cambridge, UK.
- SANParks. 2008. Developing a system for sustainable resource use by the Khomani San in Kgalagadi Transfrontier Park and environs: Potential project themes. South African National Parks, Kimberley.
- SANParks. 2006. Kgalagadi Transfrontier Park, Park Management Plan. Ref No. 16/1/5/1/5/11/1. <http://www.sanparks.org/parks/kgalagadi/>. [Accessed 18 May 2009].
- Sayer, J., Ishwaran, N., Nasution, M. and Thorsell, J. 2000. World heritage forests: The World Heritage Convention as a mechanism for conserving tropical forest biodiversity. CIFOR, Government of Indonesia, UNESCO, Bogor.
- Schoffeleers, J. M. (Ed.) 1978. Guardians of the land: Essays on Central African territorial cults. Mambo Press, Zambeziana Series 5, Gwelo.

- Scoones, I. 1998. Sustainable rural livelihoods: A framework for analysis. IDS working paper 72. Institute of Development Studies, UK.
- Scott, W. R. 1995. Institutions and organizations. Sage Publications, CA.
- Scovronick, N. C. and Turpie, J. K. 2009. Is enhanced tourism a reasonable explanation for transboundary conservation? An evaluation of the Kgalagadi Transfrontier Park. *Environmental Conservation*, **36** (2):149-156.
- Shackleton, C. M., Netshiluvhi, T. R., Shackleton, S. E., Geach, B. S., Ballance, A. and Fairbanks, D. F. K. 1999. Direct use values of woodland resources from three rural villages. CSIR Report No ENV-P-I 98210, Pretoria.
- Shackleton, C. M. and Shackleton, S. E. 2004a. The importance of non-timber forest products in rural livelihood security and as safety nets: Evidence from South Africa. *South African Journal of Science*, **100**: 658-664.
- Shackleton, C. M. and Shackleton, S. E. 2006. Household wealth status and natural resource use in the Kat River Valley, South Africa. *Ecological Economics*, **57** (2): 306-317.
- Shackleton, C. M. and Shackleton, S. E. 2000. Direct use values of secondary resources harvested from communal savannas in the Bushbuckridge Lowveld, South Africa. *Journal of Tropical Forest Product*, **6**: 28-47.
- Shackleton, S. and Shackleton, C. 2007. Exploring the role of wild natural resources in poverty alleviation with an emphasis on South Africa. *Paper prepared for the SANPAD conference on Poverty held in June 2007*, Department of Environmental Science, Rhodes University, Grahamstown.
- Shackleton, S. and Shackleton, C. 2004b. Everyday resources are valuable enough for community-based natural resource management programme support. Evidence from South Africa. In: *Rights, resources and rural development: Community-based natural resources management in Southern Africa*. (Eds.) Fabricius, C., Koch, E., Magome, H. and Turner, S. Earthscan, London; Sterling, VA. Pp. 135-146.
- Shackleton, S. E. 2005. The significance of local-level trade in natural resource products for livelihoods and poverty alleviation in South Africa. Unpublished PhD thesis, Rhodes University, Grahamstown.
- Shackleton, S., Campbell, B., Lotz-Sisitka, H. and Shackleton, C. 2008. Links between the local trade in natural products, livelihoods and poverty alleviation in a semi-arid region of South Africa. *World Development*, **36** (3): 505-526.
- Shackleton, S, Delang, C. O. and Angelsen, A. (2011). From subsistence to safety nets and cash income. Exploring the diverse values of non-timber forest products for livelihoods and poverty alleviation. In: Shackleton, S., Shackleton, C. and Shanley, P. (Eds). Non-timber forest products in the global context. Springer, Heidelberg, Dordrecht, London, New York, Pp 55-82.

- Shackleton, S. E., Shackleton, C. and Cousins, B. 2000a. The economic value of land and natural resources to rural livelihoods: Case studies from South Africa. In: *At the Crossroads: Land and agrarian reform in South Africa into the 21st Century*. (Ed.) Cousins, B. Programme for Land and Agrarian Studies and NLC, Bellville and Johannesburg. Pp. 35-67.
- Shackleton, S. E., Shackleton, C. and Cousins, B. 2000b. Re-valuing the communal lands of Southern Africa: New understandings of rural livelihoods. *Natural Resources Perspectives* 62. Overseas Development Institute, London.
- Shackleton, S. E., Shackleton, C. M., Netshiluvhi, T. R., Geach, B. S., Ballance, A. and Fairbanks, D. F. K. 2002. Use patterns and value of Savanna resources in three rural villages in South Africa. *Economic Botany*, **56** (2): 130-146.
- Shamai, S. 1991. Sense of place: An empirical measurement. *Geoforum*, **22** (3): 347-358
- Sheil, D. and Wunder, S. 2002. The value of tropical forest to communities: complications, caveats, and cautions. *Conservation Ecology*, **6** (2): 9-25.
- Steyn, H. P. 1984. Southern Kalahari San subsistence ecology: A reconstruction. *The South African Archaeological Bulletin*, **39**:117-124.
- Sunderland, T. 2006. Reconciling conservation and development: Is it possible? Background briefing note. CIFOR, Bogor.
- Sunderland, T. C. H., Ehringhaus, C. and Campbell, B. M. 2008. Conservation and development in tropical forest landscapes: A time to face the trade-offs? *Environmental Conservation*, **34** (4): 276-279.
- Suzman, J. 2001. Regional Assessment of the Status of the San in Southern Africa. An introduction to the regional assessment of the status of the San in Southern Africa. Report No 1 of 5. Legal Assistance Centre, Windhoek.
- Tanaka, J. 1980. The San: Hunter-gatherers of the Kalahari. University of Tokyo Press, Tokyo.
- Tapela, B. N., Maluleke, L. and Mavhunga, C. 2007. New Architecture, Old Agendas: Perspectives on Social Research in Rural Communities Neighbouring the Kruger National Park. *Conservation and Society*, **5** (1): 60-87.
- Terborgh, J. 1999. Requiem for nature. Island Press, Washington D.C.
- Thoma, A. 1996. The communal land and resource management system of the San. *Paper presented at the Consultative Conference on Communal Land Administration*, Windhoek, Namibia, 27 September 1996.
- Thomas, D. S. G. and Twyman, C. 2004. Good or bad rangeland? Hybrid knowledge, science, and local understandings of vegetation dynamics in the Kalahari. *Land Degradation and Development*. **15** (3): 215-231.

- Thomas, E. M. 2006. *The old way: A story of the first people*. Farrar, Straus and Giroux, New York.
- Thondhlana, G., Shackleton, S. and Muchapondwa, E. 2011. Kgalagadi Transfrontier Park and its land claimants: A pre- and post-land claim conservation and development history. *Environmental Research Letters*, **6** (2):1-12. [online] URL: stacks.iop.org/ERL/6/024009.
- Timmermans, H. 1999. Power relations and their impacts at Dwesa and Cwebe Wildlife and Marine Reserves - South Eastern Seaboard, South Africa. Unpublished report, International Institute for Environment and Development, London.
- Tomaselli, K. G. (Ed.). 2007. *Writing in the San/d: Auto-ethnography amongst indigenous Southern Africans*. Altamira Press, New York.
- Turner, R. K., Paavola, J., Cooper, P., Farber, S., Jessamy, V. and Georgiou, S. 2003. Valuing nature: Lessons learned and future research directions. *Ecological Economics*, **46**: 493-510.
- Turner, S. 2004. Community-based natural resource management and rural livelihoods. In: *Rights, resources and rural development: Community-based natural resources management in Southern Africa*. (Eds.) Fabricius, C., Koch, E., Magome, H. and Turner, S. Earthscan, London. Pp 44-65
- Turpie, J. K. 2003. The existence value of biodiversity in South Africa: How interest, experience, knowledge, income and perceived level of threat influence local willingness to pay. *Ecological Economics*, **46** (2): 199-216.
- Turpie, J., Barnes, J., Arntzen, J., Nherera, B., Lange, G. and Buzwani, B. 2006. Economic value of the Okavango Delta, Botswana and implications for management. IUCN.
- Twine, W., Moshe, D., Netshiluvhi, T. and Siphugu, V. 2003. Consumption and direct-use values of savanna bio-resources used by rural households in Mametja, a semi-arid area of Limpopo province, South Africa. *South African Journal of Science* **99**: 467-473.
- Twyman, C. 2001. Natural resource use and livelihoods in Botswana's wildlife management areas. *Applied Geography*, **21** (1): 45-68.
- Twyman, C. 2000. Livelihood opportunity and diversity in Kalahari wildlife management areas, Botswana: Rethinking community resource management. *Journal of Southern African Studies*, **26** (4): 783-806.
- Uberhuaga, P. and Olsen, C. S. 2008. Can we trust the data? Methodological experiences with forest product valuation in lowland Bolivia. Proceedings of the Biennial Meeting of the Scandinavian Society of Forest Economics Lom, Norway, 6th-9th April. *Scandinavian Forest Economics*, **42**: 508-524 (ISSN 0355-032X).
- UNDP. 2006. Kenya National Human Development Report: Human security and human development – A Deliberate Choice. UNDP, Nairobi.

- UNEP. 1992. Convention on Biological Diversity. UNEP, Nairobi.
- United Nations. 1994. Draft United Nations Declaration on the Rights of Indigenous Peoples. Office of the United Nations High Commissioner for Human Rights Geneva, Switzerland.
- Useb, J. 2000. A history of water resource access in the southern Kalahari: San perspectives on the role of modern technology in dispossession and poverty. *Paper presented at the 2nd World Water Forum and Ministerial Conference, The Hague, 21 March 2002.*
- Vaccaro, I. and Norman, K. 2007. Social Sciences and landscape analysis: Opportunities for the improvement of conservation policy design. *Environmental Management*, **88** (2): 360-371.
- van Rooyen, A. F. 1998. Combating desertification in the southern Kalahari: connecting science with community action in South Africa. *Journal of Arid Environments*, **39**: 285-298.
- van Rooyen, N. and Bredenkamp, G. J. 1996. Shrubby Kalahari dune bushveld. In: *Vegetation of South Africa, Lesotho and Swaziland: A Companion to the Vegetation Map of South Africa, Lesotho and Swaziland*. (Eds.) Low, A. B. and Rebelo, A. G., Department of Environmental Affairs and Tourism. Pretoria. Pp. 33-35.
- Vatn, A. 2005. Institutions and the environment. Edward Elgar Publishing Limited, UK.
- Vedeld, P., Angelsen, A., Sjaastad, E. and Berg, G. K. 2004. Counting on the environment: Forest incomes and the rural poor. *Environmental Economics Series 98*. The World Bank Environmental Department, The World Bank, Washington D.C.
- Vedeld, P., Angelsen, A. Sjaastad, E. and Bojø, J. 2007. Forest environmental incomes and the rural poor. *Forest Policy and Economics* **9** (7): 869-879.
- Vella, K. 2003. Assessing the institutional arrangements governing Australia's outback resources, CSIRO Sustainable Ecosystems, Australia.
- Vinnicombe, P. 1972. Myth, motive, and selection in Southern African rock art. *Journal of the International African Institute*, **42** (3): 192-204.
- Wallman, S. 1984. Eight London households. Tavistock, London.
- Walsh, K. 2003. Qualitative research: Advancing the science and practice of hospitality. *Cornell Hotel and Restaurant Quarterly*, **44** (12): 66-75.
- Watts, S. 2006. Strategic developments in natural forest conservation in South Africa. *Journal of Sustainable Forestry*, **22**: 77-109.
- Wells, M., Brandon, K. and Hannah, L. 1992. People and parks: Linking protected area management with local communities. World Bank, Washington, DC.

- Wells, M. P. 1996. The social role of protected areas in the new South Africa. *Environmental Conservation*, **23** (4): 322-331.
- Western, D. and Wright, M. R. (Eds.) 1994. Natural connections: Perspectives in community-based conservation. Island Press, Washington, DC.
- White, A. T. and Cruz-Trinidad, A. 1998. The values of Philippine coastal resources: Why protection and management are critical. Coastal Resource Management Project, Cebu City.
- Williams, G. 1996. Setting the agenda: A critique of the World Bank's rural restructuring programme for South Africa. *Journal of Southern African Studies*, **22**: 139-166.
- Wilshusen, P., Brechin, S., Fortwangler, C. and West, P. 2002. Reinventing a square wheel: Critique of a resurgent 'protection paradigm' in international biodiversity conservation. *Society and Natural Resources*, **15** (1):17-40.
- Wilson, G. A. and Bryant, R. L. 1997. Environmental management: New directions for the twenty-first century. UCL Press, Great Britain.
- Wollenberg, E. and Ingles, A. (Eds.) 1998. Incomes from the forest: Methods for the development and conservation of forest products for local communities. CIFOR, Bogor.
- Worden, N. 1985. Slavery in Dutch South Africa. Cambridge University Press, Cambridge.
- World Bank. 2007. Poverty and the environment: Understanding linkages at the household level. The World Bank, Washington DC.
- World Bank. 2004. Strategic framework for assistance to Africa IDA and the emerging partnership model. The World Bank, Washington DC.
- World Bank. 2002a. From action to impact: The African region's rural strategy. *The International Bank for reconstruction and rural development*. World Bank, Washington DC.
- World Bank. 2002b. Linking poverty reduction and environmental management: Policy challenges and opportunities. The World Bank, Washington, DC.
- World Bank. 2000/2001. Attacking poverty. World Development Report, World Bank, Washington D.C.
- WPC (World Parks Congress). 2011. Recommendations (R 1-32). <http://www.iucn.org/themes/wcpa/wpc2003/english/outputs/recommendations.htm>. [Accessed 12 August 2011].
- Wunder, S. 2001. Poverty alleviation and tropical forests-what scope for synergies? *World Development*, **29** (11): 1817-1833.

Wynberg, R. and Kepe, T. 1999. Land reform and conservation areas in South Africa- Towards a mutually beneficial approach. IUCN, Pretoria.

Young, O. R. 2002. The institutional dimension of environmental change: Fit, interplay and scale. Cambridge MA: The MIT press, London.

WEBSITES

<http://www.cifor.org/pen> – Center for International Forestry Research: The Poverty and Environmental Network (PEN)

<http://www.sanparks.org> – South African National Parks

<http://www.sasi.org> – South African San Institute

<http://www.dwaf.gov.za> – Department of Water Affairs (South Africa)

<http://www.peaceparks.org/> - Peace parks Foundation

<http://www.world-geography.org/africa>

PERSONAL COMMUNICATIONS

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5. Miss Kelly Scheepers, former Social Science Researcher, SANParks, Cape Town.
6. Dawid Kruiper, Traditional Leader of the #Khomani San, Andriesvale-Kalahari, South Africa.
7. Mr. Pieter Retief: Manager, Contract Park Community Lodge.
8. SANParks management.

APPENDICES

APPENDIX 1: All plants cited by the San and Mier sample respondents.

<i>Scientific name</i>	Common name	Plant use
<i>Harpagophytum procumbens</i>	ghamaghoe, devil's claw, duiwelsklou, kloudoring	Medicine
<i>Aptosimum albomarginatum</i>	Koegab!	Medicine
<i>Solanum</i>	Jakkalsbos	Medicine
<i>Hoodia gordonii</i>	!khoba, //choba, bitterghaap, wilde ghaap	Food/medicine
<i>Dicoma capensis</i>	verkouebos, korsbos	Medicine
<i>Acacia erioloba</i>	Kameeldoring	Fuel wood
<i>Citrullus lanatus</i>	tsamma, !samma	Food
<i>Galenia sp.</i>	Slangneus	Medicine
<i>Acanthosicyos naudinianus</i>	Gemsbokkomkommer	Food
<i>Stipagrostis amabilis</i>	duinriet, duinsteekriet	Household
<i>Senna italica</i>	Swartstorm	Medicine
<i>Rhigozum trichotomum</i>	Driedoring	Art
<i>Aristida diffusa</i>	Besemgras	Household
<i>Acacia mellifera</i>	gnoibos, haakdoring, swarthaak	Fuel wood
<i>Kohautia caespitosa</i>	bitterhout, vadershout, David Staan	Medicine
<i>Hermbstaedtia fleckii</i>	Grashout	Medicine
<i>Selago L. sp.</i>	Moedershout	Medicine
<i>Pergularia daemia</i>	Kgaba	Food, medicine
<i>Catophractes alexandri</i>	ncha, gelukshout, swartdoring, gabbabos	Cultural
<i>Boscia albitrunca</i>	witgat, shepard's tree	Fuel wood
<i>Adenium oleifolium</i>	ouheip, bitterkambro)	Medicine
<i>Acacia luederitzii</i>	rooihaak, nchugras, swartbas	Fuel wood
<i>Rhynchosia holosericea</i> Schinz cf.	Leeuhout	Medicine
<i>Mentha longifolia</i>	teebos, kruisement	Food
<i>Cucumis africanus</i>	small wild cucumber	Food
<i>Aloe hereroensis</i> (hereroensis)	Alwyn	Medicine
<i>Kohautia cynanchica</i>	wit vergeet	Medicine
<i>Virgilia oroboides</i>	wilde keur	Medicine
<i>Syringa sp.</i>	Syringe	Fuel wood
<i>Sutherlandia frutescens.</i>	kalkoen, kalkoenbos, kankerbos	Medicine
<i>Parkinsonia africana</i>	lemoending, n!cams bos	Household, Medicine
<i>Grewia flava</i>	rosyntjebos, n!oubessie,	Art

	bessiebos	
<i>Elephantorrhiza elephantina</i>	rooibas, elandsboontjie	Medicine
<i>Vinca major</i>	Opklim	Medicine
<i>Stipagrostis uniplumis</i>	Boesman gras	Household
<i>Sarcocaulon salmoniflorum</i>	Kersbos	Medicine
<i>Echinopsis pachanoi</i>	San Pedro	Cultural, Food
<i>Cissampelos capensis</i>	Dawedjies	Medicine
<i>Boophone disticha</i>	Gifbol	Medicine
<i>Acacia karroo</i>	soetdoring, sweet thorn	Fuel wood, Cultural
<i>Acacia haematoxylon</i>	vaal kameeldoring	Fuel wood
<i>Sceletium tortuosum</i>	kanna, channa, kougoed	Food
<i>Ruta graveolens</i>	wyn riet	Medicine
<i>Rhus tenuinervis</i>	nguni boom, kuniebos	Food
<i>Radyera urens</i>	Pampoensossie, Wilde kalbas	Medicine, Fuel wood
<i>Phyllica</i> sp.	Bitterbessie	Medicine
<i>Petroselinum crispum</i>	Pieterselie, Parsley	Food
<i>Nestlera conferta</i>	Volstruisbos	Medicine
<i>Mesembryanthemum</i>	Vygies	Medicine
<i>Melhania burchelli</i>	Goeiemanshout, Frankhout	Medicine
<i>Galenia africana</i>	Kraalbos	Medicine
<i>Euryops multifidus</i>	Skaapbos	Medicine
<i>Dicerocaryum eriocarpum</i>	Elandbos	Medicine
<i>Berula erecta</i> subsp. <i>thunbergii</i>	Wolbos, Tandpynbossie	Medicine
<i>Asparagus</i> sp.	Katdoring	Art
<i>Asclepias fruticosa</i>	Tontelbos, Kapokbossie	Household, Medicine
<i>Artemisia afra</i>	Wilde als	Medicine
<i>Aristida meridionalis</i>	Steekgras	Household
<i>Aptosimum elongatum</i>	Magatho, Washout	Medicine
<i>Terfezia pfeilii</i>	Kalahari truffle	Food
<i>Agathosma</i> Willd.	Boegoe, Buchu	Medicine
<i>Leonotis leonurus</i>	Wilde dagga	Medicine
<i>Tridentea marientalensis</i> subsp. <i>marientalensis</i>	Kopseer, chipchebie	Medicine

APPENDIX 2: Plant use by part used by San and Mier (Adapted from Mannetti, 2010)

Plant species	Plant part used						
	Root	Stem	Leaf	Flower	Fruit	Seed	Bulb
<i>Acacia erioloba</i>	X	X			X	X	
<i>Acacia haematoxylon</i>		X					
<i>Acacia karroo</i>	X	X	X				
<i>Acacia luederitzii</i> var. <i>luederitzii</i>	X	X					
<i>Acacia mellifera</i> subsp. <i>detinens</i>			X				
<i>Acanthosicyos naudinianus</i>					X	X	
<i>Adenium oleifolium</i>	X						
<i>Agathosma betulina</i>							X
<i>Aloe hereroensis</i> var. <i>hereroensis</i>	X						
<i>Aptosimum albomarginatum</i>		X	X	X			
<i>Aptosimum elongatum</i>		X	X	X			
<i>Aristida diffusa</i> subsp. <i>burkei</i>		X	X				
<i>Aristida meridionalis</i>		X					
<i>Artemisia afra</i>			X				
<i>Asclepias fruticosa</i>		X	X			X	
<i>Asparagus</i> sp.		X	X				
<i>Berula erecta</i> subsp. <i>thunbergii</i>	X		X				
<i>Boophane disticha</i>			X				
<i>Boscia albitrunca</i>	X	X			X	X	
<i>Catophractes alexandri</i>	X	X					
<i>Cissampelos capensis</i>	X	X					
<i>Citrullus lanatus</i>					X	X	
<i>Cucumis africanus</i>					X		
<i>Dicerocaryum eriocarpum</i>			X				
<i>Dicoma capensis</i>	X	X	X				
<i>Echinopsis pachanoi</i>		X					
<i>Elephantorrhiza elephantina</i>	X		X			X	
<i>Euryops multifidus</i>			X				
<i>Galenia africana</i>		X	X				
<i>Galenia</i> sp.	X						
<i>Grewia flava</i>		X					
<i>Harpagophytum procumbens</i>	X						
<i>Hermbstaedtia fleckii</i>	X						
<i>Hoodia gordonii</i>		X					
<i>Kohautia caespitosa</i> subsp. <i>brachyloba</i>	X						
<i>Kohautia cynanchica</i>	X						
<i>Leonotis leonurus</i>			X				
<i>Melhania burchelli</i>	X						
<i>Mentha longifolia</i> subsp. <i>capensis</i>			X				
<i>Mesembryanthemum</i> spp.		X	X				
<i>Nestlera conferta</i>	X	X					

<i>Parkinsonia africana</i>		X					
<i>Pergularia daemia</i> subsp. <i>daemia</i>		X	X				
<i>Petroselinum crispum</i>		X	X				
<i>Phylica</i> sp.					X		
<i>Radyera urens</i>		X					
<i>Rhigozum trichotomum</i>		X					
<i>Rhus tenuinervis</i>					X		
<i>Rhynchosia</i> cf. <i>holosericea</i>	X						
<i>Ruta graveolens</i>	X	X	X				
<i>Sarcocaulon salmoniflorum</i>		X					
<i>Sceletium tortuosum</i>		X	X				
<i>Selago</i> sp.	X						
<i>Senna italica</i> . subsp. <i>arachoides</i>	X						
<i>Solanum</i> . sp.	X						
<i>Stipagrostis amabilis</i>		X	X				
<i>Stipagrostis uniplumis</i> var. <i>uniplumis</i>		X	X				
<i>Sutherlandia frutescens</i>	X		X	X			
<i>Syringa</i> sp.		X					
<i>Terfezia pfeilii</i>							X
<i>Tridentea marientalensis</i> subsp. <i>marientalensis</i>		X					
<i>Vinca major</i>	X						
<i>Virgilia oroboides</i> subsp. <i>oroboides</i>		X	X				

APPENDIX 3: Medicinal plants harvested in the Contract Park on a permit system

Common Name	Scientific name
1. Witnergeet	<i>Cf kohowtia sp</i>
2. Botterblam	<i>Hermannia cf stricta</i>
3. Moedershout	<i>Cf selago dinteri (walafrida saxatilis)</i>
4. Jan bloed (used after pregnancies to clean the womb)	<i>Saxatilis</i>
5. Frankhout	<i>Melhanian burchelli (orange blom)</i>
6. Leeuhout	<i>Rhynchosia cf holosericea</i>
7. Vadershout/Bitterhout	<i>Rubiaceae</i>
8. Gannabos	<i>Salsola rabierna</i>
9. Handepisbossie	<i>Plinthus sericeus</i>
10. Koegab	<i>Aptosimum albomarginatum</i>
11. Koorbos	<i>Hirpicum echnus cf gazanoides</i>
12. Gifbol	<i>Ledebaria undulate</i>
13. Ghoena/gifbol	<i>Lindneria clavata</i>
14. Gifbol	<i>Boophane disticha</i>
15. Goeie mans/rooihout	<i>Xenostegia (Merremia) tridentate</i>
16. Magatho/washout	<i>Aptosimum elangatum</i>
17. Duiwelsklou	<i>Harpagophytum procumbens</i>
18. Basterdamdjiewartel	<i>Kedrostis Africana</i>
19. Suring	<i>Oxygonum delagoemse</i>
20. Grashout	<i>Hermstaedia fleckii</i>
21. Verkouebossie	<i>Dicconia capensis</i>
22. Ghaap	<i>Tridentea marientalensis</i>

APPENDIX 4: List of all wild animals mentioned by the San and Mier and their uses

Common name	Scientific name	Uses
Ystervark (Porcupine)	<i>Atherurus africanu</i>	Meat, medicines, cultural
Kalahari Springbok	<i>Antidorcas marsupialis</i>	Meat, medicines, crafts
Gemsbok	<i>Oryx gazelle</i>	Meat, crafts, household uses
Steenbok	<i>Raphicerus campestris</i>	Meat and inputs for crafts
Eland	<i>Taurotragus oryx</i>	Meat, cultural, input for crafts
Common Duiker	<i>Sylvicapra grimmia</i>	Meat, crafts
Black-backed jackal/ Rooijakkals	<i>Canis mesomelas</i>	Meat, crafts
Ostrich/volstruis	<i>Struthio camelus</i>	Meat, crafts
Red hartebeest/ Rooihartbees	<i>Alcelaphus buselaphus</i>	Meat, crafts
Wild cat	<i>Felis silvestris lybica</i>	Meat, crafts
Aardvark	<i>Orycteropus afer</i>	Meat, crafts, cultural
Bat-eared fox / Bakoorvos	<i>Otocyon Megalotis</i>	Meat, crafts
Cape fox	<i>Vulpes chama</i>	Meat, crafts
Honey badger	<i>Mellivora capensis</i>	Meat, crafts
Aardwolf	<i>Proteles cristata</i>	Meat, crafts
Blue wilderbeest	<i>Connochaetes taurinus</i>	Meat, crafts
Spring hare	<i>Pedetes capensis</i>	Meat, crafts
Pangolin	<i>Manis temminckii</i>	Meat, crafts, cultural
Ground squirrel	<i>Spermophilus lateralis</i>	Meat, crafts
Yellow mongoose	<i>Cynictis penicillata</i>	Meat, crafts

APPENDIX 5: Resource valuation household survey

Date: May 2009 to August 2011
Place: Southern Kalahari, South Africa

A. HOUSEHOLD CHARACTERISTICS AND INCOME

1. Identification and location of household.

Household number	
Village name	

2. We would like to ask some questions regarding this household.

1. Who is the head of this household head? Resident married male [] Married male working away [] Widow/widower [] Divorced [] Single/never married [] Other, specify?	
2.If the head of the household is away, who makes most of the domestic decisions? Head [] Wife [] Son [] Other []	
3.How long ago was this household formed?	<i>Years</i>
4.Was the household head born in this village? <i>If 'Yes', go to 6.</i>	
5.If 'No': how long has the household head lived in the village?	<i>Years</i>
6. Where did he/she come from?	

3. Who are the members of this household and what is their level of education?

Personal identification number	Name/code of household member (see codes below)	3. Year born (yyyy)	4. Sex (M=male F=female)	5. Education (number of years completed)
1				
2				
3				
4				
5 etc.				

Codes: 1=Father; 2= Mother; 3=Son/Daughter; 4=Grandchild; 5=Son/Daughter in law; 6= Other family members

4. Which people in this household have a full-time, part-time or casual job?

Name No	Job type	Full-time/part-time/casual	Self-employed (describe)	Local/Remittance	R/month
1					
2					
3					
4					
5 etc.					

5. Do any of the household members earn any type of grant/income? If yes tick

Name	Tick	No of grants	R/month
Old-age pension			
Disability grant			
Child grant			
Posing for photos			
Any other income <i>Specify?</i>			

3. Assets

1. Please indicate the type of house you have.

1. Do you have your own house? ¹⁾	Y/N
2. What is the type of material of (most of) the walls? ²⁾	
3. What is the type of material of (most of) the roof? ³⁾	
4. How many m ² approx. is the house?	m ²

2) Codes: 1=mud/soil; 2=wooden (boards, trunks); 3=iron (or other metal) sheets; 4=bricks or concrete; 5=reeds/straw/grass/fibers/; 6=other, specify:

3) Codes: 1=thatch; 2=wooden (boards); 3=iron or other metal sheets; 4=tiles; 5=other, specify:

2. Please indicate the number of implements and other large household items that are owned by the household.

Item	No. of units owned
Car/truck	
Motorcycle	
Bicycle	
Handphone/phone	
TV	
Radio	
Cassette/CD/ VHS/VCD/DVD/ player	
Stove for cooking (gas or electric only)	
Refrigerator/freezer	
Scotch cart	
Wooden cart or wheelbarrow	
Furniture e.g. beds for everyone	
Water pump	
Solar panel	
Others	

B. LIVESTOCK

1. Does your household own any livestock? *Yes [] No []*

2. If Y, fill out table, if N, go to section C

Animal	Number	Where kept	Animal	Number	Where kept
Cattle			Horses		
Sheep			Chickens		
Goats			Other; specify		
Donkeys					

3. Where do you graze your livestock? _____
4. Who looks after your livestock during the day? *Self* [] *Family member* [] *Friend* []
No-one [] *Hired help* [] *Join with other friends* []
5. If you hire someone, how much do you pay them (per month) _____
6. Do you pay for fencing, medicine (dip & dose) or grazing fees? *Yes* [] *No* []
 If **Y**, how much and how often
- a. Fencing: R _____ frequency _____
- b. Medicine: R _____ frequency _____
- c. Grazing fee: R _____ frequency _____
7. What benefits (uses) does your household get from the livestock?

Resource/Activity	Get/use	Resource/Activity	Get/use
Meat		Transport	
Milk		Ceremonies/rituals/parties	
Skins		Other:	
Cash (from sales)		Other:	
Lobola payments		Other:	
Savings			
Dung for manure			

8. Are there any problem regarding livestock production? *Yes* [] *No* []
 If **Y**, fill out table

Problems	Tick	Possible solution
Lack of water		
Diseases/Lack of dipping chemicals		
Theft		
Lack of a reliable market		
Other specify:		

B1.Milk

1. How much milk does your household get from your (cows) and (goats) per day? If none, move on to next
2. Cows: _____ Goats: _____
3. What do you do with the milk?

	Tick answer
Consume at home	
Give away/share	
Sell	

4.If you sell or give away (share) milk complete table below:

Animal type	Quantity (Sold)	Quantity? (Given)	How often	Who to	Which months of the year	Price?
Cattle	Sell					
Goat	Give					
Sheep						

B2.Meat

1. How often do you slaughter any of your livestock?*if you don't move to next part*

Livestock	Frequency (e.g./week/)month/year)	Quantity at a time	Animals slaughtered in the last year
Cattle			
Goats			
Sheep			
Other			

2. Do you sell or give away some of the meat from a slaughtered animal? *Yes [] No []*

Livestock	Quantity sold	Quantity given	Who to?	Price?(per kg/animal)	Total
Cattle					
Goats					
Sheep					
Other					

B3.Skins

1. What does your household do with the skins of slaughtered animals?

Livestock	Keep	Sell	Throw away	Crafts
Cattle				
Goats				
Sheep				
Other				

2. If the skin is kept what do you use it for: _____

Livestock	Use(s)
Cattle	
Goats	
Sheep	
Other;	

3. If the skins are sold:

a) How often do you sell skins? _____

b) What do you get from the skin? R _____ (other) _____

B4.Dung

1. Do you ever use your animals' dung? *Yes [] No []*

If Y, go to Q2, if N, move to next section

2. If Y, -what you use it for? _____

-where do you collect it? _____

-how often do you collect? _____

-how much do you collect each time? _____

3. Do you ever sell or give away dung from your animals? *Yes [] No []*

	Amount?	How often?	Who to?	Payment?
Sell				
Give				

B5.Transport

1. Do you ever use your livestock for transport? *Yes [] No [] if N, go to*

2. For what purposes explain _____

3. Approximately how far are the distances to the nearest services? _____

4. How much would you have paid using a tax/lift? _____

5. Do you ever hire or lend out your animals for transport? *Yes [] No []*

If Y, fill out table

	Frequency?	To whom?	Price?
Hire			
Lend			

B6.Cash sales

1. Do you ever sell your livestock for cash? *Yes [] No []*, If N, go to B7

a) **If Y, complete the following table**

Animal	Tick	Price/beast	No sold/month/year
Cattle			
Sheep			
Goats			
Donkeys			
Horse			
Other; specify			

B7. Ceremonies/Rituals

1. Does your household ever slaughter cattle/goats for ceremonial or ritual purposes? *Yes [] No []*

If Y. how often? Cattle _____ Goats _____

For what ceremonies/rituals do you do this? _____

B8. Savings

1. Does your household regard livestock as a form of savings? *Yes [] No []*

2. If Y, why _____

3. What alternatives ways of savings are available to your household: _____

4. Which particular group of animals is a better form of savings than others?

Give reasons? _____

C. ACCESS TO LAND

1. Please indicate the parcel of land that you have access to.

Category	Farm Land	Contractual Park:	Rest of Park
Access	<i>Miershoop Pan</i>		
	<i>Uitkoms</i>		
	<i>Andriesvale</i>		
	<i>Scotty's Fort</i>		
	<i>Witdraai</i>		
	<i>Erin</i>		
Uses of land	Tick		
1.Livelihood strategies livestock farming eco-tourism crafts			
2.Consumptive use of resources e.g. firewood, melons			
3.Traditional activities (rituals)			
4.Other (specify)			

D. NATURAL RESOURCE BASE AND CONSUMPTIVE USE

D1. Firewood

Does your household collect firewood?	<i>Y/N</i>	
Where? [<i>Uitkoms; Miershoop Pan; Andriesvale; Scotty's Fort; Witdraai; Erin</i>]		
Frequency of collection (<i>Daily=D; Weekly=W; Monthly=M</i>)		
How many trips a week/month do you do?		
Quantities collected (<i>local measure e.g. full wheel burrow; scotch cart etc</i>)		
Estimated value		
How many hours per week do the members of your household spend on collecting firewood for family use?	<i>(hours)</i>	
Does your household now spend more or less time on getting firewood than you did 5 years ago? <i>Codes: M=more; S=about the same; L=less</i>		
How has availability of firewood changed over the past 5 years? <i>Codes: D=declined; S=about the same; I=increased</i>		
If declined (code 'D' on the question above), how has the household responded to the decline in the availability of firewood? <i>Please rank the most important responses, max 3.</i>	Response	Rank 1-3
	Increased collection time (e.g., from further away from house)	
	Buying (more) fuelwood and/or charcoal	
	Buying (more) commercial fuels (gas or electricity)	
	Reduced the need for use of fuels, such as using improved stove	
	More conservative use of fuelwood for cooking and heating	
Reduced number of cooked meals		

	Increased use of non-wood wild products (e.g. twigs)	
	Restricting access/use to own resources	
	10. Conserving standing trees for future	
	11. Other; specify	
11. List the name of mostly used/most important species.	Name	Rank 1-5
12. Any other source of fuels used.	Name	Quantity/day

13. Who is involved in collection of firewood?

14. Method of transportation _____

15. Are there any restrictions on fire wood use? *Yes* [] *No* []

If Y, explain _____

D2. Wild plants (food)

1. Do you collect any wild plants? *Yes* [] *No* []

If Y, where? [Uitkoms [] Miershoop Pan [] Andriesvale [] Scotty's Fort [] Witdraai [] Erin []

2. If Yes, who is involved in collection of wild plants? _____

3. How often do you go out to collect food plants?

_____/week

_____ month

Other specify _____

Species mainly used	Season/month harvested	Used at home (quantity)	Sell (quantity)	Price/kg
Bulb/Tubers;				
Leaves;				
Seeds;				
Other; e.g. wild melons				
Hoodia				

4. Name and give reasons for most important species _____
5. Name and give reasons for least important species _____
6. Are any species becoming scarcer? *Yes* [] *No* []
If *Y*, name them and give reasons _____
7. Does availability of the resource change over seasons? Is there shortage of plants at certain times of year? *Yes* [] *No* []. If *Y*, explain, _____

D4. Animals hunted for food

1. Do you hunt any wild animals for food? *Yes* [] *No* [].
If *Y*, where? [Uitkoms [] Miershoop Pan [] Andriesvale [] Scotty's Fort [] Witdraai [] Erin []
2. Who is involved in hunting? _____
3. How often do you go out to hunt?
_____/week _____ month Other specify _____

Species hunted	Season/month hunted	Used at home (quantity)	Sell (quantity)	Price (eg R/kg/animal)
Springbok				
Wildebeest				
Eland				
Gemsbok				

2. Name and give reasons for most important species _____
3. Name and give reasons for least important species _____
4. Are any species becoming scarcer? *Yes* [] *No* [] If *Y* name them and give reasons _____
5. Does availability of the animals hunted change over seasons? Is there shortage of animals at certain times of year? If *Y* explain _____
6. Are there any animals that are not hunted for cultural reasons? *Yes* [] *No* [] If *Y* name them and explain further _____
7. What have been the trends of natural resources use and availability in the last 5-10 years since the park was formed? _____

D3. Medicinal plants/animals

1. Do you collect any wild plants/animals for medicine? *Yes* [] *No* []
If *Y*, where? [Uitkoms [] Miershoop Pan [] Andriesvale [] Scotty's Fort [] Witdraai [] Erin []
2. Who is involved in collection of plants/animals? _____
3. How often do you/they/he go out to collect?
_____/week _____ month Other specify _____

Species collected/hunted	Season/month	Used at home (Quantity)	Sell (quantity)	Price (eg R/kg)

3. Name and give reasons for most important species _____

4. Name and give reasons for least important species _____

5. Are any species becoming scarcer? *Yes* [] *No* []

If *Y*, name them and give reasons _____

6. Does availability of the resource change over seasons? Is there shortage of plants/animals at certain times of year? *Yes* [] *No* []

If *Y*, explain _____

7. Are there any species that are not harvested for cultural reasons? *Yes* [] *No* []

If *Y*, name and explain _____

Wood (construction material)

1. Do you have any fences/kraals/house made with indigenous poles or branches? *Yes* [] *No* []

If *Y*, how many poles/loads did you use for (a) Kraal _____
(b) House _____

2. When was the (a) kraal erected _____ (b) House _____

3. After how long do you have to replace damaged poles? _____
Number/load of poles per time _____

4. Do you collect or buy the poles? *Buy* [] *Collect* []

If you buy, at how much? R _____

Grass (construction material)

1. Do you use grass for any construction? *Yes* [] *No* []

If *Y*, for what purposes _____

2. When was the above constructed? _____

3. How much grass did you use (local measure)? _____

4. Did you buy or collect the grass? *Buy* [] *Collect* []

If bought, at how much? R _____

5. After how long do you have to replace damaged grass? _____

6. Any other uses of grass? _____

F. CRAFTS FOR SALE

1. What types of craft materials do you make? What resources do you use? How much are crafts sold at?

Name of craft produced	How many produced (per/week/month)	Material and part used (plant/animal)	How many sold (per/week/month)	Selling price (R/item)
Bracelets				
Beads				
Bow and arrow				
Artifacts for hanging				
Other; specify				

Do you buy anything to make your crafts? *Yes* [] *No* []

If *Y*, what and for how much? Fill out the table.

Material bought	For what	Cost

2. Which part of plants do you use most? _____

3. Which part of animals do you use most? _____

4. Are any species becoming scarcer? *Yes* [] *No* []

If *Y*, name them and give reasons _____

5. How much time do you spend on making these items in a day/week/month _____

6. Which particular time of the year do you have more sales? _____

7. Give reasons for your answer? _____

8. Are there any problems encountered in the crafts industry? *Yes* [] *No* []

9. If *Y*, name them _____

10. What can be done to ameliorate the problems _____

E. CULTURAL VALUES OF PLANTS, ANIMALS AND SITES

1. Are there any cultural values associated with plants and animals use? *Yes* [] *No* []

If *Y*, what plants, animals and sites are important to you culturally

Species (local name)	Cultural use (please name the uses) e.g. actual use in rituals, sacred species. Why does this have cultural importance?	Overall ranking of plants, animals, sites (1=very important; 2= important; 3= slightly important; 4=not important)

Plants:		
Animals:		
Sites:		

2. Are there any annual special ceremonies associated with plants and animals? **Yes** [] **No** []

If **Y**, explain? _____

3. Are there any specific plants and animals considered sacred? **Yes** [] **No** []

If **Yes** explain? _____

4. Are there any traditional practices/rules/taboo associated with plant and animal use? **Yes** [] **No** [] If **Y**, identify and explain? _____

5. Is compliance with traditional laws as strong in these days as it was in the old days? **Yes** [] **No** [] *If No, why not?* _____

6. Is this knowledge restricted to a certain age group or gender? **Yes** [] **No** []

If **Yes** which?

	Females	Males
Elderly		
Adults		
Children		

7. How do you share the knowledge _____

G. INSTITUTIONAL ARRANGEMENTS AND POWER RELATIONS

1. Are you or any member of your household a member of any organisation?

Yes [] **No** [] If **Y** tick box

Park Committee	
Livestock Committee	
JMB	
Ward Committee	
Burial society	
Other	

2. Does someone in your household attend the meetings? **Yes** [] **No** []

If 'No', go to 5.

3. If 'Yes': in your household, who normally attends the meetings and participates in other organisation's activities? Tick

1. Only the wife	
2. Both, but mainly the wife	
3. Both participate about equally	
4. Both, but mainly the husband	

5. Only the husband	
6. Mainly sons	
7. Mainly daughters	
8. Mainly husbands & sons	
9. Mainly wife & daughters	
10. Other; specify	

4. What are your reasons for joining the named organisation?

Please tick under each organization

Reason	JMB	Park Committee	Livestock committee	Ward Committee
Increased access to natural resources products				
Better natural resources management and more benefits in future				
Access to other benefits, e.g., government support or donor programmes				
My duty to protect the natural resources for the community and the future				
Better quality of natural resource product				
Higher price for natural resource product				
Makes harvest of natural resources products more efficient				
Know natural resource better (e.g hoodia)				
Reduce conflicts over natural resource use				
More secure land title				
Being respected and regarded as a responsible person in village				
Improved livestock management				
Social aspect (meeting people, working together, fear of exclusion, etc.)				
Learn new skills/information				
Forced by SANParks/Government/local leaders/neighbours				
Other, specify:				

5. Are there any formal rules and regulations for access to resources in the farms? **Yes [] No []**

If **Y**, explain _____

6. Are these rules followed? **Yes [] No []**

If **Y**, how and by whom? _____

If **N**, Why not? _____

7. Are there any informal organizations governing access to land & natural resources? **Yes [] No []**

If **Y**, name and explain _____

8. Do you participate in any? **Yes [] No []** If **Y**, name _____

9. If you don't participate in any organisation, Why

Reason	Tick
No organisation exists in the village	
I'm new in the village	
Organisation members generally belong to a particular family group (s)	
Cannot afford to contribute the time	
Cannot afford to contribute the required cash payment	
Membership will restrict my use of the resources, and I want to use the resources as I need	
I don't believe organisations are very effective in managing the natural resources	
Lack of natural resources	
Not interested in the activities undertaken by organisations	
Corruption in previous organisations	
Interested in joining but needs more information	
Organisations exist in village, but household is unaware of their presence	
Other, specify:	

10. Do you share your knowledge and ideas of how resources should be managed? *Yes* [] *No* []

If Yes, how and why? _____

If No, why _____

11. Overall, how would you say the existence of the named natural resources organisation has affected the benefits that the household gets from the farm and park?

Large negative effect [] Small negative effect [] No effect [] Small positive []

12. Do you think your views are considered by community representatives/organisations?

Yes [] *No* []

If **Y** or **N** explain? _____

13. Do you think the park management respects your views? *Yes* [] *No* []

If **Y** or **N** explain? _____

14. What is your general comments/feelings/opinions about access to natural resources in the park and the surrounds? _____

Thank you very much for your cooperation

APPENDIX 6: Standardised qualitative questions for key informant interviews (Adopted from Reid et al., 2004)

NB. The following questions will be used to guide interviews. I have answers already for some of the questions.

11. Who is the land owner of the Contract Park?
12. Is ownership clear?
13. Who can use the natural resources in the Contract Park?
14. Are use rights clear?
15. Who receives the benefits from having a Contract Park on the land?
16. In what form are the benefits for the conservation authority?
17. In what form are the benefits for the land owners?
18. Are the benefits for the land owners in the form of revenue from the Contract Park? (Are benefits directly linked to Contract Park)?
19. Are the benefits distributed equitably among the land owners?
20. Do the benefits outweigh the costs of the Contract Park for the conservation authority?
21. Do the benefits outweigh the costs (outweigh the opportunity costs) of the Contract Park for the land owners?
22. What are the responsibilities of SANParks in the Contract Park?
23. What are the responsibilities of the land owners in the Contract Park?
24. Are the responsibilities clear?
25. Does the level of responsibilities in the contract park match with the level of benefits?
26. Do land owners have the capacity to carry out the responsibilities in the Contract Park?
27. Are there good relations between SANParks and the landowners?
28. Are the conservation objectives of the Contract Park met?
29. Is there an enabling macro-economic framework in which the contract park can become profitable?
30. Is the JMB legitimated by the government in terms of legislation and devolution of power (Is the JMB powerful)?
31. Is the JMB legitimate in the eyes of SANParks?
32. Is the JMB legitimate in the eyes of landowners (for example how often are elections held and how effective is feedback to the communities at large)?
33. Do landowner representatives on the JMB truly represent the needs of the land owners (San and Mier)?
34. Is there government support for the process, for example, conflict resolution and sanction imposition?.
35. Is there NGO and donor support for the process, foe e.g. with conflict resolution and sanction imposition (E.g. National Lottery donated R4.2 million)?
36. Are they good conflict resolution mechanisms within the terms of the Contract Park or the joint management plan?

APPENDIX 7: Questionnaire on institutions and actors

1. GENERAL UNDERSTANDING OF CBO STRUCTURE & FUNCTION

CPA Annual General Meetings

1.1 In which year was the last AGM? (Year) / Don't Know

1.2 Did you attend the last AGM? Yes / No / Don't Know

1.3 How satisfactory was the last AGM to you:

- It was very well run
- It was well run (i.e. just ok)
- Neutral
- It was unsatisfactory
- It was highly unsatisfactory
- I did not attend

CPA General Meetings

1.4 In what month was the last General Meeting?varied..... / **Don't Know**

1.5 How many general meetings have you attended in the last 12 months?

.....**12months=12 ;==15, the 2, 3 ,4etc)**

1.6 Where was the last General meeting held? CBO Level / Don't Know

1.7 Approximately how many people attended the last general meeting?

1.8 How satisfactory was the last General Meeting to you:

- It was very well run
- It was well run
- Neutral
- It was unsatisfactory
- It was highly unsatisfactory
- I did not attend

1.9 Do you know the name of the CPA administrator? YES / NO

1.10 Do you know the name of the CPA Financial Manager? YES / NO

1.11 Do you know the name/s of the Escort Guides? YES (**11/50**)/ NO

2. UNDERSTANDING OF CPA CONSTITUTION & RIGHTS

2.1 Has your constitution been explained to you in the last 12 months? YES /NO

2.2 Were you consulted during the constitution building process? YES /NO

2.3 Do you think your constitution organises the community well?

- The constitution works very well
- The constitution works reasonably well (just ok)
- Neutral
- The constitution is bad
- The constitution is very bad
- ??? Don't know what it says

2.4 Does your community follow the constitution?

- We always follow it
- Neutral
- We sometimes follow it, sometimes don't
- We seldom follow it

??? Don't know (what it says / if it is followed or not)

2.5 Do you have the following rights (tick yes or no for each)?

- | | Yes | No | |
|-----|--------------------------|--------------------------|---|
| (a) | <input type="checkbox"/> | <input type="checkbox"/> | To stand in an election |
| (b) | <input type="checkbox"/> | <input type="checkbox"/> | To make decisions on the use of wildlife/CPA money |
| (c) | <input type="checkbox"/> | <input type="checkbox"/> | To check how CPA money was spent |
| (d) | <input type="checkbox"/> | <input type="checkbox"/> | To remove incompetent/corrupt officers (Chairperson) |
| (e) | <input type="checkbox"/> | <input type="checkbox"/> | To remove incompetent/corrupt employees (Financial Manager) |
| (f) | <input type="checkbox"/> | <input type="checkbox"/> | To vote / choose CPA leaders |
| (g) | <input type="checkbox"/> | <input type="checkbox"/> | To amend the constitution |
| (h) | <input type="checkbox"/> | <input type="checkbox"/> | To demand for a meeting (e.g. for explanation of committee performance) |
| (i) | <input type="checkbox"/> | <input type="checkbox"/> | To set animal quotas for hunting |
| (j) | <input type="checkbox"/> | <input type="checkbox"/> | To choose your hunting safari operator |
| (k) | <input type="checkbox"/> | <input type="checkbox"/> | To choose your tourism partners (Joint Venture) |

2.6 As an ordinary person, do you have any responsibilities/duties in the CPA?

- (l) Yes / No / Don't Know
 (m) What is it

2.8 How are CPA decisions generally made?:	Tick one
The committee makes decisions without telling us anything	
We are only told what is happening sometimes	
The committee makes decisions, and informs us	
The committee makes decisions, but we have the right to change them	
We make decisions, and tell the committee what to do	

ENUMERATOR: If the person says the answers is a, b, c or d in question 2.8 above, ask the following question. If they answer e, skip this question and go to question 2.10.

2.9 When Elected Representatives make key decisions, which statement is true?	Tick one
These decisions are good	6
These decisions are sometimes good, sometimes selfish	11
These decisions are bad and selfish	32
Don't know	1
2.10 Who makes the budget?	Tick one
Community members at General Meetings	0
People we elected (Committee)	5
CPA Employees (Financial Manager)	28
Don't know	17

3. ELECTIONS OF COMMITTEE

3.1 Did you participate in choosing the current committee? Yes / No / Don't Know

3.2 How was the committee chosen?

- Appointed by government

- Vote by hands
 - Vote by secret ballot
 - Don't know
 - Other means (Specify).....
- 3.3 Do you think the process of choosing the committee was fair? Yes / No / Don't Know
- 3.4 In which year was the last election for the Board?/ Don't Know
- 3.5 In which year is the next election for the Board?/ Don't Know

4. CPA MANAGEMENT

- 4.1 How well does the CPA committee manage your affairs?
- ☺☺ The CPA is very well managed
 - ☺ The CPA is managed reasonably well
 - ☺ Neutral
 - ☹ The management of the CPA is poor
 - ☹☹ The management of the CPA is very bad
- 4.2 Did CPA give you a financial report in the last year? Yes / No / Don't Know
- 4.3 Are the CPA finances properly presented to you?
- ☺☺ Yes, well presented and we understand and believe these figures
 - ☺ Yes, presented reasonably
 - ☺ Neutral
 - ☹ No, badly presented
 - ☹☹ Not presented at all. We have no idea what is happening
- I did not go to the meeting
- 4.4 Are the CPA finances properly accounted for?
- ☺☺ Yes, well accounted for
 - ☺ Yes, reasonably accounted for
 - ☺ Neutral
 - ☹ No, badly accounted for
 - ☹☹ No, very badly accounted for (and we do not trust the figures)
- 4.5 Do you trust the CPA leadership to manage and account for your finances?
- ☺☺ Yes, I trust them a lot
 - ☺ Yes, I trust them
 - ☺ Neutral
 - ☹ No, I don't trust them
 - ☹☹ No, I strongly distrust them

5. INFORMATION GIVEN TO YOU BY CPA COMMITTEE

In the last year, the CPA gave me the following information (tick as applicable):

Did you get:	☺☺ All the information	☺ Some information	☹ Nothing	Don't Know	N/A
INFORMATION ON FINANCES AND PROJECTS					
Annual budget	4		46		
Source and amount of income (INCOME)	4		45		
How money was spent (EXPENDITURE)	3		47		
They explained the progress of	3		47		

projects					
INFORMATION ON WILDLIFE VALUE AND USE					
We were given a list of our hunting quota	4		44		
We were told how many animals were shot last year			44		
We were told the price of animals that we sold to the hunters			44		
We were told the income we got from our campsites			49		
We were told the income we got from the community lodge and other e.g. Molopo			50		
INFORMATION FROM EVENT BOOK					
We have been shown the following information:					
5.10 Trends in animal populations					

6. WILDLIFE COSTS & BENEFITS TO INDIVIDUAL HOUSEHOLDS

6.1 Please list the benefits you and your household got from wildlife in the last 12 months:

Type of Benefit	Do you and your household receive benefit?	Amount/Describe	Enumerator to calculate approx Rand Value
Cash	Yes / No		
Meat	Yes / No		
Employment	Yes / No		

CPA Projects	Yes / No	
Education & Training	Yes / No	
Non-Financial Benefits Specify	Yes / No	
Other (specify)	Yes / No	

6.2 Please list the costs you and your household suffered from wildlife in the last 12 months:

Type of Cost	Yes / No	Amount/Describe	Enumerator to calculate approx Rand Value
Livestock losses	Yes / No		
Other (specify)	Yes / No		

7. MANAGEMENT PLANS & LAND USE ZONES

7.1 Does your community have a land use plan or a management plan? YES/NO/DON'T KNOW

7.2 Were you consulted in developing the land use plan? YES / NO

7.3 Has your CPA set aside a place/zone exclusively for wildlife & tourism e.g Miershoop pan for game and Witdaai (for bushcamp)?

YES / NO / DON'T KNOW

8. WILDLIFE & NATURAL RESOURCE MANAGEMENT

8.1 We have noticed the following trends in numbers of wildlife:

	↑	→	↓	??	N/A
Gemsbok			yes		
Springboks					
Eland					
Steenbok					
Bat eared fox					
Other (specify)					

8.2 Is there poaching in your area?

- A lot
- A little
- Never
- Don't know

8.3 Since you got land, what have you noticed about the trends in poaching:

Poaching	↑	→	↓	??

8.4 Please explain why you came to this conclusion about poaching.....(check x file)

8.5 What, if anything, do you do to protect wildlife and natural resources?

9. VALUE OF WILDLIFE & NATURAL RESOURCE MANAGEMENT

9.1 Income:

How much money did your CPA earn from wildlife last year? Rand Don't Know

How much of this money reached your village? Rand Don't Know

How much money did your household get? Rand Don't Know

9.2 Last year, how much did the Safari Operator pay the CPA to shoot:

Gemsbok? Rand Don't Know

Springbok? Rand Don't Know

9.3 How many animals were harvested in your area last year?

	Safari	Problem Animals	Subsistence Hunting	Don't Know
Gemsbok				
Springbok				

9.4 Income from Tourism & Joint Venture Partners

Name of Lodge	How much did they pay to the CPA last year?
1.	Rand..... / Don't Know
2.	Rand..... / Don't Know
Name of Community Campsite	How much did money did it bring the CPA last year?
1.	Rand..... / Don't Know

10. ATTITUDES ABOUT WILDLIFE

10.1 Overall (taking into account positives and negatives) my attitude towards wildlife is:

- ☺☺ Strongly Positive
- ☺ Positive
- Neutral
- ☹ I do not support Wildlife
- ☹☹ I strongly dislike Wildlife
- ?? Not sure

10.2 Why do you like wildlife? For each reason, indicate how important this is for you.

	Very Important	Important	Neutral	Not Very important	Not at All Important
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REASON FOR LIKING WILDLIFE	☺☺	☺	☹	☹	☹☹
Conservation for non-financial reasons					
Household benefits					
Jobs					
Development projects / Community income					
Brings development (i.e. economic growth)					
Hunting / Meat					
Helps us get better organized/empowered					
Others reasons (Specify).....					

11. CONCLUSIONS

11.1 What are the best three things about the CPA Programme?

- 1.
- 2.
- 3.

11.2 What are the worst three things about the CPA Programme?

- 1.
- 2.
- 3.

11.3 What changes / improvements would you make to the CPA Programme?

- 1.
- 2.