

LINKING TOURISM, HUMAN WELLBEING AND CONSERVATION
IN THE CAPRIVI STRIP (NAMIBIA)

By

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To my parents,
for their constant support and inspiration

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TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS.....	4
LIST OF TABLES.....	9
LIST OF FIGURES.....	10
ABSTRACT.....	12
CHAPTER	
1 INTRODUCTION.....	14
Problem Statement.....	14
Conceptual Overview.....	15
Research Questions.....	16
Overview of CBRNM and Tourism.....	17
The Namibian Context.....	19
Methodological Overview.....	24
Dissertation Outline.....	26
2 CONSTRUCTING A WELLBEING INDEX.....	29
Introduction.....	29
An Overview of Human Wellbeing.....	30
Conceptualizing Human Wellbeing.....	30
Operationalizing a Measure of Human Wellbeing.....	33
Scale and scope of the index.....	34
Identifying indicators.....	35
Weighing indicators and aggregating them into an index.....	35
Validating the index.....	37
Overview of Wellbeing Research in Southern Africa.....	38
Methods.....	39
Research Site.....	40
Data Collection.....	40
Developing a New Wellbeing Index.....	41
Identifying life domains.....	41
Combining life domains into a Multidimensional Wellbeing Index.....	44
Assessing the performance of MWI against other quality of life measures.....	46
Results.....	47
Theoretical Operationalization of the Life Domains.....	47
Statistical Operationalization of the Life Domains.....	51
Aggregating the Life Domains into a Wellbeing Index through Regression Modeling.....	53

Selecting a Regression Model to Compute the Multidimensional Wellbeing Index (MWI).....	54
Comparing MWI to Other Measures of Wellbeing	54
Discussion	55
Conclusion	60
3 THE IMPACT OF NATURE-BASED TOURISM ON THE WELLBEING OF RURAL RESIDENTS IN CAPRIVI	67
Introduction	67
Community Based Natural Resources Management Context	67
Rural Development Context	70
Tourism Context.....	72
Research Objective	74
Methods	75
Study Design	75
Study Sites	75
Data Collection	76
Index Construction	77
Data Analyses	77
Results.....	79
Discussion	82
Tourism’s Impacts on People’s Lives	82
What Is Limiting Tourism’s Impacts on Wellbeing?	85
Institutional issues.....	85
Marginality of community based natural resources management areas	87
Confronting unrealistic expectations and misperceptions	88
Using our Wellbeing Index to Target Development Interventions.....	89
Conclusion	90
4 FACTORS INFLUENCING ATTITUDES TOWARD CONSERVANCIES AND TOWARD TOURISM IN CAPRIVI	97
Introduction	97
Problem Statement.....	97
Objectives.....	97
The Community Based Natural Resources Management and Tourism Context.....	98
Links between Community Based Natural Resources Management and attitudinal work	99
How do you measure attitudes?	100
Factors influencing attitudes toward conservation and tourism	101
Methods	103
Study Design	103
Study Sites	103
Data Collection	104
Data Analyses	104

Index construction	104
Statistical analyses	106
Results	108
Descriptive Results	108
Hypotheses Testing	109
Discussion	112
Comparing Conservancies	113
Factors Leading to More Positive Attitudes	115
Factors Leading to More Negative Attitudes	118
Conclusion	119
5 CONCLUSION	129
Introduction	129
Developing a Wellbeing Measure	130
Multidimensional Approach	131
Local Relevance	132
Ease of Implementation	133
Using a Wellbeing Measure for Tourism and CBNRM Studies	134
Study's Limitations	136
Limitations of Wellbeing Measures	137
Operationalization of the MWI	137
Comparability restrictions	137
Elusive truthfulness	138
Determining Causality	139
Future Research	140
Conclusion	141
APPENDIX	
A FINAL QUESTIONNAIRE	144
B ITEMS USED IN DEVELOPING MWI	156
C MISSING VALUES FROM INDICATORS	158
LIST OF REFERENCES	159
BIOGRAPHICAL SKETCH	179

LIST OF TABLES

<u>Table</u>	<u>page</u>
1-1 Overview of the sample conservancies	28
2-1 Missing values	62
2-2 Correlation analysis	62
2-3 Comparing the theoretical and statistical life domains sets	62
2-4 Regressing the theoretical life domains set (models A).....	63
2-5 Regressing the statistical life domains set (models B).....	64
2-6 Spearman rank correlation analysis for wellbeing measures.....	65
2-7 Weights of subindices in MWI and mCWI.....	65
2-8 Applying Hagerty et al.'s criteria to assess MWI.....	66
3-1 Independent variables used in wellbeing regression models.....	92
3-2 Comparing the performance of conservancies on well-being index and its subindices	93
3-3 Comparing well-being, and subindices, performances for different groupings ...	93
3-4 Comparing tourism revenues and wellbeing.....	95
3-5 Tourism revenues and distribution.....	95
3-6 Multivariate analyses of influencing factors on well-being and its subindices....	96
4-1 Distribution of agreement with attitudinal statements	122
4-2 Attitude toward conservancy.....	123
4-3 Attitude toward tourism.....	123
4-4 Attitude toward conservancy and tourism.....	126
4-5 Regression results for conservancy attitude index model.....	127
4-6 Regression results for tourism attitude index model	128
C-1 Missing values: Complete list	158

LIST OF FIGURES

<u>Figure</u>	<u>page</u>
1-1 Conceptual Model.....	27
1-2 Study Area Map.....	27
2-1 Multidimensional wellbeing conceptual model.....	62
3-1 Overall wellbeing per conservancy.....	94
3-2 Scores of multidimensional wellbeing subindices.....	94
4-1 Distribution of attitudes toward wildlife.....	124
4-2 Conservancy attitudes vs. wellbeing.....	125
4-3 Tourism attitudes vs. wellbeing.....	125
4-4 Conservancy attitudes by conservancy membership.....	126
4-5 Tourism attitudes by tourism employment.....	126

LIST OF ABBREVIATIONS

CBNRM	Community Based Natural Resources Management
CWI	CIFOR Wellbeing Index
ESI	Economic Sphere Index
HCI	Health Core Index
ICDP	Integrated Conservation and Development Project
IRDNC	Integrated Rural Development and Nature Conservation
ISI	Infrastructure Sphere Index
ECI	Education Core Index
mCWI	Modified CIFOR Wellbeing Index
MET	Ministry of Environment and Tourism
MWI	Multidimensional Wellbeing Index
OLS	Ordinary Least Squares
PCA	Principle Component Analysis
PSI	Political Sphere Index
PWI	Personal Wellbeing Index
SLD	Statistical Life Domains
SSI	Social Sphere Index
SWB	Subjective Wellbeing
SWI	Subjective Wellbeing Index
TLD	Theoretical Life Domains
WCI	Wealth Core Index

Abstract of Dissertation Presented to the Graduate School
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Billions of dollars are invested into tourism by international aid agencies, with a significant portion going toward nature-based tourism in support of environmentally sound development objectives (Honey 2008). Sustainable tourism is considered a promising bridge to merge environmental and development objectives within sustainable development strategies (United Nations 2002). As such, community-based natural resources management (CBNRM) programs frequently rely on tourism as an economic driver to achieve rural development objectives. Such projects are based on the tacit, if not explicit, assumption that nature-based tourism improves people's lives, and subsequently leads to better environmental stewardship. However, empirical evidence remains limited but suggests that these connections should not be taken for granted (Walpole and Goodwin 2000). In this dissertation, we investigate tourism's impacts on host communities' wellbeing, and whether such wellbeing or other factors are associated with peoples' attitudes toward tourism and conservation. We conducted our research in the Caprivi strip in Namibia, interviewing 467 randomly sampled rural residents within 5 communal areas. We developed a multidimensional wellbeing index that can be analyzed as an aggregate measure, as well as individual subindices for

different life domains, including health, wealth, education, and economic, social, infrastructural and political contexts. Our results suggest that tourism positively contributes to people's lives, but these impacts are limited to certain wellbeing sub dimensions and largely restricted to households involved in the tourism industry. We also show that people with higher wellbeing are more supportive of conservation and tourism. Therefore, improving peoples' lives is not just important for its human rights and socioeconomic development rationale, but also for conservation and tourism objectives in the region. Overall, human wellbeing in Caprivi is low and should constitute a priority for rural development interventions. If we consider community based natural resources management a rural development "vehicle," tourism is a good "fuel," but the engine can be tweaked to improve "fuel efficiency." Without improving the impacts of tourism at the micro (individual) scale, the sustainability of tourism's impacts at the macro (national) and meso (conservancy) scale is questionable.

CHAPTER 1 INTRODUCTION

Problem Statement

In Africa, the struggle to alleviate poverty in rural areas often entails finding a balance between use and conservation of natural resources (Adams et al. 2004). The importance of this challenge is illustrated by the fact that the United Nations' Millennium Development Goals recognize the dual importance of people's wellbeing as well as environmental sustainability (United Nations 2000).

Integrated Conservation and Development Projects (ICDPs) and Community Based Natural Resources Management (CBNRM) projects were established in the late 1980s under the assumption that rural people would better husband natural resources they could derive benefits from and that they governed themselves (Brandon and Wells 1992). One of the most widespread strategies to generate revenues from the sustainable use of natural resources relies on establishing nature-based tourism because its long-term financial success depends on intact natural resources. Many developing countries have high expectations for nature-based tourism to simultaneously contribute to rural development and safeguard their natural resources.

In sub Saharan Africa, tourism is one of the fastest economic sectors, with a growth rate estimated at 4.6% per year over the next ten years (World Travel and Tourism Council 2009a). Much of this tourism is based on the continent's rich wildlife resources, which tourists can enjoy through a vast network of national parks as well as communal and private land areas. While tourism appears to have consolidated wildlife conservation, its success as a rural development strategy is less obvious (Lindberg 1995; Ross and Wall 1999). Tourism in developing countries has been criticized

because its reliance on foreign investment often implies that revenues leak out of the host areas at the expense of rural people and even in some cases at the expense of the national economy (Mbaiwa 2003). However, southern African policy makers, international donors, and non-governmental organizations continue to support, via policy and financial investments, nature-based tourism as a tool to simultaneously improve rural people's lives and foster support for conservation. As such, it is important to investigate if and how nature-based tourism improves wellbeing, and whether such improvements correlate with more favorable attitudes toward tourism and conservation. We focus on the experience of the Caprivi strip in Namibia to address these questions.

Conceptual Overview

The rural development objectives of CBNRM provide the overarching context for this study. A small, but growing, faction of economists argues that common development indicators fall short of capturing the full human experience (Costanza et al. 2006; Max-Neef 1995; Stiglitz et al. 2009). Building on Amartya Sen's view of "development as freedom" and the "capabilities framework," scholars and practitioners suggest refocusing development measures on holistic concepts such as human wellbeing, or quality of life (Gonner et al. 2007; Nussbaum 2003; Sen 1999; Sen 1985b). Despite operational challenges to measure wellbeing, it is generally conceptualized as being multidimensional, with both subjective and objective components, and can be better defined through participatory research (Cummins 2005; White and Pettit 2004).

According to human needs theories, people will engage in particular actions based on a hierarchical sequence of needs fulfillment and an interaction between

individual and societal needs (Maslow 1970; Doyal and Gough 1991). Thus, if we consider human wellbeing a more basic need than supporting sustainable management of natural resources, we understand part of the rationale behind CBNRM projects. They aim to improve people's lives, as a first step to create enabling conditions for environmental protection.

Furthermore, CBNRM aims to empower people to make decisions for themselves in the hopes of fostering behaviors that will lead to environmentally friendly rural development. This is based on the tacit belief that local people are more likely to make sustainable management decisions when they are directly involved in processing pertinent information rather than when they are told what to do by external agents. According to the Reasonable Person Model, cognitive and motivational strategies are well suited to promote general behavioral changes (Kaplan 2000). If people are provided with opportunities to learn about particular problems and participate in addressing them, they are more likely to support efforts to resolve those problems. This may explain why participatory approaches are often recommended for conservation and development strategies (Mutamba 2004; White and Pettit 2004).

Research Questions

The adoption of nature-based tourism as a rural development and conservation strategy within the CBNRM framework is based on several assumptions that we test through this research project (Figure 1-1). First, tourism improves people's wellbeing. Second, people with higher wellbeing are more supportive of conservation efforts than people with lower wellbeing. Third, participation in conservation and tourism positively shifts people's attitudes toward these activities. Therefore, our research questions are:

At the community level, does the presence of tourism operators, or the extent of fees they pay to communities, increase wellbeing? (Chapter 3)

- Hypothesis 1: The mean wellbeing of individuals in tourism communities
 - A. is higher than in communities without tourism activities.
 - B. is positively correlated with the conservancy's financial receipts from tourism.

At the individual level, does tourism employment or the extent of tourism income, increase wellbeing? (Chapter 3)

- Hypothesis 2: Within tourism communities, an individual's wellbeing is
 - A. higher for tourism employees;
 - B. positively correlated with the percent of one's income derived from tourism.
- Hypothesis 3: Within tourism communities, residents of households home to a tourism employee have higher wellbeing.

Are people with higher wellbeing more favorable toward CBNRM and tourism? (Chapter 4)

- Hypothesis 4: individuals with higher wellbeing have more favorable attitudes toward
 - A. the conservancy.
 - B. tourism.

Are people involved with either CBNRM or tourism more favorable toward these concepts? (Chapter 4)

- Hypothesis 5: individuals who are conservancy members have more favorable attitudes toward the conservancy.
- Hypothesis 6: individuals directly involved in tourism have more favorable attitudes toward tourism.

Overview of CBNRM and Tourism

The successful implementation of CBNRM belies a complex set of theoretical assumptions summarized as the “price-proprietorship-subsidiarity” concept (Child 2003). In order for people to engage in sustainable management of natural resources,

resources must have market value, and people must have rights to manage and benefit from those resources at the most appropriate institutional scale.

CBNRM provides the institutional arrangement for communal residents to manage wildlife and the benefits derived from it. Tourism is the mechanism by which wildlife is given market value, and thus converted into benefits. CBNRM policies strengthened trophy hunting, and later photographic tourism, which eventually led to the recognition that wildlife was in many instances a more effective land use than cattle (Child 2004). Tourism is the economic driver for CBNRM, providing financial revenues to local communities through direct and indirect employment opportunities and direct payments to community-based organizations for hunting and photographic concessionary access.

The expectations and impacts of tourism as a tool for rural development range broadly from negative (e.g. cultural loss, social structure degradation) to positive (e.g. diversification of livelihood opportunities, social and economic benefits) (Simpson 2008). In order to foster the more positive aspects and reduce the risks of the negative ones, a number of scholars in the 1980's argued that tourism development and assessment needed to integrate social, economic and environmental factors (Inskeep 1988; Mathieson and Wall 1982; Murphy 1985). This led to the formulation of "sustainable tourism" as a concept anchored around the awareness of economic and environmental impacts, development equity, host residents' quality of life, and visitors' experience quality (Page and Dowling 2002a). To achieve these goals, sustainable tourism emphasizes the importance of local stakeholders' involvement and favorable attitudes toward tourism from host communities (Hunter 1997; Ap 1992). The sustainable tourism paradigm stands in contrast to other forms of tourism because it moves beyond

business success to address environmental and social concerns. As such, it is in line with the rural development objectives of CBNRM.

The Namibian Context

Namibia is the second youngest country in Africa, having gained its independence less than 20 years ago. Its history has been marked by a number of power struggles, first between Bantu tribes, and subsequently during the colonial period. It was alternatively under British and German rule between 1890 and 1929, and following the World Wars fell under the control of South Africa (Bruchmann 2000; Dierks 1999). Resistance to the apartheid rule started in the late 1960's and after drawn out armed conflicts, political mobilization and international pressure, Namibia became an independent nation in 1990 (Dierks 1999).

Namibia is one of the least densely populated country in the continent, with 2.1 million people over about 825,000 km² (roughly half the size of Alaska), 60% of which reside in rural areas. Despite one of the highest per capita income in sub Saharan Africa (US\$ 5,120), Namibia has high income inequality and 62% of its population lives on less than US\$ 2 per day. Namibia is ranked 125th out of 177 countries on the Human Development Index, down from its previous 116th ranking in 1996. The vast majority of people depend on subsistence agriculture for their livelihood, which is challenging given the country is one of the most arid in Africa. Namibia's economy is dominated by its service industry, followed by its industrial sector. Mining, including important diamond operations, is the largest foreign exchange earner, but tourism also makes a significant contribution with US\$ 473 million in 2006. Tourism's contribution to the GDP, at 7.2% is one of the highest in sub Saharan Africa. Namibia has adopted

Botswana's "high value, low volume" approach to get the most out of tourism without threatening its resource base (The International Bank for Reconstruction and Development 2009).

Part of Namibia's development vision involves an expansion of tourism activities within the framework of its CBNRM program (Office of the President 2004). This program takes form through "conservancies" as enacted by the Nature Conservation Amendment Act of 1996 (Government of Namibia 1996). Conservancies are community based organizations representing one or several village areas which have been granted conditional rights to benefit and partially manage wildlife resources within set boundaries on communal lands (NACSO 2006). They are not meant to replace, but rather to complement, current land-uses and livelihood strategies (The Namibia Economist 2009). The first conservancy was established in 1998, and by 2006 there were 50 conservancies, covering almost 119,000 km² and home to 221,000 people (NACSO 2007). Namibia is divided in 13 administrative regions, but most of the conservancies are located in the Kunene and Caprivi regions.

The Caprivi region stands out from Namibia as a strip extending out of its northeastern corner. It is the result of an aborted project by the Germans to connect German South West Africa to their East African colonies in the late 19th century. The region is different from other parts of Namibia in that it is crossed or bordered by a number of significant rivers: the Kavango, Kwando, Chobe and Zambezi. Most of Caprivi is rural communal land, with the lone urban center located in Katima Mulilo and home to approximately 28% of the region's population (Central Bureau of Statistics 2003). Overall, Caprivi's population totals 80,000 people, representing 4.4% of

Namibia's (National Planning Commission 2006). Most of the population identifies as speaking Caprivian languages, primarily Lozi (Central Bureau of Statistics 2003; Malan 1995). The majority of people depend on farming for their livelihoods, but there are vast differences in the scale of these activities depending on people's socioeconomic status (National Planning Commission 2006). The region significantly suffers from the HIV/AIDS pandemic, with less than half of Caprivians expected to live beyond 40 years, forming a "critical poverty trap" (UNDP 2000).

The landscape is characterized by Kalahari and Mopane woodlands and grasslands bordered by extensive floodplains. The soils vary from clay-loam to sand, and are typically fairly low in nutrients (National Planning Commission 2006). Despite record rains and floods in 2008-09, and significant seasonal variations, annual rainfall ranges from 348mm to 871mm, which presents challenges for agricultural production (National Planning Commission 2006). Following concerns over wildlife depletion in the 1970's and 1980's, wildlife populations have been increasing in recent years, partially credited to the efforts of CBNRM (Weaver and Skyer 2003). The area is home to a number of different species, including elephants, various species of antelopes, lions, hippos and warthogs. The diversity of wildlife can be a source of stress for local people, whose crops and personal safety may suffer from wandering animals; however, it also enables tourism development.

Sustainable tourism anchored around Namibia's natural and cultural assets represents a comparatively advantageous option for rural development; however, rural host communities face significant challenges in terms of their management capacity, understanding of the industry and institutional organization (Hitchins and Highstead

2005). CBNRM and tourism in Namibia are intricately linked because tourism provides the majority of CBNRM's income (Hitchins and Highstead 2005). Therefore, in addition to institutional and environmental aspects, the long term success of CBNRM hinges on tourism's success (Hitchins and Highstead 2005).

Tourism development in Caprivi can be separated into three time periods. Commercial hunting began in the early 20th century, but through the 1970's, few people except for experienced adventurers or hunters visited the area because of its remote access and political and economic priorities (Matengu 2001). This period may be considered the first wave of tourism, characterized by a lack of organization and infrastructure as well as a weak supply and demand. Further tourism development in the region faced challenging conditions; first, because of declining wildlife population in the 1970s and 80s, and subsequently because of civil unrest in the pre-independence period (up until 1990) as well as between 1998-2001 (Fisch 1999; Zeller 2000). The second tourism wave took place in the 1990s with the establishment of camps sites and lodges to host visitors interested in non-hunting tourism (i.e. photo safari, bird watching, etc...) (Anonymous 1993). This occurred in the context of the country achieving independence and implementing strategies to stimulate economic development, improve natural resources management, and foster social justice. In particular, in 1996, national legislation was passed to enable rural communities to benefit from wildlife through conservancies, the first of which was established in Caprivi in 1999 (NACSO 2007). Conservancies continued efforts initiated with local communities to reduce poaching and reverse negative trends in attitudes toward wildlife (Bond et al. 2003). In Caprivi, tourism development experienced severe set-backs between 1998 and 2001

because of violence associated with a local secession movement and spill-over effects from the civil war in neighboring Angola (MacGregor 2000; Fisch 1999). By 2002, calm had returned to the region, and with it tourism activities restarted. This marked the beginning of the third and current tourism development stage.

There are currently 19 tourism establishments in Caprivi, including rural campsites and lodges as well as hotel and guest houses in the urban center, Katima Mulilo. This represents a total of 454 beds, which had a 29% occupancy rate in 2008 (Namibia Tourism Board 2009). Of Namibia's 1.8 million tourists, 27,000 (1.5%) visited Caprivi in 2008, coming primarily from Germany, Namibia, South Africa and the U.S.A (Namibia Tourism Board 2009). Despite significant growth of the tourism industry in Caprivi, the region is still not a prime tourism destination, especially when considering other attractions in the region. Most visitors go through central Caprivi in between visits to Etosha National Park (Namibia) to the west, Victoria Falls (Zimbabwe and Zambia) to the east and Chobe National Park (Botswana) to the south east (Zeller 2000).

Several of these tourism establishments are located in rural areas conservancies and, in a few instances, national parks. Between 1998 and 2006, nine conservancies were established in Caprivi, covering almost 2,600 km² and home to approximately 27,000 people (NACSO 2007). In addition to donor support, conservancies generate income from joint venture agreements with tourism operators, including trophy hunters, lodges and campsites, as well as through crafts markets and cultural exhibits. All lodges were built before the conservancies' registration. Lodge operators vary from relatively small privately owned companies to larger corporations, such as Wilderness Safaris. They usually can employ 15-40 local staff members, which is 5 to 10 times more than

hunters and campsites. Lodges, however, are capital intensive and have not been developed in every conservancy. As of 2008, there were a total of 6 lodges in the Caprivi, 5 of which along the Kwandu river and one on the Chobe river. All registered conservancies have joint venture agreements with hunters, but these agreements are sometimes shared with other conservancies. A few conservancies have established their own independent campsites. All tourism activities are regulated through contracts, which are negotiated by conservancy leaders with the assistance of extension agents from the Ministry of Environment and Tourism (MET) and from a local non governmental organization, Integrated Rural Development and Nature Conservation (IRDNC). The establishment and progress of conservancies in Caprivi (and throughout the country) owes much to the financial, technical and strategic support provided by a large number of stakeholders, including MET, NGOs, donor agencies, community representatives and the University of Namibia (Bond et al. 2003).

Methodological Overview

Our research approach is strongly anchored in the belief that research should have practical relevance. As such, we organized meetings and discussions with local stakeholders in Caprivi, Namibia in May 2007, which helped us articulate the research questions. Specifically, there was an interest to focus research on how conservancies, and the tourism activities on which they rely, contribute to the lives of rural residents and not just to the conservancies in and of themselves. In other words, do tourism revenues trickle down from conservancy committees to conservancy residents? Second, there was also strong interest in documenting local residents' satisfaction with conservancies and tourism.

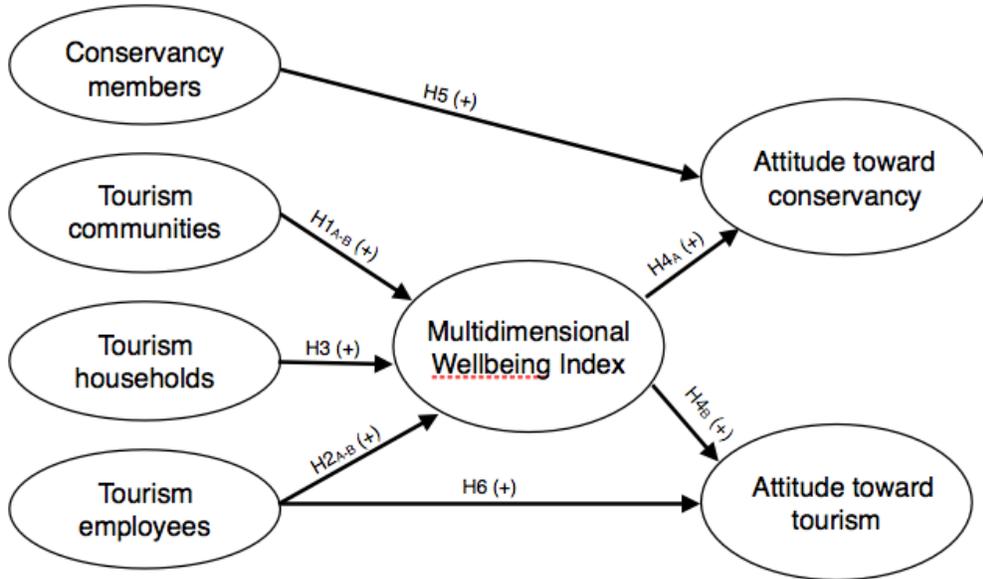
Part of the intellectual merit of this research is the methodological contribution it makes to quality of life research, especially in the context of rural development and tourism studies in southern Africa. We developed a measure of human wellbeing based on the review of the literature and participatory research methods to understand the meaning of wellbeing within the Caprivian context. We organized focus groups, stratified by gender and age, in June and July 2007, which contributed to our conceptual definition of wellbeing as a multidimensional construct. In July 2007, we also conducted a pilot study to test a preliminary questionnaire with a randomly selected sample of 53 residents in Wuparo conservancy (Namibia). The results of the pilot study were presented to local stakeholders and university and professional colleagues for validation. A final questionnaire was developed based on their input and additional literature review (Appendix A).

The main data collection period took place between February and June 2008 in five conservancies in Namibia (Figure 1-2). As seen in Table 1-1, four of those conservancies (Balyerwa, Mashi, Mayuni and Kwandu) had active partnerships with tourism operators, either through lodges, campsites or safari hunters (or a combination of), and thus represented treatment sites. We refer to them as “tourism conservancies” in this document. Our control site was a fifth conservancy, Bamunu, which was not yet registered and had no tourism activity, and is thus referred to as “non-tourism conservancy.” We interviewed a total of 467 individuals, randomly selected, and stratified by their involvement in the tourism industry. Data was collected through a 60-item questionnaire, originally written in English but translated in Lozi (local language). We hired and trained local research assistants to conduct interviews and report results

in English. Data analyses were conducted using SPSS 15.0 and STATA IC 10.5. Partial descriptive results were presented back to communities during feedback sessions, prior to the end of fieldwork, which enabled us to get an initial validation of the data, and in some cases gather additional contextual information.

Dissertation Outline

This dissertation is structured around the anticipated publication of research results in peer-reviewed publications. This first chapter presents a general overview of the problem statement, of the concepts and methodologies that guided our work, and our research questions. The second chapter, *Constructing a wellbeing index*, adopts a multidimensional approach to present a conceptual and operational definition of human wellbeing. The third chapter, *The impact of nature-based tourism on the wellbeing of rural residents in Caprivi*, investigates if one's involvement in tourism contributes to a better life. The fourth chapter, *Factors influencing attitudes toward conservancies and toward tourism in Caprivi*, documents attitudes toward (1) conservancies and (2) tourism, as well as factors that may influence them. The fifth chapter integrates the results from chapters 2-4, and concludes with a discussion of their relevance for both scholars and practitioners interested in using tourism as a tool to improve the lives of rural communities in developing countries.



Note: H=Hypothesis

Figure 1-1. Conceptual Model

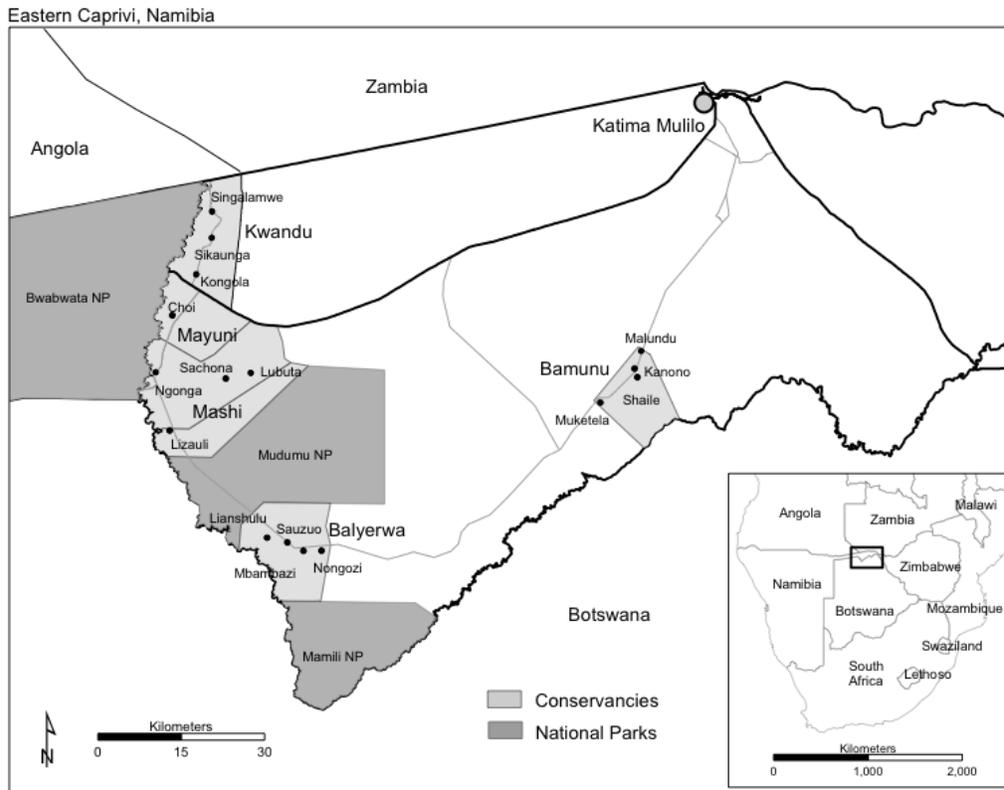


Figure 1-2. Study Area Map

Table 1-1. Overview of the sample conservancies

	Kwandu	Mayuni	Mashi	Balyerwa	Bamunu
Registration date ^a	1999	1999	2003	2006	not yet
Size (km ²) ^a	190	151	297	223	-
Population					
Individual ^a	1,947	2,117	3,237	1,916	4,033
Household ^c	782	580	984	525	823
Sample size	82	86	124	86	89
Employed					
Tourism ^b	4	46	67	25	1
Conservancy ^b	9	11	14	-	-
Other ^c	142	171	104	23	226
Tourism Infrastructure					
Lodges ^b	0	2	2	1	0
Lodge beds ^b	0	41	94	80	0
Campsite ^b	1	1	0	0	0
Hunting JV ^b	1	1	1	1	0
Service Infrastructure ^d					
Primary school (up to grade 7)	1	1	2	1	1
Jr. secondary school (up to grade 10)	1	-	1	1	1
Sr. secondary school (up to grade 12)	-	1	-	-	-
Clinic	1	1	1	-	1
Conservancy Financial Data (\$US) ^b					
Revenues from tourism fees	40,471	64,917	47,701	79,708	-
Salaries paid to conservancy employees	21,603	26,462	31,234	18,810	-
Amount spent on community projects	4,772	2,169	9,833	7,808	-

Source: ^a NACSO, 2007; ^b Unpublished IRDNC documents ; ^c estimated from sample data; ^d www.arc.org.na

CHAPTER 2 CONSTRUCTING A WELLBEING INDEX

Introduction

“[T]he time is ripe for our measurement system to shift emphasis from measuring economic production to measuring people’s well-being.”

-Stiglitz *et al.* 2009

Over the past century, development objectives were assessed through conventional economic measures, such as Gross Domestic Product, income or consumption; however, there are growing concerns over the shortcomings of such measures. In September 2009, two Nobel prize winners – Drs. Stiglitz and Sen – presented a report to the OECD on how to better measure social progress in recognition of the limitations of conventional economic indicators (Stiglitz *et al.* 2009). This highlights the growing awareness of wellbeing research in economic circles. Lawn (2003) argues that while life can hardly be enjoyed in the absence of physical goods, satisfaction is not determined by the rate at which goods are produced and consumed. Furthermore, quality of life has been shown to decrease over time beyond a certain threshold point in economic growth (Max-Neef 1995). This is not a new debate; policy makers are more frequently incorporating development goals embracing multidimensional and subjective concepts (Michaelson *et al.* 2009). Hinks and Gruen (2007) suggest governments should “aim to improve the perceived lives of ... people” For instance, Bhutan tracks “Gross National Happiness” and Namibia has inscribed people’s quality of life in its long-term policy framework (Office of the President 2004; Zurick 2006). Conventional economic measures do not capture the full human experience, and higher performances on such indicators are not necessarily

accompanied by better lives for people (Qizilbash 1996). This has been increasingly acknowledged in scholarly writing across multiple disciplines as well as in policy circles (Sen 1984, 1999; Sen 1985a). It is clear that development objectives should be broadened to encompass human wellbeing rather than focus solely on indicators to which a dollar sign could be attached (Stiglitz et al. 2009). Human wellbeing has been recognized as a multidimensional concept that truly exists; however, the difficulties inherent to defining, understanding, and assessing it have hampered its adoption to assess the progress of development objectives.

In the study of human wellbeing, different terms have been used, such as happiness, quality of life, welfare, life satisfaction or multidimensional poverty (lack thereof); these terms are sometimes interchangeable, sometimes not (Rahman et al. 2005; Annand et al. 2005; Cahyat et al. 2007; Kingdon and Knight 2006). In this document, we consider wellbeing, quality of life and the lack of multidimensional poverty to be equivalent concepts (Cahyat et al. 2007; Neff 2007; Sanderson 2005).

In this chapter, we first present an overview of how human wellbeing has been conceptualized and operationalized by other scholars. We then explain the methodology we employed to develop a new index to measure wellbeing in the Caprivi region of Namibia, and present the results of our index construction. Finally, we discuss the implications of our results and propose future avenues for research.

An Overview of Human Wellbeing

Conceptualizing Human Wellbeing

Attention to quality of life is not new. Ryan and Deci (2001) trace back wellbeing research to ancient Greek philosophies of hedonism and eudemonism. Many disciplines

have tackled the subject of understanding, and measuring it (Sirgy et al. 2006). A web of knowledge search for publications with either “quality of life” or “well-being” in their title yielded almost 30,000 results in the past five years alone. It is beyond the scope of this chapter to provide an in depth review of this diverse literature. For decades, efforts seemed to remain within the confines of individual disciplines, but these walls are increasingly being crossed over in favor of interdisciplinary approaches (Costanza et al. 2006; McGregor 2006).

In the 1930's, the President's Research Committee on Social Trends recognized that economic indicators alone failed to properly depict people's wellbeing, and in response, research protocols were established to gather data on social indicators and quality of life (Chan et al. 2004; Bulmer 1983). Research surged in the 1960's (Gasper 2004), split mostly along three parallel tracks: sociologists focused on objective social indicators, economists focused on preferences, and psychologists focused on subjective wellbeing. Another strong research sphere emerged in the health disciplines, with concepts of mental and physical wellbeing, as well as in marketing, but this chapter will not focus on it (World Health Organization 1997; Akvardar et al. 2006; Power et al. 1998; WHOQOL Group 1994; Sirgy et al. 2006).

The basic premise of subjective wellbeing (SWB) research is that in order to understand the wellbeing of an individual, it is important to directly measure the individual's cognitive and affective reactions to her or his whole life, as well as to specific domains of life (Diener 2000). Typically, this is achieved through a single question such as “how satisfied are you with your life as a whole?” but multiple-item indices also exist (Diener 2000; Diener et al. 1997). However, this assessment of life

satisfaction is just the first layer of a hierarchy that can be deconstructed into several life domains, which can in turn also be further deconstructed into indicators (Sirgy et al. 2000; Cummins 2005). The number and type of life domains remain an active research subject, but scholars tend to agree on a minimal set, usually including health, personal relationships, employment, wealth, and sense of community (Cummins et al. 2003).

In economics, Easterlin in the 1970's, pioneered attempts to document personal reports of happiness and wellbeing, and challenged previous assumptions regarding the relationship between income and happiness (Easterlin 1973). This paved the way for a paradigm shift in economic development measures, most convincingly argued by Amartya Sen and Martha Nussbaum (Sen 1984; Sen 1985a, 1985b; Nussbaum 2003; Nussbaum and Sen 1993; Sen 1999). They proposed a capabilities approach to assess progress of human development, which placed emphasis not just on how people live, but also on the freedom people have to decide how to live. This led to new development measures, most notably the Human Development Index, but also provided the theoretical framework for many alternate measures of development, placing the human experience at the center (United Nations Development Program 1990; Anand and Sen 1994). It helped reframe poverty from income deprivation to a multidimensional concept including capability deprivation. Conceptually, this has been well received by various development scholars, but the capabilities approach has been difficult to operationalize comprehensively (Chambers 1997; Mazumdar 1999; Neff 2007; Annand et al. 2005).

Since the 1990's, stronger connections have been built between economists and psychologists working on the concept of subjective wellbeing (Sirgy et al. 2006; Hinks and Gruen 2007; Annand et al. 2005; Kahneman et al. 2006; Kahneman and Krueger

2006). This line of research remains limited but is growing, especially through interdisciplinary approaches (Kingdon and Knight 2006; Costanza et al. 2006). Despite lingering hesitation from some traditional economists to accept the validity of self reported wellbeing data, Di Tella et al. (2003) argue that such measures are sound given the extensive research, and supporting validity conclusions, they have been subject to in psychology. Considering the utility maximization theory, it is key to have adequate measures of utility that can explain people's economic behavior (Mill and Crisp 1998). While utility may have originally been conceptualized as happiness or wellbeing, through most of the 20th century, it was operationalized through neoclassical theory leading to indicators based on income and consumption (Conceição and Bandura 2008). However, scholars argue that people seem to maximize happiness over income, and thus that happiness would be a better utility measure (Hinks and Gruen 2007; Ng 1997). Indeed, the multidimensional concept of wellbeing is gaining grounds as a measure of human development, at least as a complement to more conventional unidimensional measures (Berenger and Verdier-Chouchane 2007). Despite all this work, the scientific study of wellbeing, especially with an application toward development economics, is still quite limited compared to other concepts (Gasper 2004). We share Layard's view that "happiness...should become a central topic in social science" (2003).

Operationalizing a Measure of Human Wellbeing

In this chapter, we develop a wellbeing index at the individual level. We opted to build our own index after encountering difficulties in using existing instruments because of scale, structural and cultural issues. Measures, such as the Human Development Index or the Physical Quality of Life Index aggregate data usually at the district or

national level (Bobbitt et al. 2005). Despite presenting a better picture of development than conventional measures, these indices have been criticized for still falling short of capturing the human experience in its broader context (Rahman et al. 2005). The Satisfaction with Life Scale (SWLS) or the Personal Wellbeing Index (PWI) operate well at the individual level, but are too focused on people's feelings and may not provide a deep enough deconstruction of life domains into tangible factors policy makers could target (International Wellbeing Group 2006). Finally, quality of life indices have been constructed for a variety of specific populations, such as US tourism host communities, rural US residents, elder Chinese, or mental illness patients, which appeared ill adapted for our context in Namibia (Andereck and Jurowski 2005; Flynn et al. 2002; Chan et al. 2004; Greenley et al. 1997). In fact, several authors have argued in favor of developing locally relevant wellbeing measures, which led us to the creation of our index, incorporating concepts from other instruments (Appendix B) (Cahyat et al. 2007; International Wellbeing Group 2006; Gonner et al. 2007).

Measuring a latent multidimensional concept through an index entails a number of steps and subjective choices. These include defining the scope and scale of the index, identifying indicators, choosing how to weigh those indicators and aggregating them into an index, and finally validating the indicators and the conclusions that could be drawn from them (Bobbitt et al. 2005; Berenger and Verdier-Chouchane 2007).

Scale and scope of the index

Our work was motivated by the desire to measure and compare people's wellbeing to assess the performance of development interventions (in this particular case, tourism). We wanted a wellbeing measure that would work at an individual level, within the context of a rural developing country, and employing subjective and objective

indicators to encompass multiple life domains (Cummins 2005). We based our index on CIFOR's wellbeing index (CWI) because of its conceptual relevance and practical adequacy (Cahyat et al. 2007). As can be seen in Figure 2-1, it combines one's subjective wellbeing, fulfillment of basic needs (health, wealth and education) and surrounding context (social, political, environmental, economic and infrastructural).

Identifying indicators

The identification of locally relevant indicators is a key process, probably best addressed by the use of participatory research methods, yet few studies employ them (White and Pettit 2004). Robert Chambers argues that people whose wellbeing we seek to measure should have a voice in defining what constitutes that wellbeing (Chambers 1997). Yet, there continues to be a schism between an economist approach favoring objective, quantitative and general indicators, and a socio-psychologist approach favoring subjective, qualitative and contextualized indicators (Hulme and Toye 2006). As recommended by Costanza et al. (2006), we attempted to include both kinds.

Weighing indicators and aggregating them into an index

When multiple life domains are combined into an index, we must be aware that they may not all have the same influence over one's wellbeing. Is health more important than wealth? Is wealth more important than social relationships? Weighting is a debated topic in the construction of composite measures of quality of life (Cox et al. 1992; Wu and Yao 2006). One option is not to assign any weight, though Costanza et al. (2006) argue that this places equal weights on all the indicators. While equal weights are certainly a valid combination, the choice to not assign weights assumes equal weighting rather than determine it through analysis. The importance of different life domains is likely to vary across time and space, and weights should be determined for the local

context in which the index will be used (Costanza et al. 2006). Identifying weights can be done through a number of multivariate statistic techniques. For instance, decompositional approaches have been used, such as principle component analysis, conjoint analysis, or multiple correspondence analysis based on the notion that people make overall assessments of their wellbeing by combining the different amounts of value they assign to the different life domains (Hair et al. 1998; Hagerty et al. 2001; Rahman et al. 2005; Rossouw and Naudé 2008). Another approach relies on regression modeling, relating an aggregate assessment of wellbeing as a dependent variable to a set of multiple life domains as independent variables (Annand et al. 2005; Richards et al. 2007; Hinks and Gruen 2007; Kingdon and Knight 2006). This gives rise to a formula of the type:

$$\text{Formula 1} \quad \textit{Wellbeing} = \alpha + \sum \beta_i X_i + \varepsilon$$

In this model the β_i represents the respective weight of the contribution of each life domain X_i on wellbeing. In such models, wellbeing is usually measured through a question about general satisfaction with life (Richards et al. 2007; Hinks and Gruen 2007; Higgs 2007; Annand et al. 2005; Kingdon and Knight 2006).

Other approaches have also used fuzzy analysis, which may be well suited for qualitative data sets (Berenger and Verdier-Chouchane 2007; Ragin 2008). Another approach to weighting involves obtaining both a satisfaction score and an importance score for life domains, and multiplying them for an aggregate score (Costanza et al. 2006), but it has been criticized for being unnecessary and even potentially damaging to the data (Trauer and Mackinnon 2001). Regardless of the technique chosen to determine the weights of each indicator to the aggregate composite measure of quality

of life, it is important to recognize that it is unlikely to satisfy everyone (Hagerty et al. 2001).

When using a regression technique to determine the weights, a choice needs to be made for the link function to aggregate the index. The common form of a multiple regression is well suited to relate a dependent metric variable to a set of independent metric variables. When the dependent variable is ordinal, researchers may opt to use a logistic regression model (for binary dependent variables) or an ordered logistic regression (for dependent variables with more than two levels) (Agresti 1996). Ordered logistic regression has been particularly popular with quality of life researchers, because the dependent variable is often a measure that has a limited number of ordinal responses (Kingdon and Knight 2006; Hinks and Gruen 2007; McGregor 2006). These models are adapted to variables where the differences between various responses are not necessarily equivalent, but where responses are in a meaningful order (Agresti 1996). However, when the response categories of a dependent variable become too numerous, results may be hard to interpret, and researchers may opt to use multiple regression (Annand et al. 2005).

Validating the index

Overall, the numerous choices required to develop a wellbeing index are highly likely to generate some sort of disagreement over the process (Costanza et al. 2006). Nevertheless, a few tools are available to check the newly created index. The validity, reliability and sensibility of subjective wellbeing measurements can be assessed through a variety of psychometric tests. For instance, the correlation between the newly developed index and previously developed measures serves to assess convergence validity. Inter item correlations and cronbach's alphas provide information on the index's

reliability (Cummins et al. 2003; Diener et al. 1985; International Wellbeing Group 2006; Pavot and Diener 1993). Another approach is more qualitative, and may be better suited to indices that go beyond subjective wellbeing and adopt more of a development policy focus. Haggerty et al. (2001) developed a set of 14 criteria to assess the validity and usefulness of quality of life indices from a policy making perspective. These range from defining the purpose of the index to guidelines about indicators, as well as validity and reliability concerns. After developing their own quality of life index for a US county, Bobbit et al. (2005) used these criteria to determine that their index was adequate.

Overview of Wellbeing Research in Southern Africa

Wellbeing research has been relatively vibrant in southern Africa, illustrated by two special issues of Social Indicators Research (in 1997 and 2004) that have focused on a range of issues related to quality of life measures, causes and consequences in South Africa (Moller 2007). While some research still focus on conventional measures of economic development as proxies for wellbeing and poverty measures, several scholars embrace a more multidimensional approach (Martins 2007; Bandyopadhyay et al. 2004). Subjective wellbeing is often at the centre of these assessments and studies have highlighted similarities and differences among people with different socio-cultural characteristics, such as economic status, ethnicity, urban/rural location and country of residency (Hinks and Gruen 2007; Higgs 2007; Bookwalter and Dalenberg 2004; Neff 2007; Richards et al. 2007). Furthermore, as it has been suggested before, it is important to also consider objective indicators of non economic quality of life and to try to integrate all these elements into simple frameworks for use in a southern African development context, such as has been attempted with the Everyday Quality of Life Index (Rossouw and Naudé 2008; Higgs 2007). A number of studies have recognized

the importance of developing wellbeing measures adapted to the local context through participatory research, as illustrated by the efforts of, among others, the National Planning Commission in Namibia (Kingdon and Knight 2006; National Planning Commission 2006; Mosimane 2007; May and Norton 1997).

In Namibia specifically, efforts to document wellbeing are starting. Conventional income-based analytical frameworks are complemented by multidimensional approaches, strongly supported by rural development experts (Jones 2004; Ashley 2000a; Bandyopadhyay et al. 2004; Bandyopadhyay 2008). Research efforts by the University of Namibia and by the National Planning Commission have made extremely valuable contributions to our understanding of wellbeing at a local level, with a focus on the causes and consequences of multidimensional poverty (Mosimane 2007; National Planning Commission 2006). However, these initiatives have not yet attempted to aggregate their results into a simple index that could offer an overall view of wellbeing. We believe our research starts to fill this gap by developing a multidimensional wellbeing index that can be analyzed as an aggregate measure, as well as individual subindices for different life domains.

Methods

Our objective was to build a household level wellbeing index for use in the tourism context of the Caprivi strip in Namibia. We implemented a multiple stage process based on the integration of existing measures, namely the CIFOR Wellbeing Index (CWI) developed by Cahyat et al. (2007) and the Personal Wellbeing Index (PWI) developed by the International Wellbeing Group (2006), and participatory field research conducted in 2007-08. First, we conducted focus groups to identify life domains of human wellbeing in the local cultural context. Next, we tested a preliminary questionnaire and

subsequently developed and implemented a final 40-item questionnaire. In a broad sense, this allowed us to gather information on what people have, what people do, and how people feel, as recommended by several scholars (McGregor 2006; White and Pettit 2004). Finally, we compared different methods to aggregate our information into a single Multidimensional Wellbeing Index (MWI).

Research Site

Research was conducted in the southern portion of the Kwandu river basin, part of the Kavango Zambezi Conservation Transfrontier Area. Historically, this area was part of the greater Lozi Kingdom of pre-colonial Barotseland. Today Subia, Mbukushu and Fwe tribes, of Bantu origin (united by Lozi language, though each group also has its own language), as well as San communities inhabit the area (Malan 1995). For homogeneity reasons, the study was limited to Bantu communities.

The pilot study, which included quality of life focus groups and testing of the initial questionnaire, was conducted in Wuparo conservancy in Namibia and the Chobe Enclave Community Trust in neighboring Botswana. The main study was conducted in five conservancies in Namibia (Bamunu, Balyerwa, Mashi, Mayuni, Kwando) (Figure 1-1).

Further description of the study area is provided in Chapter 1.

Data Collection

Data were collected through individual questionnaires administered to a random sample of 467 conservancy residents. Fifteen of the 40 items presented a problem of missing values (Table 2-1 and Appendix C). Respondents either did not provide an answer (or their answer was not recorded) or answered “don’t know,” which could not be computed in the calculation of the subindices. These missing values were

particularly common for 5 items, including all four items used in the calculation of the Natural Sphere Index. We replaced these missing values by the average score for each respective item, calculated on the basis of the non-missing values.

Developing a New Wellbeing Index

The identification of life domains, and their subsequent aggregation into an index included multiple methodological decisions.

Identifying life domains

We identified life domains through focus groups and a literature review. We conducted twelve focus groups (n=91) stratified by gender and age group (above / under 30 years old) to better understand what constituted a good life for rural residents in the Caprivi region (White and Pettit 2004). The focus groups were led either by a male or female investigator depending on the gender composition of the group (when possible), and conducted in English with immediate Lozi translation available. The focus groups revealed several common themes for life domains as well as potential indicators. We developed a 23 item questionnaire, incorporating 7 of the 8 items from the 4th edition of the Personal Wellbeing Index (International Wellbeing Group 2006). In order to validate the choice of items before conducting the study, the questionnaire was discussed in detail with local representatives, who confirmed that the set of 23 items was comprehensive and relevant to assess human wellbeing in the research site. A total of 51 respondents were randomly selected from Wuparo conservancy, and asked to assess their happiness with each item using a five-point scale with happy faces (☹☹ =very unhappy → 😊😊=very happy), as a pilot study.

During discussions of the pilot study results, local residents, researchers and other colleagues, suggested we incorporate more detailed indicators for the different life

domains and not focus solely on people's satisfaction with those domains. Thus, we adopted a definition of wellbeing as a nested concept integrating subjective wellbeing, core aspects of wellbeing (health, wealth, education) and contextual environments (natural resources, economic, social, political, infrastructural) that contribute to one's capability to get out of poverty (Figure 2-1) (Cahyat et al. 2007). Operationally, this translated into a hierarchical structure with a wellbeing index, composed of subindices, each of them including a number of indicators. Thirty-four indicators were selected on the basis of the above mentioned focus groups and an extensive literature review of both theoretical and empirical work. Many indicators matched those used in the CWI and the PWI, but we also included new items (Appendix B) (Cahyat et al. 2007; International Wellbeing Group 2006). All indicators were structured as closed ended questions, most of which had ordinal responses, except for cases where respondents answered "I don't know."

We had two options to group the indicators into life domains: (1) theoretically, on the basis of a literature review and field interviews, or (2) statistically, using factor analytic techniques. Cahyat et al. (2007) identified indicators through focus groups, assigned them to the set of life domains they had conceptualized and subsequently used correlation analysis to select only a few indicators for each domain, and then used those in the full study. Because of budget and time constraints, we were unable to conduct such an intermediary step.

Our first grouping attempt was based on a literature review, adopting the structure used for the CWI (Cahyat et al. 2007). We assigned each indicator as part of one of the following subindices: subjective wellbeing (SWI), health (HCI), wealth (WCI), education

(ECI), natural sphere (NSI), economic sphere (ESI), social sphere (SSI), political sphere (PSI), infrastructures and services (ISI), and personal wellbeing index (PWI). We refer to these as the “theoretical life domains” (TLD). A score for each subindex was calculated for every respondent through formula 2:

Formula 2
$$\frac{\sum \text{indicator_scores} - \sum \text{min_scores}}{\sum \text{max_scores} - \sum \text{min_scores}} \times 100$$

While the grouping of the indicators into their respective subindex is theoretically justified, cronbach’s alphas suggested that the subindices may not be unidimensional. Indeed, the cronbach’s alphas ranged from .12 to .57, and dropping some items would improve this range from .13 to .66. Thus, we decided to explore the underlying structure of our indicators with statistical tools. The other grouping was done through principle component analysis (PCA), and enabled a statistical identification of the multiple dimensions accounted for by the indicators. We ran the PCA on 29 indicators, leaving out 4 indicators that suffered from a heavy rate of missing values¹, the 6 indicators unique to the PWI, and the single item on how happy people were with their life as a whole. We extracted factors with a minimum eigen value of 1 and employed a varimax orthogonal rotation to facilitate the interpretation of the components. We refer to these as the “statistical life domains” (SLD). The factor scores enabled us to assign a score for each life domain for each respondent.

¹ “Don’t know” answers cannot be computed with other ordinal responses, and were thus treated as missing values at this stage of the analysis.

Combining life domains into a Multidimensional Wellbeing Index

After identifying and quantifying life domains, we aggregated them into an overall wellbeing index. This can be achieved through an averaging formula or through regression modeling. The averaging technique does not allow flexible weights to reflect that some life domains may be more influential than others in assessing overall wellbeing. For instance, Cahyat et al.'s (2007) wellbeing index averages the average of the health, wealth and education subindices and the average of the natural, economic, social, political and infrastructural indices. This dual average technique results in a weight of .167 for each of the first three subindices and .125 for the remaining five. We replicated this approach and calculated a modified version of the CIFOR WBI (mCWI) (Formula 3), but did not include the Natural Sphere Index because too many “don't know” answers made its computation unreliable. The mCWI is “modified” because it was largely inspired by the CWI, but did not include exactly the same items. For instance, HCI included an item asking about people's satisfaction with their health in addition to the other indicators used in the original CIFOR HCI.

$$\text{Formula 3} \quad mCWI = \frac{\left(\frac{HCI + WCI + KCI}{3} \right) + \left(\frac{ESI + SSI + PSI + ISI}{4} \right)}{2}$$

The other method to aggregate life domains entails regressing an overall measure of wellbeing against a set of life domains, which unlike the previous approach, generates regression coefficients for each life domain that can be interpreted as their weight. We favored the regression modeling approach and applied it to both the theoretical and the statistical life domains (TLD and SLD sets, respectively). For the TLD set, we used the multi-item SWI as the dependent variable, rather than the single

item QOLlife, because it had more and stronger Spearman's rank correlations with the subindices we used as dependent variables (Table 2-2). The correlation analysis also indicated that NSI was not related to either SWI or QOLlife, and was thus dropped from the model. For the SLD set, we used QOLlife as the dependent variable, and allowed the other two variables from SWI to be included in the principle component analysis along with the other 27 indicators.

We determined that the variables in the TLD set were not affected by multicollinearity concerns after checking Variance Inflation Factors (VIF), Condition Indices and correlation among the independent variables. VIF indicate the effect that other independent variables have on the standard error of the regression coefficient. Condition Indices represent the collinearity of combinations of variables in the dataset. VIF are below 10 and condition indices are below 30 for all variables. Furthermore, the maximum correlation among the seven independent variables presents an R^2 of 0.153.

When we fitted an ordinary least squares (OLS) regression to each set of variables, we noticed that they suffered from the strong influence of several outlying observations. Upon further inspection of these outliers, we could not find a pattern to them and decided to delete observations that had strong leverage and/or fitted the model poorly ($h \geq .04$, or Cook's $D \geq .015$, or $|\text{studentized residual}| \geq 2.6$ for the TLD set, $h \geq .05$, or Cook's $D \geq .0087$ and $|\text{studentized residual}| \geq 1.96$ for the SLD set). This led to the deletion of 11 observations before refitting the model to the TLD set and 32 observations before refitting the models to the SLD set.

We compared the performance of different regression models. First, we used OLS regression, which is designed for continuous dependent variable with no limitations on

the value it takes (Hair et al. 1998). However, OLS has been shown to be prone to suffer from data sets with outliers and several robust regression techniques have been developed to lessen their impacts (Rousseeuw and Leroy 1987). Thus, we used a robust regression iteratively reweighting the least squares with Huber and biweight functions set at 95% Gaussian efficiency (StataCorp 2007). However, like OLS, this technique assumes that error terms are independently and identically distributed (Hamilton 2009). In response to this concern, we also tried a regression technique with a “sandwich estimator” of variance (Hamilton 2009). We also tried fitting an ordered logit model, which is designed for ordinal dependent variables, for the TLD set.

We calculated means for the two potential wellbeing indices (predicted SWI and QOLlife, for the TLD and SLD set respectively). With the exception of the ordered logit, all models assigned a single predicted value to each respondent. For the ordered logit model, each respondent was assigned 9 different potential predicted values, each with a different probability level. For each respondent, we assigned the predicted value with the highest probability and used those values to calculate the mean predicted value for the entire sample.

We selected the regression model that explained the most variation and offered the clearest interpretation to predict an aggregate value of wellbeing, labeled Multidimensional Wellbeing Index (MWI).

Assessing the performance of MWI against other quality of life measures

To determine if the MWI is a better measure of wellbeing for use in subsequent analyses, we wanted to compare it to other existing measures of wellbeing, mainly the mCWI and the PWI. To do so, we ran pair wise correlations between these measures of wellbeing and each of the 7 life domain subindices. We also used a set of criteria

(Hagerty et al. 2001) to self score the performance of our new index, as implemented by Bobbitt et al (2005).

Results

We present results in separate sections. First, we describe the “theoretical” life domains that emerged from the focus groups and literature review. Next, we describe the “statistical” life domains that emerged from the factor analysis of the 29 indicators. We then present results from the different regression models. Finally, we select a model to calculate our Multidimensional Wellbeing Index (MWI) and compare it to previous wellbeing measures.

Theoretical Operationalization of the Life Domains

The focus groups confirmed the multidimensionality of human wellbeing and provided valuable insights as to how to disaggregate the concept into distinct life domains. These life domains largely reflect results from previous studies and include health, wealth, education, social relationships, economic context, political empowerment, natural environment, and access to infrastructure and services (Moller 2007; Hinks and Gruen 2007; Higgs 2007; Rahman et al. 2005). The resulting 23-item questionnaire implemented during the pilot study had a cronbach’s alpha of .78, suggesting good internal validity. However, the formulation of the items focused on respondents’ happiness with particular items and was ill adapted to a less subjective assessment of distinct life concerns. Thus, for the final study, we developed 34 items to compute a series of wellbeing subindices (Appendix B), adapting the methodology developed by CIFOR and the International Wellbeing Group.

Subjective wellbeing is an individual assessment of how good one’s life is, and as such represents a measure of overall wellbeing (Diener 2000). It may be

operationalized through a single question, such as “How do you feel about your life as a whole? or through indices with multiple items, such as the Satisfaction with Life Scale (Diener et al. 1985). We measured **subjective wellbeing (SWI)** with three indicators focusing on one’s feelings of prosperity, poverty and overall happiness with life (referred to as QOLlife in the rest of this paper) (Gonner et al. 2007). These concepts were selected because they emerged as overarching and multidimensional themes when we conducted the preliminary focus groups. We did not define these terms for the respondents, thus allowing subjective aggregation of as many or as few aspects of their lives.

The **Health Core Index (HCI)** focuses on basic physical needs and overall health aspects through four indicators. The satisfaction of basic physical needs is an essential element of an individual’s wellbeing, which has led to incorporating secure food and clean drinking water access in multiple quality of life measurements (Higgs 2007; Ashley and Hussein 2000). Health issues can be sensitive topics, especially in rural contexts; thus, we opted not to probe in too much depth as it could have jeopardized the completion of the questionnaire. We documented people’s personal satisfaction with their own health and whether household members received treatment (modern and/or traditional) when sick (Cahyat et al. 2007; International Wellbeing Group 2006).

The **Wealth Core Index (WCI)** includes four indicators: the quality of one’s house, and whether one owned cattle (how many), a vehicle, and other assets (how many). Houses in Caprivi are usually built with natural materials, cheaper (though not always free) and needing to be replaced more often than alternative materials. A standard house is usually a small compound enclosed by a reed wall and including at least one

mud hut with a leak proof thatch roof. Wealthier individuals tend to have better maintained houses (they replace materials as needed, or use modern materials) and larger compounds. Cash resources tend to be limited in rural African economies due to the absence of banking institutions and a different approach to cash and savings than in western culture (Fafchamps et al. 1998). Investment in livestock is equivalent to a savings account, which led to include the number of cattle owned by a household as part of its wealth index. The number, and type, of assets owned by a household is another good measure to incorporate and has been included, among others, in national socio-economic reports (Central Bureau of Statistics 2006). Of particular interest, ownership of a vehicle is a clear indication of higher wealth and was included in our index.

The **Education Core Index (ECI)** includes two items documenting the education level of the respondent and the highest level of education in the household. Education was frequently cited during our focus groups as an important factor contributing to a good life: education opens opportunities because it is often a necessary step to get a job. Note that the ECI focuses on formal education, and does not take into account traditional knowledge or skill sets.

The **Natural Sphere Index (NSI)** includes four items, documenting people's perception of the state of natural resources rather than direct information on the status of those resources. For instance, we asked people if wetland grazers (e.g. reedbucks) were still present in the area but did not use survey data to assess the species' population size and distribution. The limitation of perception data is discussed further in later sections of the paper. We asked about wetland grazers because they are

recognized as a good indicator for the health of the local ecosystems (Ministry of Environment and Tourism 2003). We also asked residents to assess the river water quality, the extent of damage to the local environment and whether any non-timber forest products had disappeared as a result of extraction. Ultimately, we did not include the NSI or its indicators in the aggregated wellbeing index because too many respondents did not know the state of the environment and thus the indicators could not be adequately quantified.

The **Economic Sphere Index (ESI)** includes three indicators. The first was the number of cash earning activities household members engaged in. The second pertained to whether income sources were regular or not. The third asked if the household could physically or financially secure enough staple foods, such as maize.

The **Social Sphere Index (SSI)** includes four indicators focusing on social dynamics within one's village. Specifically, we documented the level of trust, people's willingness to help each other, the frequency of conflicts, and one's personal satisfaction with being a village member. These indicators merged the approach taken by the Center for International Forestry Research and by the International Wellbeing Group (International Wellbeing Group 2006; Cahyat et al. 2007).

The **Political Sphere Index (PSI)** includes three items. The first documented people's perceptions of their rights to access natural resources (wildlife excepted) around their village. The second considered information availability by documenting the number of information sources people have access to. The third asked the extent to which people were involved in decision making processes within their village.

The **Infrastructure Sphere Index (ISI)** includes 7 indicators documenting access and quality of health, education and other services. Specifically, we asked how easy it was to get to a secondary school, a health facility, a market and the closest urban center (Katima Mulilo). We also asked respondents to assess the quality of education and health services. Finally, we asked if agricultural, business or other kinds of training had been offered to village members in the past year.

We also computed a modified version of the **Personal Wellbeing Index (PWI)**, adapting work by the International Wellbeing Group (2006). It included 8 items each asking a respondent to rank their happiness on a 5 point scale (from very unhappy to very happy) with their (1) shelter and living conditions, (2) health, (3) achievements in life, (4) personal relationships, (5) personal safety, (6) being a member of the village, (7) future security, and (8) availability of water for cattle and crops. Our version of the PWI did not ask about spirituality but included an item on water based on the themes that emerged during preliminary focus groups.

Statistical Operationalization of the Life Domains

We ran a principle component analysis with a varimax rotation on 29 of the original 40 indicators. We extracted 10 factors with a minimum eigen value of 1, which together explained 58% of the total variance ($p=0.000$). These ten factors, representing life domains, can be labeled as follows, based on the strength of each indicator's loading.

“Access to services” encompasses access to health facilities, schools, markets, and the local urban center and one's satisfaction with one's health. The first four indicators are a subset of what we had previously grouped under the label of the Infrastructure Sphere Index.

“**Wealth**” encompasses ownership of cattle, assets, vehicle and the quality of one’s house. As such, this is a similar grouping to the Wealth Core Index.

“**Prosperity**” encompasses one’s perceptions of poverty and prosperity as well as the regularity of income sources. The poverty and prosperity indicators were previously grouped along with QOLife in the Subjective Wellbeing Index.

“**Education**” encompasses education of the respondent and of the most highly educated household member. This is equivalent to the Education Core Index.

“**Satisfaction with services**” encompasses the perception of the quality of education and health services, whether or not people get medical (modern or traditional) treatment when ill, can collect natural resources and obtain enough food.

“**Social**” encompasses indicators of trust, willingness to help among village members, and one’s satisfaction with being a member of their village. In our theoretical identification of life domains, these indicators formed the “Social Sphere Index.”

“**Economic opportunities**” encompasses the number of income sources and the availability of training options. These two indicators were included in the TLD’s Economic and Infrastructure/Services Sphere Indices, respectively.

The eighth factor is hard to interpret as it has significant loadings from indicators about the number of information sources and the frequency of conflict. The latter has the highest loading (.71) and thus this factor is labeled “**Conflict**.”

Similarly, the ninth factor is also challenging to interpret. It has strong loadings from indicators related to access to drinking water and participation in village decision-making, and to a lesser extent, to the ability to gather natural products. These denote one’s ability to be less dependent on others for their livelihood, and we label this factor

“Empowerment.” It includes two indicators that were previously grouped under the “Political Sphere Index.”

Finally, the tenth factor is labeled **“Food security”** as it has a strong loading from the maize sufficiency indicator.

As can be seen in Table 2-3, several of the life domains in the theoretical set share at least two indicators with similar domains or pairs of domains in the statistical set. The factor analysis reveals a distinction of conflict and food security as life domains, and suggests that the indicators of the theoretical HCI and ESI do not form their own group.

Aggregating the Life Domains into a Wellbeing Index through Regression Modeling

Overall, the regression models fitted to the SLD set (models B₁₋₃) tended to have a slightly better fit than the models fitted to the TLD set (models A₁₋₄), though the differences were fairly minimal (Tables 2-4 and 2-5).

For the TLD, the regression technique with a “sandwich estimator” of variance (model A₂) and the ordered logistic regression (model A₄) performed best ($R^2=0.31$), but not by much compared to the regular OLS and the robust regression. Both models, found the following variables to be independently statistically significant ($p \leq .05$): Health Core Index, Economic Sphere Index and Social Sphere Index. All variables had a positive impact on the predicted wellbeing value.

For the SLD, the regression technique with a “sandwich estimator” of variance (model B₂) performed best ($R^2=0.32$), but not by much compared to the regular OLS and the robust regression. Six factors were found to be independently statistically

significant: service access, service satisfaction, social, economic opportunities, conflict, and food security.

Selecting a Regression Model to Compute the Multidimensional Wellbeing Index (MWI)

Based on their R^2 values, the best three models are the regression techniques with a “sandwich estimator” of variance performed with the theoretical life domains set (model A_2) and the statistical life domains set (model B_2), as well as the ordered logistic regression (model A_4). Model B_2 suffers from unexpected relationships with explanatory variables: a positive association with conflict and a negative one with food security. Furthermore, several factors are particularly challenging to interpret. The modest R^2 improvement compared to models A_2 and A_4 is insufficient to argue in favor of its adoption in light of these issues. To distinguish between models A_2 and A_4 , we also considered the ease of interpretation and their respective means. Ordered logit models are complex to interpret because the effects of each explanatory variable vary across the respondents depending on their scores on the other variables. By contrast, the interpretations of the regression coefficients in model A_2 are more straightforward. Furthermore, the mean predicted wellbeing with model A_2 is slightly more conservative than with model A_4 . Thus, given the similar R^2 , we decided to select model A_2 as the regression model to compute the Multidimensional Wellbeing Index (MWI). As such, MWI is estimated through the formula 4:

$$\text{Formula 4: MWI} = -14.7 + .47(\text{HCI}) + .26(\text{SSI}) + .10(\text{ISI}) + .09(\text{ESI}) + .05(\text{WCI}) + .02(\text{ECI}) + .07(\text{PSI})$$

Comparing MWI to Other Measures of Wellbeing

Table 2-6 shows that the Personal Wellbeing Index (PWI) has the fewest significant correlations with our wellbeing subindices, while model B_2 is significantly

correlated to six of the eight subindices. The other three measures of wellbeing (MWI, A₄ and mCWI) are significantly correlated to each other, and to all the subindices. MWI has the strongest associations with the other measures of wellbeing, closely followed by model A₄, except with PWI, which was more strongly associated with model B₂. mCWI had the weakest correlation with PWI.

The same subindices were used to compute MWI and mCWI, but these composite indices differ in the weights that are assigned to each of those subindices (Table 2-7). We note that MWI is more heavily influenced by health (HCI) and social (SSI) dimensions and less influenced by education (ECI) than mCWI.

Table 2-8 indicates that the MWI performs slightly above average according to the criteria developed by Hagerty et al. (2001) compared to a number of other wellbeing instruments, but in absolute terms, it performs only moderately well, scoring 2.3/3

Discussion

This chapter presented the rationale and process to create a new wellbeing measure that would (1) capture the multidimensionality of the concept, (2) reflect local preferences, (3) improve upon existing measures, and (4) could be used to quantitatively assess factors influencing socioeconomic development interventions. We successfully developed a multidimensional wellbeing index (MWI) regressing a measure of wellbeing in a general sense (Subjective Wellbeing Index) on a variety of subindices of key domains of one's life (health, wealth, social context, etc...), as can be seen in formula 4.

Measuring a latent concept, such as wellbeing, can be particularly challenging. Our results are limited by the extent to which people gave us true answers. When we asked people if they had a radio, we were able in some cases to verify their answer (the

radio may have been visible), but in some cases, we may not have been. Some questions did not lend themselves to such a verification (e.g. “do you feel poor”?). We took steps to increase the reliability of our answers, but it is always a concern. We presented descriptive results from our data collection to all the communities before leaving the field, and these meetings helped us validate the data. Furthermore, subjective assessments of some elements of wellbeing are moving targets. Levels of satisfaction may evolve (up or down) over time based on one’s dynamic personal conditions (Hinks and Gruen 2007).

The MWI uses a combination of objective and subjective indicators which is strongly recommended by quality of life scholars (Rossouw and Naudé 2008). Failure to use both may result in misleading conclusions. For instance, over half of the respondents whose house was qualified as below standard reported being either happy or very happy with their living conditions. This apparent contradiction is not uncommon, particularly with people facing challenging contexts. It illustrates the theory of homeostasis by which people adjust their satisfaction to their reality (Cummins 2005).

The MWI was built by adapting similar work that had been conducted in rural Indonesia, combined with multivariate statistical techniques to assign weights to each component of the index (Rahman et al. 2005; Annand et al. 2005; Cahyat et al. 2007). Our process involved participatory techniques to anchor our indicators and final index to the local context. The life domains, measured through our subindices, elicited during focus groups mirror results from other quality of life research. Namely, quality of life is perceived as a combination of basic needs (wealth, health, education), happiness and a set of overarching contexts (economic, social, political and infrastructural) (Moller 2007;

Hinks and Gruen 2007; Higgs 2007; Rahman et al. 2005). Despite evidence in the literature, and during our focus groups, of the importance of the environmental context, we were unable to incorporate that dimension in our model because our data relied too heavily on people's perception about the environment rather than on the actual state of the environment (Dasgupta 2001; UN Millenium Project 2005). The data revealed that people's knowledge about the current state of environmental resources is actually quite weak. This is a valuable lesson in and of itself, as it suggests that more environmental education and awareness is needed, but proved to be problematic for incorporating the environmental context in the final wellbeing model. In order to do that, we would need additional indicators providing objective information on the state of environmental resources, such as actual water quality, bush encroachment rate, and population size and distribution of key wildlife species.

The high correlation of MWI with mCWI (.83) and the higher correlation of PWI with MWI rather than mCWI (.57 and .32 respectively) suggest strong convergence validity for MWI as a measure of wellbeing. When compared to other wellbeing measures, MWI seemed to perform better than the Personal Wellbeing Index because of its more significant correlations with each subindex. Statistically, we cannot conclude that MWI performs better or worse than the mCWI; however, we can conclude that there are differences between the two measures.

The stronger influence of health and social factors on the MWI, compared to the mCWI, supports the adoption of MWI in the context of this study. Life in this rural setting is precarious. There are serious health issues, such as malaria, tuberculosis and the rising toll of HIV/AIDS which is estimated at over 40% prevalence rate, compared to

23% in Namibia as a whole (National Planning Commission 2006). In addition, health care services are often inadequate in the rural areas of Caprivi. Clinics are unevenly distributed, stocked and staffed and for serious matters, transport to the local hospital in Katima Mulilo remains a challenge. Health issues tend to affect directly or indirectly multiple aspects of one's life (Booyesen et al. 2004). Indeed, poor health and death of household adults increase a rural family's vulnerability by reducing its ability to secure food and other basic resources (National Planning Commission 2006). In addition, food security concerns are heightened by climate change which threatens crop production. It is therefore unsurprising that health factors have a preponderantly significant role in one's assessment of his/her wellbeing.

Furthermore, the communities that were studied are fairly isolated rural communities, where traditional social systems still play an important aspect in one's life. Being able to rely on family, friends and neighbors to help with food harvests, house construction, or looking after children, can help families from falling down the poverty ladder. In the absence of strong government services in remote rural areas, people identify with their community and their tribal affiliation. Traditional authorities are recognized by the central government and are involved in many, if not most, local decisions. Feeling a sense of belonging to the community is thus important as it can provide a level of security when issues arise. In case of conflict, the first level of recourse is usually through the traditional authority. Thus, the social sphere index (SSI) may be considered a practical and emotional safety net for people to cope with challenging living conditions, which explains its strong influence on one's assessment of wellbeing.

This is not to minimize the influence of other aspects of one's life, but the fact that the MWI recognizes the larger role of health and social factors, supports its preference over the mCWI. Other research also suggests that the health or the social domain (depending on the multivariate technique used for weight identification) would be the best single proxy for quality of life (Rahman et al. 2005).

The reduced influence of the education core index (ECI) is interesting and a little puzzling in light of the discussions held during the focus groups. Local residents often argued that education was a key factor to improve one's quality of life. Education is perceived as a stepping-stone that opens possibilities for a better life. People with more education may be more competitive for employment, even short term and unskilled labor, and employment provides a cash buffer for basic needs (staple food, school fees, clinic visits, etc...). However, three factors may limit this potential. First, in rural poor communities, children often play an important economic role in a household's livelihood strategy, and thus education in practice becomes more of a luxury good. Second, many of our respondents did not have much education (27% had no education, and an additional 38% had completed between 1 and 9 years). Third, job opportunities are limited in rural Caprivi, and as such, many residents who have completed grade 10 or higher still struggle to find employment. Thus, education may be perceived to contribute to wellbeing but it may actually do so under broader economic constraints, such as immediate household needs and the ability of the job market to absorb this potential workforce. Indeed, the significance of employment may be reflected in the importance of the economic sphere index (ESI), which did not focus on the amount of cash but on the diversity and regularity of income sources. Furthermore, education may result in more

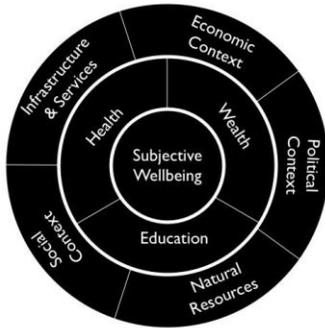
employment outside of the research area (i.e. the local urban center), and thus our sample may have been drained of the more highly educated and now employed residents, who may no longer be permanently in the rural communities. Finally, we also note that the ECI subindex focused on formal education rather than encompass traditional knowledge and task specific skill sets. Future iterations of the MWI should broaden the ECI to include those facets of knowledge as well.

Finally, as explained previously, the MWI does not include data on the natural environment as the original CWI does. This is unfortunate but does not justify not using the MWI in our case. Indeed, we would not have been able to use the results from our environmental indicators in the mCWI for the same reason that we were unable to use them in the MWI. This should also be corrected in future applications of the MWI by building a natural sphere index (NSI) with objective environmental indicators rather than perception based ones.

Conclusion

Our measure of wellbeing, MWI, is locally adapted to the rural context of the Caprivi region in Namibia, and has potential as a tool to help different stakeholders involved in rural development projects. Our approach can be used to present information at different scales. The MWI itself presents an aggregate view of quality of life, which helps get a broad indication but in order to guide specific policy recommendations, it would be best to study the disaggregated subindices (Bobbitt et al. 2005). Indeed, these can identify whether health issues or education issues (for example) could be improved upon. Furthermore, the actual indicators can also be studied for very specific actions if need be. While the overall index and the subindices may be useful to extension agents or policy makers, the indicators may be more useful

to local community leaders and members. In fact, their development took this into consideration, and each indicator is simple enough to be easily incorporated into a local community-based monitoring program. We believe this is very important in order to empower communities with information and can help them achieve better results from development programs meant to improve their lives. They can collect their own data about whether such programs are delivering the anticipated outcomes or not. From our research perspective, this methodology yielded a variety of tools to include wellbeing in future socioeconomic studies: (a) we may focus on subjective wellbeing and use either the single item QOLlife or the multi-item SWI in conjunction with other more traditional development measures, or (b) we may expand beyond subjective wellbeing and use an index that incorporates and weights multiple life domains, such as the MWI, or (c) we may use the disaggregated subindices of each life domain included in the MWI, such as the HCI, WCI, ECI, PSI, SSI, ESI and ISI to focus on particular issues that could be targeted by policy. Future research includes a dual agenda. From a methodological standpoint, these different measures of quality of life can be further refined by comparing them to other instruments such as Annand et al's (2005) operationalisation of the capabilities framework, the EQLI (Higgs 2007) and results of consensus analyses on the local meaning of the concept. It would be particularly interesting to explore whether San and Bantu people conceptualize wellbeing differently, as this may further help the government of Namibia assess the quality of life of its residents, in a locally relevant fashion. From a policy perspective, we will use the MWI and its associated subindices to study the impact of different development interventions (such as tourism) on people's wellbeing.



Adapted from Cahyat, A., Gomer, C., & Haug, (2007) *Assessing Household Poverty and Wellbeing: A Manual with examples from Kutai Barat, Indonesia*. Bogor, Indonesia: Center for International Forestry Research

Figure 2-1. Multidimensional wellbeing conceptual model

Table 2-1. Missing values

Item	% of missing values	Item	% of missing values	Item	% of missing values
NTFP	45%	EnvDam	33%	SchoolQual	13%
BioIndRec	42%	RivH2OQual	16%	HlthQual	3%

An additional 19 items have less than 1% missing values

Table 2-2. Correlation analysis

	SWI	QOLlife
HCI	0.4260***	0.4401***
WCI	0.1936**	0.0601
PSI	0.2107***	0.0939
SSI	0.2760***	0.2730***
ISI	0.2813***	0.2143***
ESI	0.1436**	0.0950
ECI	0.1214*	-0.0149
NSI	-0.0222	-0.0468

*** p<.0001, ** p<.01, * p<.05

Table 2-3. Comparing the theoretical and statistical life domains sets

Theoretical Life Domains	Statistical Life Domains (# of shared indicators)
Wealth Core Index	Wealth (4)
Infrastructure Sphere Index	Access to Services (4) + Satisfaction with Services (2)
Social Sphere Index	Social (3)
Subjective Wellbeing Index	Prosperity (2)
Education Core Index	Education (2)
Political Sphere Index	Empowerment (2)

Table 2-4. Regressing the theoretical life domains set (models A)

	A ₁ OLS	A ₂ OLS_vce(robust)	A ₃ Robust Regression	A ₄ Ordered Logit ^a
Adj. R ²	0.30	0.31 ^b	0.29	0.31
Beta_HCI	0.47**	0.47**	0.49**	0.04**
Beta_WCI	0.05	0.05	0.05	0.00
Beta_ECI	0.02	0.02	0.03	0.00
Beta_ESI	0.10**	0.09**	0.09*	0.01**
Beta_SSI	0.26**	0.26**	0.26**	0.02**
Beta_PSI	0.07	0.07	0.07	0.01
Beta_ISI	0.10	0.10	0.10	0.01
Alpha	-14.7**	-14.7**	-16.65**	.
Average predicted SWI	47.9	47.9	48.20	49.56
Standard error	0.65	0.65	0.68	0.85

** : p <= .05 ; * : p <= .01

^a We report the ML(Cox Snell) R² rather than the McFadden's Adj R² value (.09), because it more closely approximates the R² from linear regression models. The coefficients for the ordered logit model are ordered log odds: i.e. for a one unit increase in HCI, the ordered log odds of being in a higher predicted SWI category are increased by .04 if all other variables in the model are held constant.

^b This is the R² (not the adjusted R²)

Table 2-5. Regressing the statistical life domains set (models B)

	B ₁ OLS	B ₂ OLS_vce(robust)	B ₃ Robust Regression
Adj. R2	0.30	0.32 ^a	0.30
Beta Service Access	0.31**	0.31**	0.31**
Beta Wealth	0.09	0.09	0.09
Beta Prosperity	0.04	0.04	0.05
Beta Education	-0.02	-0.02	-0.03
Beta Service Satisfaction	0.25**	0.26**	0.28**
Beta Social	0.15**	0.15**	0.17**
Beta Economic Opportunities	0.20**	0.20**	0.20**
Beta Conflict	.45**	.45**	.47**
Beta Empowerment	0.00	0.02	-0.01
Beta Food Security	-0.37**	-0.37**	-0.36**
Alpha	3.47**	3.47**	3.5**
Average predicted QOLlife	3.46	3.46	3.50
Standard error	0.04	0.04	0.04
Average predicted QOLlife (normalized)	38.19	38.19	38.98

** : p <= .05 ; * : p <=.01

^a This is the R² (not the adjusted R²)

Table 2-6. Spearman rank correlation analysis for wellbeing measures

		MWI	A ₄	B ₂	mCWI	PWI
Wellbeing measures	MWI	1				
	A ₄	0.9502*	1			
	B ₂	0.7333*	0.6757*	1		
	mCWI	0.8244*	0.7813*	0.4953*	1	
	PWI	0.5772*	0.5461*	0.6139*	0.3190*	1
Subindices	SWI	0.5742*	0.5443*	0.5318*	0.4775*	0.5658*
	HCI	0.8739*	0.8451*	0.6172*	0.6358*	0.5703*
	WCI	0.3995*	0.3735*	0.1638*	0.5981*	0.0559
	ECI	0.2298*	0.2067*	0.0143	0.5970*	0.0131
	ESI	0.2702*	0.2731*	0.1113*	0.3508*	0.0452
	SSI	0.5319*	0.4949*	0.4934*	0.3454*	0.3923*
	PSI	0.4005*	0.3989*	0.0864	0.5443*	0.0438
	ISI	0.5490*	0.5114*	0.5760*	0.5628*	0.2225*

* significant at 0.05

Table 2-7. Weights of subindices in MWI and mCWI

Subindex	MWI	mCWI	MWI-mCWI
HCI	0.471	0.167	+ *
WCI	0.055	0.167	-
ECI	0.025	0.167	- *
PSI	0.067	0.125	-
SSI	0.263	0.125	+ *
ESI	0.095	0.125	-
ISI	0.099	0.125	-

* significant at 0.05

Table 2-8. Applying Hagerty et al.'s criteria to assess MWI

Criteria	MWI Score ¹	Average score ²
The index must have a clear practical purpose.	3	2.6
The index should help public policy makers develop and assess programs at all levels of aggregation.	3	2.1
The index should be based on time series to allow periodic monitoring and control.	2	2.5
The index should be grounded in well established theory.	3	2
The components of the index should be reliable, valid and sensitive.	2	1.8
The index should be reported as a single number, but can be broken down into components.	3	2.2
The domains in aggregate must encompass the totality of life experience.	3	1.5
Each domain must encompass a substantial but discrete portion of the QOL construct.	1	1.8
Each domain must have the potential to be measured in both objective and subjective dimensions.	2	1.4
Each domain within a generic QOL instrument must have relevance for most people.	3	2.3
If a specific domain is proposed for a non generic instrument, it must be demonstrated to contribute unique variance to the QOL construct beyond the generic domains for the target group.	1	1.8
Domains must be potentially neutral, positive, or negative in their contribution to the QOL construct.	1	1.9
Domains differ from the dimensions of personality, cognitive processes, and affect in that they cannot be measured objectively.	3	2.2
The subjective dimension of each domain has both a cognitive and an affective component. They are measured by questions concerning satisfaction.	2	1.4
Average	2.3	2

¹ Bad = 1, Average = 2, Good = 3 / ² From Hagerty et al. (2001)'s review of 22 quality of life instruments

CHAPTER 3 THE IMPACT OF NATURE-BASED TOURISM ON THE WELLBEING OF RURAL RESIDENTS IN CAPRIVI

Introduction

Billions of dollars are invested worldwide into tourism by international aid agencies, with a significant portion going toward nature-based tourism in support of environmentally sound development objectives (Honey 2008). Nature-based tourism, especially when combined with ecotourism principles, has the potential to bridge environmental and development objectives within a sustainable development framework (United Nations 2002). As such, it has been adopted as the economic driver to foster rural development within community-based natural resources management (CBNRM) projects. Namibia enacted CBNRM legislation in 1996 and has reaffirmed its commitment to it as an element of its rural development strategy (Government of Namibia 1996; Office of the President 2004; The Namibia Economist 2009). Wildlife-based CBNRM projects tacitly, if not explicitly, assume that tourism improves people's lives, and provides incentives for better environmental stewardship. However, empirical evidence remains limited but suggests that these connections should not be taken for granted (Walpole and Goodwin 2000). In this chapter, we investigate if nature-based tourism affects multidimensional development objectives in rural northeastern Namibia. Our research is thus set at the nexus of CBNRM, rural development and nature-based tourism.

Community Based Natural Resources Management Context

CBNRM returns rights to, and benefits from, natural resources to people who live in proximity to those resources. It is founded upon neoclassical economic theory, liberal

democratic theory and common property theory by linking price, proprietorship and subsidiarity in a way that fosters sustainable management. CBNRM assumes that natural resources will be sustainably managed if the value of these resources exceeds that of other land-uses, if that value is captured by local people through clear property rights, and if those same local people are empowered with management decisions (Child 2003).

Different natural resources have led to a wide variety of CBNRM projects to capitalize on the value of those resources. CBNRM programs have been developed for fisheries, timber, non-timber forest products, and wildlife (Gibson and Marks 1995; Klooster 2000; Nunan 2006; Pandit and Thapa 2004). In Uganda, fishermen have formed cooperatives to share efforts and benefits associated with the management of common property fisheries (Nunan 2006). Similarly, community forestry in Mexico has enabled local communities to manage and sell timber products on local and international markets, previously controlled by external actors, providing incentives for sustainable management (Taylor 2000). For wildlife, value is generated primarily through tourism activities, including both safari-hunting and photo-safaris (Child 1996).

In practice, CBNRM is not new; rules and regulations have been established at the local level for millennia in order to manage the interaction of people with their environment (Western and Wright 1994). Even recently, in the 1970's, traditional leaders in local communities in Namibia organized game guards in an attempt to curb large declines of mammal populations (Jones 2001). However, this initiative was initially skeptically received by national decision makers, still strongly influenced by a natural resources management paradigm that tended to separate people (at least local people)

from the environment they lived in and to promote central decision making processes (G. Owen-Smith, personal communication, June 2008). However, the transfer of rights to wildlife from central government agencies to private landowners - mostly Afrikaans cattle ranchers - in the 1960's and 1970's served as a model for the subsequent transfer of such rights to communities on communally held lands (Jones 1999a; Jones and Murphree 2001). One of the key pioneering CBNRM project in southern Africa was the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) in Zimbabwe (Child 1996). Other countries have also implemented such programs with different levels of success and different institutional set ups (Jones 2001; Thakadu 2005; Western et al. 1994).

In Namibia, the Nature Conservation Amendment Act of 1996 provides the legal framework for CBNRM, implemented through conservancies defined as communal land areas with set boundaries and within which local people are granted partial and conditional benefits from wildlife (NACSO 2006; Government of Namibia 1996). These benefits are almost exclusively linked to tourism activities. Namibia's development vision includes strengthening its CBNRM programs, illustrating that these projects are about much more than just natural resources management (Office of the President 2004; The Namibia Economist 2009). They have become vehicles for local peoples' development aspirations, through expectations of employment and capacity building opportunities, social projects and in-kind benefits (Long, 2001). Similarly, perhaps under the influence of an increasingly multidimensional poverty focused development agenda, multi- and bi-lateral agencies funding CBNRM are shifting their expectations beyond CBNRM's conservation accomplishments and requesting reports of how CBNRM is

making a difference in people's lives (Jones 2004; Bandyopadhyay et al. 2004). This suggests that funding agencies may consider emphasizing funding priorities more explicitly tied to concrete quality of life improvements. CBNRM, however, has limitations and should not be expected to be the sole engine of rural development.

Rural Development Context

Rural development aims to improve the living conditions of people in rural areas, and has been implemented through a wide range of strategies. These have included market-based approaches, such as payment for environmental services or access to microcredit, as well as rights-based approaches, such as defining private and common property rights or democratic governance (Tschakert 2007; Johnson and Forsyth 2002). The achievements of these different strategies are a source of debate among scholars and practitioners, which highlights the need to clearly define how development success should be measured (Biggs 2008; de Janvry and Sadoulet 2005).

Cernea (1985) challenged conventional economic development indicators in favor of more people centered measures. Ecological and development economists argue that classic economic growth indicators do not adequately or completely represent the human experience of development (Max-Neef 1995; Mazumdar 1999). The United Nations' Human Development Index (HDI) was a significant institutionalization of development measures broadening beyond economic indicators. It emerged from economic philosopher Amartya Sen's theory that development is not just reflected by how people live, but also by the opportunities people have to decide how they live (Anand and Sen 1994; Sen 1999). As such, a number of researchers have since then proposed multidimensional development measures with human experiences at their

core (Berenger and Verdier-Chouchane 2007; Costanza et al. 2006; Diener and Suh 1997; Hagerty et al. 2001; Higgs 2007; Mazumdar 1999). In 2009, Sen coauthored a report urging nations to incorporate human wellbeing measures into development indicators (Stiglitz et al. 2009).

Policy-makers are increasingly adopting such holistic development targets, as reflected by the Millennium Development Goals as well as by national policy objectives (United Nations 2000). Namibia's development vision includes a focus on improving the quality of life of its residents (Office of the President 2004). In this regard, the government of Namibia has conducted participatory poverty assessments, which highlight the importance of non-economic aspects of people's lives, such as health, education, or empowerment (National Planning Commission 2006).

Conceptually, rural development, CBNRM and nature-based tourism (guided by ecotourism principles) overlap in their interest in promoting a better life for rural residents. A few researchers have developed project specific measures of quality of life in the context of tourism in developed countries (Andereck and Jurowski 2005; Kim 2002; Urtasun and Gutierrez 2006); however, such efforts remain all too rare in the CBNRM or tourism context of developing countries. This is a serious gap hampering the advancement of tourism as a development tool, because it is difficult to know if and how projects truly improve people's lives.

In southern Africa, one of the most holistic approach is the Sustainable Livelihood framework applied to assess tourism's impacts in Namibia (Ashley 2000a). It considers the links between natural, financial, human, physical and social capitals and wellbeing, income, empowerment, health and reduced vulnerability. Ashley (2000a) concludes that

a multidimensional approach to the development impacts of tourism in Namibia is essential because of the diversity of livelihood strategies and the complex linkages to the tourism sector. However, the Sustainable Livelihood framework is fairly complex to implement and to analyze (Ashley and Hussein 2000).

Tourism Context

Despite downward trends in 2008-09, tourism is among the leading sectors of the world economy, and nature-based tourism is one of its most rapidly growing sub-sector (World Tourism Organization 2009; Balmford et al. 2009). In Namibia, tourism constitutes 7.2% of the GDP, a figure which is expected to experience the second most rapid growth in the world over the next ten years (World Travel and Tourism Council 2009b; The International Bank for Reconstruction and Development 2009). Tourism is the most efficient way to add value to wildlife (Barnes et al. 2002; Barnes et al. 1999). Trophy hunting generated US\$ 880,000 in conservancy revenues in 2006 and lodges and campsites, organizing photo safaris, contributed an additional \$US 1.4 million (NACSO 2007).

There are a number of warnings against tourism. Researchers caution that nature-based tourism in developing countries may suffer from financial leakages resulting in enclaves of foreign investment which fail to significantly foster the development of basic services or stable employment opportunities (Mbaiwa 2005). Tourism has also been criticized for the risks of social ills. In some cases, increased cash flow into a community may introduce or accentuate issues such as alcoholism, prostitution, drug use, theft or violence within communities (Mansperger 1995; Sindiga 1996). The uneven distribution of some benefits may increase, rather than reduce the socioeconomic gaps and result

in social tensions, and potentially crimes (Abakerli 2001; DeMotts et al. 2009). These are obviously detrimental to a community's progress and wellbeing. They can also undermine tourism's long-term success by spoiling the relationships between local people, tourism operators and tourists. Finally, tourism may also commodify and erode local cultures (Mansperger 1995; Vorlaufer 1999).

Since we are focused on tourism within CBNRM, we will consider that it adheres to ecotourism ethics, described as "responsible travel to natural areas that conserves the environment and improves the well-being of local people" (Honey 1999; Page and Dowling 2002b). Our specific concerns center on how tourism improves people's lives. A large number of host community impact assessments focus on classic economic indicators, such as income or employment; however, as we've argued in previous sections, these assessments must be more holistic (Lindberg 1995; Walpole and Goodwin 2000; Wunder 2000; Ross and Wall 1999; Scheyvens 1999). Scheyvens (1999) argues that ecotourism should only be considered successful from a development perspective if it empowers local people. In order to measure success, she proposes an analytic framework that merges social, economic, psychological and political dimensions. In essence, this emphasizes the development of institutions enabling people to take control of the decisions that impact them rather than being passive recipients of tourism projects. This empowerment framework echoes Sen's view of "development as freedom" (Sen 1999). In this study, we will use our multidimensional wellbeing index to assess tourism's impacts at a micro scale.

Tourism's real and expected impacts are multi-scalar. At a macro scale, tourism impacts the national economy (through foreign exchange, multiplier effects, tax

revenues, etc...) as well as international relations (through public image of a country and its tourism products). At a meso scale, nature-based tourism is expected to contribute to sustainable natural resources management and local economic development. At a micro scale, tourism is expected to make a difference in people's lives.

In Namibia, local residents may benefit from tourism in different ways. The most direct is through employment, which can be part-time or full-time, but cannot absorb all job seekers in a community. Other opportunities to benefit from tourism involve the sale of crafts or other local products (firewood, thatching grass, etc...) which can provide direct cash to local residents (Murphy 2003). Tourism operators also at times facilitate in kind or cash donations from tourists to local schools, clinics or churches, but these exchanges are fairly informal. Formally, tourism operators pay fees to the conservancy and provide meat from safari hunts. These benefits should trickle down from conservancy leaders to reach all residents, through cash, meat, community projects, or other less tangible outcome, which one of our respondents referred to as the "social benefits" of conservancies.

Research Objective

Broadly, our research objective was to investigate if tourism benefits did indeed trickle down. In other words, we questioned the assumption that nature-based tourism improves people's lives, and thus achieves CBNRM's rural development goal.

Specifically, we test the following hypotheses:

- Hypothesis 1: The mean wellbeing of individuals in tourism communities
 - A. is higher than in communities without tourism activities.
 - B. is positively correlated with the conservancy's financial receipts from tourism.

- Hypothesis 2: Within tourism communities, an individual's wellbeing is
 - A. higher for tourism employees;
 - B. positively correlated with the percent of one's income derived from tourism.
- Hypothesis 3: Within tourism communities, residents of households home to a tourism employee have higher wellbeing.

Methods

Study Design

We conducted a pilot study in May-July 2007, which provided us with an opportunity to test our data collection instruments. The main study, conducted between February and July 2008, implemented a cross sectional design, collecting data at a single point in time (DeVaus 2001).

Study Sites

Research was conducted in the southern portion of the Kwandu river basin, part of the Kavango Zambezi Conservation Transfrontier Area. Historically, this area was part of the greater Lozi Kingdom of precolonial Barotseland. Today Subia, Mbukushu and Fwe tribes, of Bantu origin (united by Lozi language, though each group also has its own language), as well as San communities inhabit the area (Malan 1995). For homogeneity reasons, the study was limited to Bantu communities.

The pilot study, which included quality of life focus groups and testing of the initial questionnaire, was conducted in Wuparo conservancy in Namibia and the Chobe Enclave Community Trust in neighboring Botswana. The main study was conducted in five conservancies in Namibia (Figure 1-1). Table 1-1 shows that four of the five conservancies (Balyerwa, Mashi, Mayuni, Kwando) had completed their registration and had ongoing tourism activities through partnerships with safari hunters, lodge operators

and/or conservancy-owned campsites. We refer to them as “tourism conservancies.” The fifth conservancy, Bamunu, was an unregistered conservancy (in 2008) with no tourism activity, and thus served as a control site, referred to as “non-tourism conservancy.”

Further description of the study area is provided in Chapter 1.

Data Collection

During the main study, we administered 467 individual questionnaires to conservancy residents stratified by their involvement in the tourism industry. The first strata consisted of the general population, from which we interviewed at least 10% of the households in each of the 5 conservancies. Within each household, we interviewed one adult (above 18 years old) full time resident, who was usually the head of the household, or his/her representative. The second strata consisted of tourism employees (full or part time). The stratification resulted in an oversampling of tourism employees, which we corrected for by applying weights when calculating means, proportions and computing regression models.

Interviews were conducted by local research assistants hired from within the communities and trained by the primary investigator. The questionnaire was developed in English on the basis of a literature review and the 2007 pilot study. It was translated into Lozi, and back translated into English to check the translation. Local research assistants conducted the interviews either in Lozi or in the relevant local dialect, depending on which language the respondents preferred. Interviews usually lasted between 30 and 75 minutes. The questionnaire included a total of 60 items, with a mix of open- and close-ended questions. The interview protocol respected cultural norms,

and to the extent possible was conducted in private. All respondents received a small gift for participating in the study.

Index Construction

Data were entered in *SPSS 15.0*, and partial descriptive results were presented back to communities during feedback sessions which enabled us to get an initial validation of the data, and in some cases gather additional contextual information.

To measure wellbeing, we built a multidimensional index (Multidimensional Wellbeing index, MWI) incorporating one's health (Health Core Index, HCI), wealth (Wealth Core Index, WCI), education (Education Core Index, ECI), as well as perceptions of the economic context (Economic Sphere Index, ESI), social context (Social Sphere Index, SSI), political context (Political Sphere Index), and infrastructural and services context (Infrastructural Sphere Index, ISI) (Gonner et al. 2007). The MWI was derived by regressing an assessment of one's overall wellbeing (Subjective Wellbeing Index, SWI), which enabled to assign different weights to each of the seven subindices, as detailed in the formula below:

$$MWI = -14.7 + .47(HCI) + .26(SS I) + .10(IS I) + .09(ESI) + .05(WCI) + .02(ECI) + .07(PSI)$$

The MWI and each of its subindex can range from 0 to 100, with scores of 33.5 or less suggesting a critical need for an intervention by conservancy leaders or support agencies, scores between 33.6 and 66.4 suggesting a moderate need for an intervention and scores of 66.5 or higher, suggesting a low need for an intervention. Details of the MWI development are reported in the previous chapter.

Data Analyses

We used *Stata/IC 10.5* to conduct the statistical analyses to assess people's wellbeing and explore factors that influence it. We used the aggregate MWI, as well as

the different subindices it is composed of (HCI, WCI, ECI, ESI, SSI, ISI, PSI), to assess wellbeing.

For hypothesis 1A, we were interested in differences between conservancies according to their different involvement with tourism activities. At a first level, we were able to separate the conservancies in a treatment group (the four registered conservancies with tourism activities) and a control group (the emerging conservancy which had no tourism activity). At a second level, we were able to distinguish the extent of tourism infrastructures for each of the registered conservancy (Table 1-1). We used adjusted Wald tests to compare the mean of MWI and its subindices across different groupings.

For hypothesis 1B, we ranked the conservancies according to their 2008 tourism earnings and compared that ranking to their wellbeing ranking.

To test hypotheses 2A and 2B, we ran a series of multiple regression models to assess the impact of a number of individual level characteristics on one's wellbeing, as well as on wellbeing's subindices within registered conservancies. The general model we employed was:

$$Y=f(X_{1-17})$$

with dependent variable Y equal MWI, HCI, WCI, ECI, ESI, SSI, PSI and ISI respectively in the eight different models and the independent variables X_{1-17} described in Table 3-1. Variables X_{1-17} include a number of factors that other scholars have shown to influence wellbeing, such as employment (Richards et al. 2007; Hinks and Gruen 2007; Rahman et al. 2005), income (Moller 2007; Rossouw and Naudé 2008), tourism costs and benefits (Andereck and Jurowski 2005; Ap 1992; Gursoy et al. 2002) and

demographic variables (Hinks and Gruen 2007; Sirgy et al. 2006), as well as some factors unique to this study. The ECI model is different from the others in that it excludes the education independent variable, since that variable is included as one of the component of the Education Core Index. We used a standard ordinary least squared regression, checking Gauss Markov assumptions. Inspections of Cook's distances and studentized residuals suggested that a number of observations in each model overly influenced or poorly fitted the results. After looking up those observations and not detecting any special patterns in them, we deleted them from the analyses (Hair et al. 1998). Finally, the models with HCI, ECI and PSI as dependent variables, violated the homoskedasticity assumption, and we thus refitted the models using a robust estimator of variance (Hamilton 2009).

Results

At the community level, we cannot conclude that tourism improves the lives of average community members. Neither the presence of tourism activities nor the amount of tourism revenues explains wellbeing differences among conservancies. Statistical significance at the 0.01 level are denoted by ***, at the 0.05 level by **, and at the 0.1 level by *.

Our results do not support the hypothesis (1A) that wellbeing is higher in tourism communities than in non-tourism communities. Figure 3-1 illustrates that wellbeing (MWI) is similar in a non-tourism community (Bamunu) as it is in three tourism communities (Balyerwa, Mayuni and Kwandu). We observe a significant difference between these four communities and one of our tourism communities (Mashi) ($F=29.34 - 64.45^{***}$), as detailed in Table 3-2. That table also shows similar trends for wellbeing's subindices. Mashi's poor performance is also reflected by scoring the lowest on five of

the seven subindices: health, wealth, economic context, social context and infrastructural context (Table 3-2 and Figure 3-2). Mashi's lower MWI score is such that it brings down the average of the four tourism communities when they are analyzed as an aggregated group (Table 3-3); however, we do not conclude that tourism communities have lower wellbeing than non-tourism communities. Table 3-2 illustrates the differences that exist within tourism communities and shows that wellbeing differences cannot be solely attributed to the presence of tourism activities in a community.

We are also unable to support the hypothesis (1B) that wellbeing in tourism communities is positively correlated to the conservancy's financial receipts from tourism. Table 3-4 shows that the rank ordering of conservancies by their tourism revenues does not match their wellbeing (MWI) ordering. Balyerwa and Mayuni conservancies earn 2 to 3 times more (relative to their household population size) than Mashi and Kwandu conservancies. Nonetheless, Kwandu's wellbeing average is not statistically different from Balyerwa's or Mayuni's ($F=0.60$). It is higher than Mashi's (49.7 vs. 39.1; $F=30.58^{***}$) even though they both earn similar tourism revenues relative to their household population size (Table 3-5). We cannot conclude that the more tourism revenues a conservancy earns, the higher its residents' wellbeing is. Furthermore, we note that Mashi distributes the largest proportion of its tourism revenues for community projects or other benefits, and yet its residents' wellbeing is the lowest of all conservancies (Table 3-5).

At an individual level, we observe that tourism employment affects some aspects of wellbeing; however, other factors may be more significant. We find that tourism

employees (within tourism communities) have higher wellbeing than unemployed people (hypothesis 2A) for several subdimensions, but not for the aggregate measure (MWI). Table 3-2 shows that tourism employees' subjective wellbeing, wealth, economic and social contexts are respectively 17%, 37%, 16% and 12% higher. On the other hand, they have lower education and infrastructural contexts than people who work in a sector other than tourism. Furthermore, our data supports hypothesis 3: households with at least one member employed in the tourism industry report higher levels of overall wellbeing, wealth, education, economic and infrastructural contexts than households without any employees.

Table 3-6 presents an overview of the multivariate regression models we performed to test the influence of tourism employment and of the percentage of one's income derived from tourism over their wellbeing (hypotheses 2A and 2B). We note that when other individual characteristics are considered, the influence of tourism employment on wellbeing is less clear. Tourism employment is still seen to positively contribute to one's social wellbeing. The proportion of one's income derived from tourism, however, is not shown to have an impact on wellbeing. We note that education, age, attitude toward tourism, attitude toward the conservancy and benefit perception are significant factors contributing to higher wellbeing.

Finally, Table 3-2 and Figure 3-2 also provide an overview of which aspects of wellbeing require more urgent attention than others. Our results suggest that wealth (WCI) is particularly low across all conservancies. WCI included information on one's house quality as well as ownership of cattle, a series of basic assets, and a car. These indicators are usually more reliable than financial information, but our data also showed

than 22% of people had no income, while another 34% lived on less than 1USD per day. Cattle are a good wealth proxy because livestock in many developing rural economies are used as “savings account” (Schwalbach et al. 2001). Earned income can be invested into cattle and converted back into cash at times of needs (Fafchamps et al. 1998).

We also note relatively low score on the Political Sphere Index, which included data on people’s perception of their rights to use natural resources, the extent of their sources of information and their participation in village decision-making. Overall, this is a reflection of the level of empowerment people have. As explained earlier, tourism in this part of Namibia happens in the context of CBNRM, which should empower people. Yet, our results suggest that people could be more empowered than they currently are.

Discussion

Tourism’s Impacts on People’s Lives

We sought to determine if nature-based tourism improved the lives of rural residents in the Caprivi strip. We consider both community characteristics as well as individual characteristics as potential factors influencing wellbeing. When analyzing wellbeing impacts, we distinguish between overall wellbeing and particular sub domain domains of wellbeing (household wealth, health and education, as well as surrounding economic, social, political and infrastructural contexts).

Our results suggest that tourism positively contributes to people’s lives, but these impacts are limited to certain wellbeing sub dimensions and restricted to households involved in the tourism industry. Previous research suggests that tourism employees should have higher income, access to a number of side services (such as health coverage), a sense of achievement, and a number of additional direct benefits (Lindberg

2003; Scheyvens 1999). Compared to unemployed residents, tourism employees in the Caprivi are wealthier (WCI), more satisfied with their overall life (SWI) and perceive their economic and social contexts (ESI and SSI) to be stronger. These effects are expectable for a number of reasons. Being employed provides a regular source of income, and thus economic security. It helps people meet basic financial needs, as well as acquire additional assets or livestock investments. Other researchers have suggested that economic inequalities deriving from tourism may spur increased social tensions within communities (Stronza and Gordillo 2008); this is not the case in Caprivi. This may be because social relationships are fairly good overall in each conservancy, at least within the same ethnic groups. Furthermore, the positive social impacts of tourism employment may reflect a higher status given to employed members of the community (Cukier 1998). They have increased economic power and can purchase goods and services from other community members. Tourism employees' higher satisfaction with their life may result from a sense of achievement from having employment and economic power. Nonetheless, we note that their subjective wellbeing is relatively moderate (55.6 out of 100). This may be explained by the theory of subjective wellbeing homeostasis, which posits that subjective overall life assessments tend to have fairly narrow ranges, as people generally adjust their happiness to match the reality of their condition (Cummins 2005).

Furthermore, tourism impacts different dimensions depending on whether one works in tourism or just lives with someone who does. Indeed, in the latter case, we observe higher overall wellbeing (MWI), wealth, education, economic and infrastructural contexts, when compared to people in households with no tourism involvement. The

positive contribution to four of MWI's seven subindices explains the higher overall wellbeing. Tourism, thus, improves the lives of household members living with tourism employees. The fact that education is higher for these respondents suggests that tourism income may be applied toward school fees for other household members. We note that tourism's impacts on subjective wellbeing and social context only affect tourism employees but not their household members. This is probably because the social status and the sense of achievement from having a job are personal characteristics, whose benefit may not spill over to other household members.

We also note that people working in a sector other than tourism are marginally better off than tourism employees, in terms of education and infrastructural contexts. Non tourism jobs in Caprivi's rural context are usually government positions, such as school teachers, nurses, or police officers and their support staff. These tend to be very competitive, often requiring specialized skills, as well as fairly secure and relatively well compensated (compared to local average incomes). Furthermore, conservancies also hire a number of people locally, but the compensation and benefits they offer are much less significant or secure than government employment. The education index for people working outside of the tourism industry may be higher because these people may be more highly educated to begin with and have larger means to pay school fees for household members. The improvements in infrastructural context are difficult to explain but could be linked to employer provided benefits (e.g. health insurance) or access to services such as employer transport.

Overall, tourism's contribution to people's wellbeing are moderate, but at least, our results indicate that tourism's impact is not negative. The reality is that there are not

many other current projects for environmentally friendly rural development. When talking to young people, many of them hope to get into the tourism industry because it is one of the few relatively large scale employers in the area. Faced with local unemployment, with the few exceptions of local elite, people either leave the area to seek jobs elsewhere or eek a living through farming. Both strategies are challenging, and if unsuccessful, can lead to destitution. Such precarious situations may unfortunately foster unhealthy habits, such as alcoholism and risky sexual behaviors (Kalichman et al. 2006). Despite frustration that services such as schools and clinics are not as easily accessible and often of lower quality in rural areas, staying in the village is often cheaper and safer (National Planning Commission 2006). Housing is usually free, farming land is more easily accessible than around urban areas and there is a stronger social safety net. However, people need regular income for their and their children's basic needs (diet, education, medication, etc...) and would like increased employment opportunities and access to social services in rural areas. While tourism contributes to these, its impacts are still limited. Why?

What Is Limiting Tourism's Impacts on Wellbeing?

There are several reasons why tourism's impacts on people's wellbeing are limited in Caprivi. First, there are multi-scalar institutional issues. Second, tourism within the context of CBNRM is taking place in marginal areas. Third, expectations for tourism's impacts are often unrealistic.

Institutional issues

At the national and conservancy level, tourism within CBNRM is having a positive impact; however the sustainability of these macro and meso achievements is threatened by the limited impacts tourism has at the individual (micro) scale. Tourism

generates significant revenues for conservancies, has helped foster positive environmental attitudes, and contributes to a safer environment for wildlife populations to grow (Weaver and Skyer 2003). These accomplishments are recognized in national policies, endorsing an expansion of CBNRM for rural development and empowerment (Office of the President 2004). However, the fees paid by tourism operators to conservancies and traditional authorities are not trickling down, either as cash or projects, to benefit the conservancies' general population at a household level.

Our results suggest tourism benefits primarily households involved in the industry. Employment is actually more important than what we had first expected because governance issues are preventing the unemployed population to enjoy more communal benefits. However, this is not sustainable, because the magnitude of tourism in the areas is highly unlikely to provide many more jobs. Thus, conservancies must find a way to increase communal benefits and strengthen multiplier effects within local economies.

Other researchers also suggest that the flow of tourism benefits is also hampered by elite capture (Child 2008). Our data, and personal observations, support this claim. The percentage of funds earned from tourism that conservancies distribute for projects is low, as can be seen in Table 3-5. Distribution of benefits may be uneven. For instance, 60% of residents in Mashii reported receiving no meat, while 40% reported receiving from 0.5 kg to 6 kg. Furthermore, the political context (PSI) scores are low in all communities. Conservancies suffer from poor participation from the general population and have not resulted in truly representative empowerment (Child 2008). This may disconnect conservancy members from conservancy leaders, and thus reduce

the effectiveness of conservancy projects. Increased transparency and accountability of conservancy leaders would foster better governance and benefit distribution (NACSO 2006). In particular, informational meetings and meaningful involvement of a wider array of community members in decision making could be more effective if they were conducted at the village rather than at the conservancy level.

Marginality of community based natural resources management areas

The limited impacts of tourism within Caprivi's conservancies may be due to the fact that these areas face more adverse conditions for rural development. The tourism conservancies are adjacent to national parks, and these areas may face more biophysical constraints to support human activities (B. Child, personal communication). Therefore, we must consider other community characteristics that could explain wellbeing differences. These could be connectivity in relation to the regional urban center (Katima Mulilo), tribal affiliation, soil conditions for farming and cattle raising, etc ... For instance, Bamunu conservancy is connected to the urban water pipeline, which sets it apart from the tourism conservancies in the sample, which all rely on ground or river water. Since "water is life," as one of our interviewees told us, and since the availability and quality of ground water varies greatly, the absence of water pipelines makes life harder for the four tourism conservancies. Mayuni presents the unique characteristic, among our sample, of having most of its population within easy walking distance of the only tar road in the region, directly connecting to Katima Mulilo. Mashi's particularly low wellbeing could be a result of soil differences affecting agricultural output, as well as less ethnic homogeneity. Because our study does not involve a temporal element, we cannot determine if tourism is improving people's wellbeing in these challenging environments compared to a local baseline. Considering that CBNRM

and tourism is taking place in areas that are disadvantaged, the effects of tourism at the community level may be larger than what our results show because even small improvements may be very significant for people (Ashley 2000b).

Confronting unrealistic expectations and misperceptions

Tourism carries many rural development hopes and expectations, which may at times be unrealistic (Altman and Finlayson 1992; Schiffer 2004; Musumali et al. 2007). This could be because of the diversity of stakeholders, each with different expectations. These stakeholders are both local and external, including communities, tourism operators, and local governmental and non-governmental agencies involved in tourism, rural development or natural resources management. Local communities must drive local development agenda, rather than be voiceless recipients of externally driven interventions (Chambers 1995). But even local stakeholders can be extremely heterogeneous, and have diverging expectations (Agrawal and Gibson 1999). For instance, in the context of Namibian conservancies, we may distinguish between Traditional Authorities, conservancy leaders, conservancy members, and the general population, before even exploring the differences between gender, age or tribal groups to name a few. Assessing the impacts of tourism is challenging because it is unclear whose expectations and which criteria to use as yardsticks.

Furthermore, distinguishing between real, reported and perceived impacts also represents an issue when assessing tourism's impacts. Almost three quarters of our sample did not perceive to receive benefits from tourism. Yet, 58% of those received either meat from safari hunting agreements, cash loans, cash gifts or non cash gift. Maybe, the real benefits from tourism are not enough in light of people's needs or expectations. A better understanding of people's needs, of what can really contribute to

improving their lives, would help better target activities by tourism operators or by conservancies funded by tourism earnings.

Using our Wellbeing Index to Target Development Interventions

The MWI and its subindices are useful tools for local monitoring of CBNRM and development interventions.

All conservancies exhibit particularly low levels of wealth. There is a real need for income generating programs, as well as alternative savings schemes. Conservancy support agencies encourage conservancy members to establish local enterprises. To date, the most successful project has been marketing local crafts, which provides direct cash to approximately 100 craft makers, empowers women and has opened the ways for health issues awareness (App et al. 2008; Murphy and Suich 2003).

We also note that Mashi has the lowest infrastructural and health scores, illustrating that its only clinic is hard to access for a large portion of its population. Transportation is indeed a problem for many residents, affecting access to markets, schools and health services. Furthermore, interviews revealed that school fees were a major hindrance for continued education among the communities' youth. A number of projects can be envisioned to help address such needs. For instance, partnerships between conservancy, tourism operator, or external investors, could subsidize transport services or scholarship programs.

Effectively converting tourism's revenues into projects that address people's needs requires collaboration among tourism operators, conservancies, and governmental and non governmental support agencies. However, each of these actors has different skill sets and motivations which hamper the delivery of effective benefits. Tourism operators' formal mandate is to develop commercially viable tourism operations, not to improve

local people's lives. The latter is at best a secondary objective, though some operators recognize its ethical and practical importance, and do invest in community services. Conservancies, on the other hand, have a formal mandate to contribute to the wellbeing of their residents, and thus the public support should provide incentives for conservancies to succeed in that effort. Conservancies, and their support agencies, are responsible for ensuring the fees paid by the tourism operators are used to effectively address the communities' needs. In practice, technical and governance issues hamper conservancies' abilities and accountability to convert tourism revenues into significant improvements for their population at large (Lapeyre 2009).

Conclusion

In conclusion, tourism's impacts on people's lives are limited in Caprivi, but this situation could change. Insufficient focus has been placed on multidimensional measures of socioeconomic development in rural settings. Our research shows that quality of life can be documented as an aggregated concept as well as individual subdomains, and that both approaches are important to understand the impacts of development projects. Future research should focus on refining these wellbeing measurements, balancing their local relevance and accuracy with their implementation within local community-based monitoring schemes. Stakeholders, including conservancies, their support agencies, tourism operators and policy makers, can work together to identify what really matters to people's lives on the ground and how tourism revenues can be applied toward interventions targeting these needs. It is essential that local people take a leading role in defining what development means to them and how they can achieve it. Conservancies and tourism have important roles to play in this future. The former can provide the institutional framework for these efforts, though they

require support and guidance to strengthen their governance and managerial capabilities. Conservancies are development “vehicles,” and for the time being, tourism is the “fuel” they need to start “driving.” However, the “mileage to fuel ratio” is currently low and stands to be improved by a better understanding of people’s needs and more efficient and targeted use of resources.

Table 3-1. Independent variables used in wellbeing regression models

Economic variables

Employment

X₁ Tourism employment (full or part time) of the respondent.

X₁₅ Employment of the respondent (not limited to tourism)

Income

X₂ Proportion of tourism income in total household income.

X₁₄ Total income of household

Costs/Benefits

X₃ Benefit reception (meat, cash, or other services provided by either the conservancy, or a tourism operator).

X₄ Suffered from crop raiding.

X₅ Benefit perception (whether the respondent perceived to receive benefits from tourism or not).

X₆ Perception of costs (whether the respondent perceived to incur costs from tourism or not).

Demographic variables

X₉ Education level of respondent

X₁₀ Age of respondent

X₁₃ Gender

X₁₆ Household size

X₁₇ Female headed household

Conservancy variables

X₇ Conservancy in which the respondent resides (three dummy variables: Kwandu, Mayuni and Balyerwa).

X₈ Whether the respondent is a conservancy member or not.

Attitude variables

X₁₁ Attitude toward tourism

X₁₂ Attitude toward the conservancy

Table 3-2. Comparing the performance of conservancies on well-being index and its subindices

	Conservancy				
	Bamunu	Balyerwa	Mayuni	Kwandu	Mashi
Overall Wellbeing (MWI)	52.3 (M)	51.5 (M)	50.0 (M)	49.7 (M)	39.1 (M)
Health	63.3 (M)	68.0 (L)	60.3 (M)	61.9 (M)	48.9 (M)
Wealth	32.0 (C)	24.7 (C)	25.7 (C)	28.5 (C)	19.0 (C)
Education	66.5 (L)	58.9 (M)	54.9 (M)	51.5 (M)	64.0 (M)
Economic Context	50.7 (M)	52.4 (M)	56.9 (M)	47.4 (M)	41.5 (M)
Political Context	53.6 (M)	40.7 (M)	41.6 (M)	52.1 (M)	43.0 (M)
Social Context	71.0 (L)	68.9 (L)	72.1 (L)	70.9 (L)	62.6 (M)
Infrastructural Context	67.2 (L)	55.5 (M)	64.1 (M)	57.2 (M)	48.5 (M)
Subjective Wellbeing	43.8 (M)	53.3 (M)	47.6 (M)	55.5 (M)	41.1 (M)

Need for intervention: Critical (C), Moderate (M), Low (L)

All scores out of 100 points. Data weighted by fnlwt

Table 3-3. Comparing well-being, and subindices, performances for different groupings

	Tourism Community?		Employment (within tourism communities only)					
	Yes	No	Individual			Household		
			No	Tourism	Other	No	Tourism	
Overall Wellbeing (MWI)	46.7 (M)	52.3 (M)	46.5 (M)	48.5 (M)	51.1 (M)	46.2 (M)	50.9 (M)	≠*
Health	58.7 (M)	63.3 (M)	58.7 (M)	55.4 (M)	59.2 (M)	58.9 (M)	62.0 (M)	≠*
Wealth	23.7 (C)	32.0 (C)	23.4 (C)	32.1 (C)	29.5 (C)	21.9 (C)	33.6 (C)	≠**
Education	58.3 (C)	66.5 (L)	56.7 (M)	62.2 (M)	84.3 (L)	55.8 (C)	75.3 (L)	≠*
Economic Context	49.2 (M)	50.7 (M)	48.5 (M)	56.1 (M)	61.0 (M)	46.8 (M)	60.5 (M)	≠**
Political Context	43.6 (M)	53.6 (M)	43.5 (M)	45.3 (M)	45.2 (M)	43.3 (M)	42.7 (M)	
Social Context	68.0 (L)	71.0 (L)	67.8 (L)	75.7 (L)	71.6 (L)	67.6 (L)	63.7 (M)	
Infrastructural Context	55.7 (M)	67.2 (L)	55.1 (L)	55.3 (M)	65.8 (M)	54.5 (M)	74.1 (L)	≠**
Subjective Wellbeing	48.1 (M)	43.8 (M)	47.7 (M)	55.6 (M)	55.6 (M)	48.0 (M)	41.4 (M)	

Need for intervention: Critical (C), Moderate (M), Low (L)

Statistical significance: $p \leq .1$ (*), $p \leq .05$ (**)

All scores out of 100 points. Data weighted by fnlwt

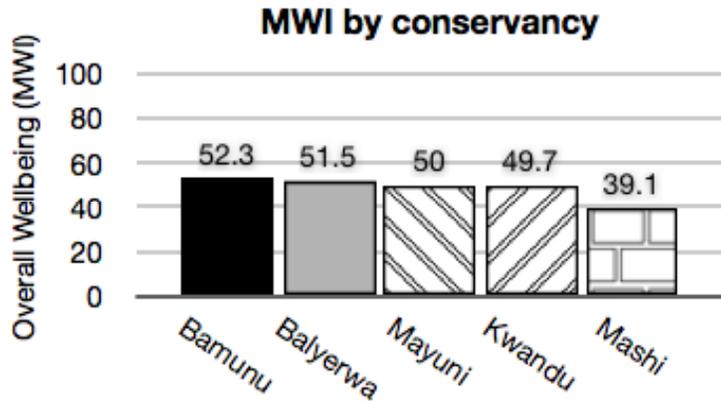


Figure 3-1. Overall wellbeing per conservancy

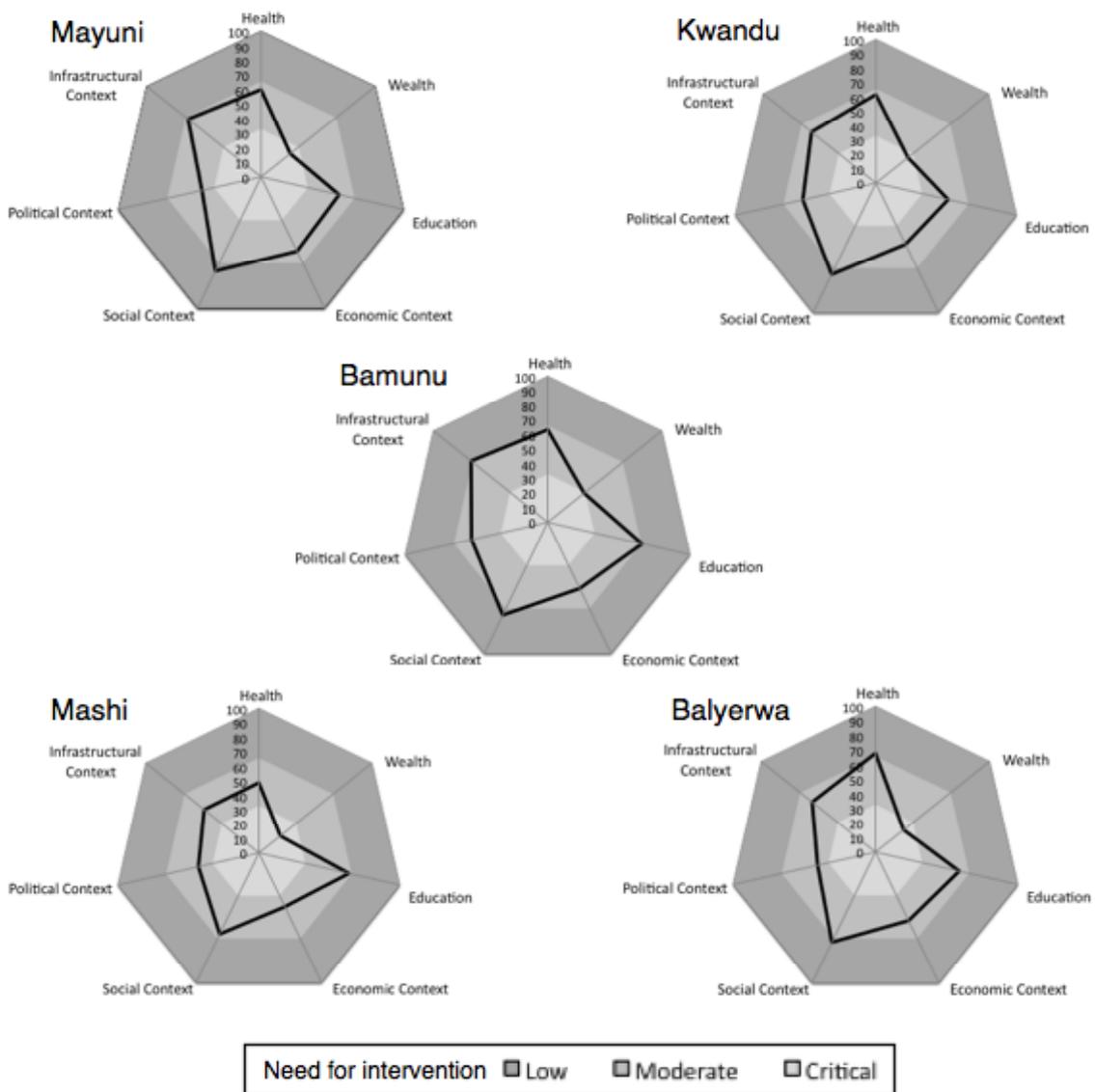


Figure 3-2. Scores of multidimensional wellbeing subindices

Table 3-4. Comparing tourism revenues and wellbeing

conservancy	Tourism revenues*			MWI
	US\$/household	Rank	Points	Rank
Balyerwa	157	1	51.5	1
Mayuni	112	2	50	2
Mashi	53	3	39.1	4
Kwandu	52	4	49.7	3

* Fee earnings from JV, Hunters and campsites in 2007

FX rate: 1N\$ = 0.14460 US\$

Source: IRDNC, 2008; Personal fieldwork

Table 3-5. Tourism revenues and distribution

conservancy	Tourism revenues*	Distribution**	% of	Tourism revenue per household	Distribution per household
			revenues as distribution		
	US\$	US\$		US\$	US\$
Balyerwa	79,708	7,808	9.80%	157	15
Mayuni	64,917	2,169	3.34%	112	4
Mashi	47,701	9,833	20.61%	53	11
Kwandu	40,471	4,772	11.79%	52	6
Total	232,797	24,582	10.56%	94	9

* Fee earnings from JV, Hunters and campsites in 2007

** Cash given by Conservancies to member as handouts or for projects (does not include salaries from JVs, etc)

FX rate: 1N\$ = 0.14460 US\$

Source: IRDNC, 2008; Personal fieldwork

Table 3-6. Multivariate analyses of influencing factors on well-being and its subindices

Factors	Wellbeing	Health	Wealth	Education	Economic	Social	Political	Infrastructural
	MWI	HCI	WCI	ECI	ESI	SSI	PSI	ISI
Attitude toward tourism	+	+	-	+	+	+	+	+
Education	+	+	+	NI	+	+	+	+
Age	+	+	+	-	+	+	-	+
Perception of benefits	+	-	+	+	+	+	+	+
Attitude toward the conservancy	+	+	+	+	+	-	+	+
Gender (female)	+	+	-	-	+	-	-	+
Household size	+	+	-	+	+	+	+	+
Income	+	-	+	+	+	+	+	-
Crop raiding	+	+	+	-	-	-	-	-
Conservancy membership	-	-	+	+	+	-	+	-
Proportion of tourism income	-	-	-	+	-	-	+	+
Perception of costs	-	-	+	+	+	-	+	-
Female Headed Household	-	+	-	+	-	-	+	-
Benefit reception	+	+	-	-	+	+	-	+
Tourism employment	+	+	+	-	+	+	-	-
Conservancy								
Kwandu	+	+	+	+	+	+	+	+
Mayuni	+	+	+	-	+	+	-	+
Balyerwa	+	+	+	-	+	+	-	+
R squared	0.42	0.38	0.24	0.61	0.33	0.11	0.22	0.40

** p<.05; * .05<p<.1; NI: not included

CHAPTER 4 FACTORS INFLUENCING ATTITUDES TOWARD CONSERVANCIES AND TOWARD TOURISM IN CAPRIVI

Introduction

Problem Statement

In an attempt to reduce the traditionally and historically antagonistic relationships between protected areas and local residents, conservation strategies have shifted toward community-based models (Adams and Hulme 2001). Southern African countries have been at the forefront of these strategies focused around the nexus of people and natural resources' use beyond the boundaries of protected areas (Hulme and Murphree 2001b). Many community-based natural resources management (CBNRM) programs in southern Africa are largely based on the wildlife tourism industry, including trophy hunting and photo-safaris. Research suggests that local participation and support are essential for the long-term success of conservation initiatives (Alexander 2000; Fiallo and Jacobson 1995; Heinen 1993; Mehta and Heinen 2001). As such it is important to positively shift the attitudes local residents have toward tourism and toward community based conservation organizations (CBOs).

Objectives

This paper explores attitudes of rural residents in Caprivi (Namibia) toward (1) community-based conservation organizations (known as conservancies) and (2) tourism. Broadly, we seek to understand the factors that influence attitudes toward these two concepts. We were particularly interested in the potential effects of quality of life, as measured through our newly developed multidimensional wellbeing index (MWI), of tourism employment, and of conservancy membership.

The Community Based Natural Resources Management and Tourism Context

Namibia has strong CBNRM legislation enabling rural communities to form conservancies and benefit from wildlife resources by taking advantage of tourism opportunities (Barnes et al. 1999; Government of Namibia 1996; Office of the President 2004). Conservancies provide the institutional framework to establish partnerships with tourism operators who pay fees to the conservancy and hire local community residents. Conservancies also develop their own tourism enterprises, such as lodging infrastructures or craft markets (Murphy and Suich 2003; Murphy 2003; NACOBTA 2007).

In a broad sense, CBNRM, “reverse[s] top-down, center-driven conservation by focusing on the people who bear the costs of conservation...includ[ing] natural resources or biodiversity protection by, for and with the local community” (Western and Wright 1994). From a development perspective, CBNRM offers a framework for governmental natural resources managers to work with local communities to align their mutual objectives, finding common grounds between livelihood needs and conservation (Adams and Hulme 2001). Within CBNRM, tourism is a springboard to connect rural communities to the market economy and provides financial incentives for sustainable management (Hulme and Murphree 2001a). From an empowerment perspective, CBNRM enables people to have more control over their political and economic contexts via a devolved management model (Scheyvens 1999). Finally, from a practical management perspective, CBNRM may make the task of natural resources management institutions easier by transferring the logistical burden to the local level and by reducing the often antagonistic relationships between communities and those agencies (Infield 1988; Jones and Murphree 2001; Parry and Campbell 1992).

Links between Community Based Natural Resources Management and attitudinal work

Local support is important for the success of conservation strategies and tourism projects (Andereck and Jurowski 2005; Alexander 2000). In Namibia, attitude toward natural resources management in the 1980's was strongly negative as local people viewed wildlife as belonging to the State (which was apartheid at the time) and incurring only costs but no benefits from their presence (Bond et al. 2003). CBNRM advocates hoped that wildlife benefit incentives would reverse this trend, by improving local people's attitude toward natural resources management and generating public support for an environment conducive to wildlife recovery (Jones 1999b). Since conservancies are in large part responsible for operationalizing these incentives, through tourism opportunities, monitoring people's attitudes toward conservancies and tourism, will help adaptively manage these programs. Furthermore, such research stands also to benefit tourism operators because quality tourism experiences rely on receptive hosts in addition to an attractive environment (Andereck and Jurowski 2005).

Strategies to foster support for CBRNM have focused on providing incentives to, and increasing participation of local residents. Incentives are based on needs theory, which posits that people will not engage in external problem solving, such as collective action issues, until they have addressed their basic needs (Maslow 1970; Doyal and Gough 1991). Providing opportunities to benefit from CBNRM or tourism enables people to tend to these basic needs, and as their wellbeing improves so should their support toward these activities. Participatory strategies reflect a behavior change theory known as the Reasonable Person Model, which suggests that people should adopt favorable attitudes toward a concept if they are provided with the opportunities to discover the

issues, learn about them and participate in addressing them (Kaplan 2000). As such, we expect people involved in tourism and in conservancies to be more supportive of these activities, because, especially in the case of conservancies, they are given the ability to process and act upon information themselves.

How do you measure attitudes?

Attitude is usually considered to be an individual's summary assessment of the degree of favorability toward a particular concept (Fishbein and Ajzen 1975). This assessment takes into account one's beliefs about a concept, and the positive to negative evaluation attached to that belief (Pierce et al. 2001). Attitude surveys have been used in tourism and conservation research to assess attitudes of tourists or residents of host communities toward different concepts, such as tourism, protected areas, or natural resources managers (Allendorf 2007; Lepp 2007; Baral and Heinen 2007). Researchers often measure attitude as an index aggregating several items, though a single item can also be used. Items are usually in the form of a Likert type scale. The benefit of an index is that it can capture the multidimensionality of complex concepts (Bernard 2002). We consider conservation as the responsible stewardship of natural resources to sustain ecological and social systems but recognize the term is used loosely. Therefore, researchers often use proxies to measure conservation attitudes. For instance, they may measure attitudes toward a protected area, wildlife, or a management institution (Alexander 2000; Fiallo and Jacobson 1995). In our case, we measure people's attitudes toward conservancies, because they represent the institution of conservation in Caprivi and have the most direct contact with people.

Attitudinal research must however be accompanied by the caveat that the links between attitudes and behavior, especially in regards to environmental issues, are

contested (Aipanjiguly et al. 2003; Holmes 2003). People who express unfavorable attitudes are unlikely to behave in support of conservation or tourism; however, residents expressing favorable attitudes may behave similarly under the influence of additional factors. For instance, Infield (1988) notes that poorer community members support conservation as a concept but not in practice due to economic constraints. Documenting attitudes is important but insufficient to guide conservancy and tourism managers.

Factors influencing attitudes toward conservation and tourism

Previous studies have investigated which factors influence attitudes toward conservation. Results suggest that a variety of demographic, environmental, social and economic factors may be significantly correlated with conservation attitudes.

Comparisons remain difficult because not all factors were tested across all sites, but it appears that education, relations with park staff and conflicts with wildlife are generally significant factors influencing conservation attitudes (Fiallo and Jacobson 1995; Mehta and Kellert 1998; Newmark et al. 1993; Parry and Campbell 1992). Surprisingly few studies have explored the links between receipt of tourism benefits and conservation support (Walpole and Goodwin 2002). In some cases, revenue sharing programs, and other tourism benefits, have resulted in favorable attitude toward conservation but not in all situations (Archabald and Naughton-Treves 2002; Walpole and Goodwin 2002).

Parry and Campbell (1992) report that in Botswana, contrary to common wisdom, direct benefits from wildlife do not improve local residents' attitudes toward it. Yet, they agree with other researchers that the rural poor face economic constraints that may prevent them from supporting conservation, and suggest improving the living conditions of rural people as an important element of conservation strategies. This seems particularly

relevant since many community based conservation projects are grounded in improving people's lives and providing economic alternatives, such as tourism, in order to garner conservation support, and yet, those relationships have not been clearly established (Arjunan et al. 2006; Parry and Campbell 1992; Shrestha and Alavalapati 2006; Walpole and Goodwin 2002).

The assumption that improving the socioeconomic context of communities in and around protected areas fosters conservation continues to draw controversy among conservation practitioners (Brandon et al. 1998; Langholz 1999). Therefore, this chapter will test that individuals with higher wellbeing have more favorable attitudes toward the conservancy (**hypothesis 4A**). Research also suggests that community participation in conservation fosters more favorable attitudes (Kideghesho et al. 2007; Thakadu 2005). Thus, we will also test that individuals who are conservancy members have more favorable attitudes toward the conservancy (**hypothesis 5**).

Researchers have also investigated attitudes toward tourism. It has also been positively correlated with favorable attitudes toward conservation, but less strongly than expected (Walpole and Goodwin 2002; Mehta and Kellert 1998). Positive attitudes toward tourism have been attributed to the belief that tourism promotes community development, improves agricultural management, generates economic gains and can bring general good fortune (Stronza and Gordillo 2008; Lepp 2007; Lindberg and Johnson 1997). Therefore, we will test that individuals with higher wellbeing have more favorable attitudes toward tourism (**hypothesis 4B**). Finally, we will also consider participation in tourism as a potential influencing factor and test that individuals directly involved in tourism have more favorable attitudes toward tourism (**hypothesis 6**).

Methods

Study Design

We conducted a pilot study in May-July 2007, which provided us with an opportunity to test our data collection instruments. The main study, conducted between February and July 2008, implemented a cross sectional design, collecting data at a single point in time (DeVaus 2001).

Study Sites

Research was conducted in the southern portion of the Kwandu river basin, part of the Kavango Zambezi Conservation Transfrontier Area. Historically, this area was part of the greater Lozi Kingdom of pre-colonial Barotseland. Today Subia, Mbukushu and Fwe tribes, of Bantu origin (united by Lozi language, though each group also has its own language), as well as San communities inhabit the area (Malan 1995). For homogeneity reasons, the study was limited to Bantu communities.

The pilot study, which included quality of life focus groups and testing of the initial questionnaire, was conducted in Wuparo conservancy in Namibia and the Chobe Enclave Community Trust in neighboring Botswana. The main study was conducted in five conservancies in Namibia (Figure 1-1). Table 1-1 shows that four of the five conservancies (Balyerwa, Mashi, Mayuni, Kwando) had completed their registration and had ongoing tourism activities through partnerships with safari hunters, lodge operators and/or conservancy-owned campsites. We refer to them as “tourism conservancies.” The fifth conservancy, Bamunu, was an unregistered conservancy (in 2008) with no tourism activity, and thus served as a control site, referred to as “non-tourism conservancy.”

Further description of the study area is provided in Chapter 1.

Data Collection

During the main study, we administered 467 individual questionnaires to conservancy residents stratified by their involvement in the tourism industry. The first strata consisted of the general population, from which we interviewed at least 10% of the households in each of the 5 conservancies. Within each household, we interviewed one adult (above 18 years old) full time resident, who was usually the head of the household, or his/her representative. The second strata consisted of tourism employees (full or part time). The stratification resulted in an oversampling of tourism employees, which we corrected for by applying weights when calculating means, proportions and computing regression models.

Interviews were conducted by local research assistants hired from within the communities and trained by the primary investigator. The questionnaire was developed in English on the basis of a literature review and the 2007 pilot study. It was translated into Lozi, and back translated into English to check the translation. Local research assistants conducted the interviews either in Lozi or in the relevant local dialect, depending on which language the respondents preferred. Interviews usually lasted between 30 and 75 minutes. The questionnaire included a total of 60 items, with a mix of open- and close-ended questions. The interview protocol respected cultural norms, and to the extent possible was conducted in private. All respondents received a small gift for participating in the study.

Data Analyses

Index construction

We used 24 Likert-type items to assess people's attitudes toward conservancies and tourism (Table 4-1). Each item was built as a statement for which each respondent

indicated their level of agreement on a 5-point scale (1=strongly disagree; 5=strongly agree, coded in reverse when appropriate; Table 4-1 collapsed the results to a 3-point scale for presentation purposes). This structure and several of the statements were selected on the basis of the pilot study which had been conducted in a nearby conservancy (Wuparo).

As shown in Table 4-1, originally 14 of those items directly pertained to the conservancy, 6 directly pertained to tourism, and 4 were evaluative assessments of concepts addressed by one of the previous items.

We dropped 5 items because theoretically they did not help assess one's attitude toward either tourism or the conservancy. Three of those items provided valuable information about people's perceptions of wildlife and are analyzed separately to that end. We also dropped 2 items because even though they were theoretically related to tourism perception, their deletion strengthened the cronbach's alpha of the final Tourism Attitude Index (TAI).

The Conservancy Attitude Index (CAI) and Tourism Attitude Index (TAI) were computed as follows:

$$(((\text{Average of item set scores})-1)/(5-1))*100$$

These indices could potentially range from 0 to 100, with 0 representing the most negative attitude (very strong dislike) and 100 representing the most positive attitude (very strong like). We also created attitudinal bins, with indices' scores equal to or less than 37.5 categorized as "dislike," equal to or more than 62.5 as "like," and in between as "neutral."

The Conservancy Attitude Index included 13 items and had a cronbach's alpha of .79 (n=463), suggesting a strong internal consistency reliability (Bernard 2002; Nunnally and Bernstein 1994). The Tourism Attitude Index included 4 items, which were also shown to have good internal consistency reliability, with a cronbach's alpha of .66 (n=463). While this is slightly lower than Nunnally & Bernstein's (1994) guideline, all items had item-total correlations of at least .58, which is an accepted threshold for inclusion of the items in the index (Ko and Stewart 2002; Nunnally and Bernstein 1994).

Statistical analyses

The final data were analyzed with *Stata/IC 10.1*. The distribution of the CAI was shown to be approximately normal, but that of TAI was skewed to the left (negatively) and could not be corrected through transformation. As a result, we used non parametric statistical tests, when parametric ones were inappropriate.

We used pairwise correlations and Spearman's rho tests to test associations between wellbeing, attitudes toward the conservancy and attitudes toward tourism.

We used Wald tests to determine the effect of conservancy membership and of tourism employment in the bivariate relationship with CAI for the former and TAI for the latter.

When comparing proportions, we used a Pearson chi-squared statistic as a test of independence. This statistic was converted into an F statistic to correct for the survey design with the second-order correction of Rao and Scott (1984), using cell proportions (StataCorp 2007).

Finally, we also developed regression models to compare the effects of multiple potential explanatory variables on CAI and TAI.

We included a number of factors that other scholars have shown to influence attitude toward tourism and/or conservation, such as employment (Anthony 2007; Gursoy and Rutherford 2004; Kuvan and Akan 2005), income (Lepp 2007; Wunder 2000), costs and benefits from either tourism or conservation of natural resources (Baral and Heinen 2007; Arjunan et al. 2006; Fiallo and Jacobson 1995; Infield and Namara 2001; Mehta and Heinen 2001; Parry and Campbell 1992; Stem et al. 2003; Walpole and Goodwin 2002) and demographic variables (Fiallo and Jacobson 1995; Kideghesho et al. 2007; Mehta and Heinen 2001; Shrestha and Alavalapati 2006), as well as some factors unique to this study. Specifically, these explanatory variables included 4 continuous integer variables: quality of life (Multidimensional Wellbeing Index - *MWI*), respondent's age (centered around mean age of 43 years old), education (centered around its mean of 6.3 years), and household size (centered around its mean of 3.5 people). The explanatory variables also included 7 categorical variables, 6 of which are binary: conservancy membership (0 for non members), part- and full-time employment in tourism of the respondent (0 for not employed), living in a conservancy involved in tourism (0 for not living in a conservancy involved in tourism), female headed household (0 for male headed household), gender (1 for male/2 for female). The seventh categorical variable, the conservancy, is multinomial and dummy variables were created for each conservancy. In the model, we only entered the dummy variables for Balyerwa, Mayuni and Kwandu (Bamunu is not needed because it is perfectly collinear with the tourism conservancy variable). We opted not to include mother tongue in the model because of collinearity issues with the conservancy variable. Ninety nine percent of Bamunu residents claim Mbalangwe as their mother's tongue, 99% of Balyerwa

residents claim Mayeyi, 88% of Kwandu residents claim Mafwe, and approximately 69% of Mashu and Mayuni also claim Mafwe while another 27-29% claim Mbukushu.

Originally, part- and full-time employment in tourism of a household member other than the respondent was included as an independent variable, but variance inflation factor tests suggested it caused multicollinearity issues with individual tourism employment and since bivariate tests indicated that household member tourism employment was not associated with either CAI or TAI, it was not included in the final models.

Results

The results section is divided into 2 subsections to describe the two attitudinal indices, CAI (the Conservancy Attitude Index) and TAI (Tourism Attitude Index), and the results of two regression models designed to test our hypotheses. Statistical significance at the 0.01 level are denoted by ***, at the 0.05 level by **, and at the 0.1 level by *.

Descriptive Results

Residents of the non-tourism conservancy (Bamunu) are more favorable toward the conservancy than tourism conservancy residents (mean CAI=61.1 vs. 53.6; $F=7.74^{**}$). However, Balyerwa conservancy is different from the other tourism communities as its residents express more favorable conservation attitudes ($F=9.85^{***}$), similar to those reported in Bamunu (mean=61.1 vs. 65.2; $F=1.31$).

In terms of attitudes toward tourism, we do not observe differences in the mean attitudes between residents of tourism and non-tourism conservancies (mean=70.0 vs. 64.9; $F=2.29$). We again observe differences among the registered conservancies, with Balyerwa residents expressing more favorable attitudes than residents of Mashu and Mayuni (mean=80.5 vs. 63.3 and 65.7; $F=28.5^{***}$ and 13.7^{***} , respectively).

Table 1-1 details the age of the conservancies and we can see in Tables 4-2 and 4-3 that the chronological ordering does not match the ordering of either the conservancy or tourism attitude indices. Similarly, if we were to assign a score of 0.5 pt for a campsite and 1 pt for each lodge or hunting agreement, we can rank the conservancies in ascending order as follows: Kwandu, Balyerwa, Mashi, and Mayuni. Again this order does not mirror either attitudinal ordering.

Finally, comparing the CAI to the TAI also highlights interesting results. Overall, people are more favorable toward tourism than toward the conservancy (mean=68.6 vs. 55.6, $F=120.1^{***}$). This difference holds true for all the tourism conservancies, but not for the non-tourism conservancy, whose residents have fairly similar attitudes toward both tourism and the conservancy (mean=64.9 vs. 61.1; $F=2.35$).

Figure 4-1 provides an overview of the results regarding people's perceptions of wildlife. We note that overall, approximately two thirds of residents think that the conservancy protects wildlife, but this belief is less widespread in Kwandu and Mashi. A large majority of conservancy residents claim to like wildlife, with no noteworthy differences among conservancies; however, most residents also believe that there is too much wildlife.

Hypotheses Testing

To test the four hypotheses listed previously (H4-6), we first considered the bivariate relationship between the pairs of variables, and subsequently ran regression models to consider additional potential explanatory variables.

For hypothesis 4A (Individuals with **higher wellbeing** have more favorable attitudes toward the **conservancy**), we plotted conservancy attitudes (CAI) against wellbeing (MWI) and ran pairwise (assuming normality), as well as Spearman (not

assuming normality) correlation tests between the two. Both tests suggested a positive association (pairwise = .32**; spearman = .33**) between wellbeing and conservancy attitudes (Figure 4-2). In other words, as residents' wellbeing increases, so does their attitude toward the conservancy.

For hypothesis 4B (Individuals with **higher wellbeing** have more favorable attitudes toward **tourism**, we plotted tourism attitudes (TAI) against wellbeing (MWI) and ran pairwise (assuming normality), as well as spearman (not assuming normality) correlation tests between the two. Both tests suggested a positive association (pairwise = .31**; spearman = .32**) between wellbeing and tourism attitudes (Figure 4-3). In other words, as residents' wellbeing increases, so does their attitude toward tourism.

Table 4-4 shows the differences in conservancy and tourism attitudes for different sub groups within tourism communities. As seen in Figure 4-4, our results support hypothesis 5 that individuals who are **conservancy members** have more favorable attitudes toward the **conservancy** (mean=54.8 vs. 48.8; $F=5.1^{**}$). Our results also support hypothesis 6, showing that individuals **involved in tourism** have more favorable attitudes toward **tourism** (mean=81.6 vs. 69.9; $F=10.0^{***}$) (Figure 4-5). This analysis compared the mean TAI for part- and full-time tourism employees to that of people not working in the tourism industry, who in most, but not all, cases were not employed at all.

Results from the regression model with CAI as the dependent variable are reported in Table 4-5. The model yields an adjusted R^2 value of .37. The model's baseline is for an average aged (43 years) male, living in Bamunu (non-tourism conservancy), not a conservancy member, not employed in tourism, living alone (thus,

head of his household and without any household member employed in tourism), without any education, not having suffered from crop raiding, not having received benefits (meat, cash or other), not perceiving any benefits or costs from tourism, and with a wellbeing score (MWI) of 0. Under these conditions, the model predicts a conservation attitude of 44.8 points (max. 100 points).

We note that the following variables have a significant effect on conservancy attitudes, when all other variables in the model are controlled for:

Being a conservancy member improves one's attitude toward the conservancy by 5.3 points***

Wellbeing: for each additional unit in the wellbeing score (MWI), the respondent's attitude toward the conservancy increases by 0.4 points***

Being in a tourism community reduces one's attitude toward the conservancy by 18.2 points***. This effect is only valid for Mashu, Mayuni and Kwandu because of the following "Balyerwa" effect:

- Residents of Balyerwa have conservancy attitudes 10.5 points*** higher than the other tourism conservancies. Thus, the net effect of being a Balyerwa resident is -7.7 points compared to non-tourism conservancy residents.

For each additional household member, conservancy attitude reduces by 1.1 point**

Receiving benefits increases one's attitude toward the conservancy by 9.1 points***

Perceiving that tourism makes one incur costs decreases one's attitude toward the conservancy by 10.0 points***

Being employed in the tourism industry increases one's attitude toward the conservancy by 10.8 points**

Results of the regression models with TAI as the dependent variable are reported in Table 4-6. The model yields an adjusted R^2 value of .33. The model's baseline is for an average aged (43 years) male, living in Bamunu (an emerging conservancy without tourism activities), not a conservancy member, not employed in tourism (full or part time), living alone (thus, head of his household and without any household member

employed in tourism), without any education, who did not suffer from crop raiding, did not receive benefits, did not perceive any tourism benefits or costs and with a quality of life score (MWI) recorded at 0. Under these conditions, the model predicts a tourism attitude of 50.2 points (max. 100 points).

We note that the following variables have a significant effect on tourism attitudes, when all other variables in the model are controlled for:

Being employed either part time or full time in tourism improves one's attitude toward tourism by 8.8 points^{***}

Being a conservancy member improves one's attitude toward tourism by 7.2 points^{***}

Wellbeing: for each additional unit in the wellbeing score (MWI), the respondent's attitude toward tourism increases by 0.6 points^{***}

Being in larger household, reduces one's attitude toward the conservancy by 2.2 points^{***} for each additional household member.

Perceiving that tourism provides benefits has a positive effect, increasing one's attitude toward tourism by 7.4 points^{***}.

Perceiving that tourism makes one incur costs decreases one's attitude toward tourism by 4.9 points^{*}

Being a resident of Kwandu has a positive effect as those residents have tourism attitudes 6.0 points higher than the base^{*}.

Being a resident of Mayuni has a negative effect as those residents have tourism attitudes 7.1 points lower than the base^{*}.

Discussion

The results of this study enable us to identify factors that influence the attitudes Caprivian residents hold toward conservancies and tourism. Since conservancies provide the institutional framework for communities to participate in land-use and wildlife management decisions, we feel that they are an appropriate proxy to assess people's attitudes toward conservation. Scholars and practitioners increasingly recognize that the success of these conservation initiatives requires more than sound economic and

ecological principles, but also public support (Alexander 2000; Fiallo and Jacobson 1995). Understanding this support requires investigating people's perceptions, values and attitudes (Jacobson and McDuff 1998; Jacobson 2009). Studies have found that various socio-demographic characteristics, such as education, age, or gender, tend to significantly influence attitudes toward conservation (Arjunan et al. 2006; Fiallo and Jacobson 1995; Infield 1988; Parry and Campbell 1992; Shrestha and Alavalapati 2006). Our results, like Baral and Heinen's (2007) in Nepal, did not support this conclusion. Rather, we identified tourism employment, conservancy membership, quality of life, benefit reception, benefit perception, cost perception, household size and individual conservancies as significant factors influencing people's attitudes toward conservancies and toward tourism.

Comparing Conservancies

Residents of conservancies in which tourism activities have not taken place are likely to have more favorable attitudes toward the conservancy, but not toward tourism. Among the tourism conservancies, Balyerwa residents have more favorable attitudes toward both the conservancy and tourism. Why? Our data does suggests that such attitudinal differences are not linked to either the conservancy's age or the extent and kind of tourism activities it hosts. Rather, higher wellbeing, large conservancy membership, meat distribution, and tourism employment positively contribute to conservancy and tourism support. The convergence of these factors in Balywera conservancy explains why it displays more favorable attitudes.

Overall, people in tourism conservancies are more favorable toward tourism than toward conservancies (mean=70.0 vs. 53.7; $F=158.3^{***}$). This could be because tourism provides more employment. Depending on their size, lodges typically hire 20 to 40

people full-time, whereas conservancies only hire about 5 to 15 people. Furthermore, while salaries could often be more substantial, lodges can generally offer better compensation than conservancies. Another factor may be that tourism is slightly buffered from internal local conflict because external people manage it, in almost all cases. Personal observations suggest that tensions between neighbors, friends, and extended family can be exacerbated through, or spill over into, conservancy involvement. On the other hand, external people involved in the tourism industry face different kinds of local conflict simply because they are not from the area, however, our data suggests that tourism attitude is somewhat resilient to these incidents. Tourism may also be better perceived than conservancies because it has a longer history with local people, and is not built on the expectations to improve their lives. Conservancies are still relatively new and local residents may have unrealistic expectations of what they will achieve. As such, they may be less satisfied with conservancies because their expectations have not yet been met. This could be due to unrealistic expectations to begin with, as well as to the challenges conservancies have faced in converting their achievements into tangible benefits that people take notice of and remember.

We note that most people (71%) believe conservancies are a good concept, but people are much more divided about their personal experience with the conservancy or the tangible benefits it provides to either individuals or the community. For example, 45% of respondents thought the conservancy had created conflicts among villagers, or claimed that they would be happier if the conservancy was not there. Conservancies are not perceived to have contributed very significantly to business or education opportunities, despite the fact that in some instances (e.g. Mayuni conservancy), the

conservancy provided education scholarships, but it may have been too few and too infrequently to make a real impact on people's perceptions.

In Bamunu, we observed similar attitudes toward tourism and conservancy. This could be explained by the fact that residents there have not experienced either the conservancy or tourism. Their attitude toward both represents more of a hypothetical attitude toward what they think they would get from the conservancy and from tourism. On the other hand, in the tourism conservancies, people have experience with both and their attitudes may reflect more the extent to which their original expectations have been met or not.

Factors Leading to More Positive Attitudes

Three factors foster more supportive attitudes toward both conservancies and tourism. First, tourism employees tend to be more favorable toward tourism, as well as toward conservancies, than people not working in tourism. While the association between tourism employment and tourism satisfaction seems to be intuitive, it is not always the case. For instance, Cottrell et al. (2007) showed that it was not a significant factor in a study conducted in China.

Conservancy members also tend to have more supportive attitudes toward both conservancies and tourism. In Caprivi, conservancy membership is not officially equivalent to residency within the conservancy boundaries. All residents over 18 years old are eligible to be members, but have to register with conservancy officers to be recognized as members. Our survey showed that 79% of people in the four registered conservancies are members, while in the emerging conservancy, membership is estimated at 43%. Membership is free and provides access to benefits from the conservancy, such as meat distribution, eligibility for long and short-term employment

affiliated with the conservancy, and partial compensation for crop and livestock losses due to wildlife. The bulk of conservancy members were registered when their conservancy was first established, but most conservancies have not actively or successfully enrolled new members over the years. Non-members are likely to feel less connected to the conservancy, and thus less favorable toward it, as well as toward tourism. They may think that conservancies or tourism are not in their best interest. In order to expand the support for conservancies, and for tourism, on which conservancies depend, conservancy leaders could try to enroll new members, and strengthen communication with existing ones.

Wellbeing also plays a significant role in predicting attitudes toward conservancies and tourism. Many conservation and development projects, as well as national policies aim to improve people's quality of life (National Planning Commission 2006; Office of the President 2004). Our research shows that such improvements are not just important for their human rights and socioeconomic development rationale, but also for conservancies' and tourism's objectives in the Caprivi region. People with lower wellbeing are much less likely to be supportive of activities such as conservation or tourism. This is explained by needs theories which argue that basic needs, such as one's own wellbeing, are tended to first, before higher needs, such as support for community wide initiatives like conservancies and tourism projects (Doyal and Gough 1991; Maslow 1970). Leaders of those projects would therefore be well advised to help improve people's lives because it will foster a more supportive environment for their projects to thrive. Improving wellbeing could be achieved by improving access and quality of education, health, transport and communication services.

In a number of other studies, benefits have been shown to positively contribute to people's attitudes toward conservation (Allendorf 2007; Archabald and Naughton-Treves 2002; Newmark et al. 1993; Stem et al. 2003). While conservancy membership opens access to benefits, it does not guarantee it. Sixty six percent of members in the four registered conservancies claimed receiving some benefit (other than employment) from either tourism or the conservancy. The majority of those benefits were meat from safari hunting agreements (91%), cash loans (37%), cash gifts (5%) and non-cash gifts (1%). Most people claim that they received that benefit from the conservancy.

Benefit reception is generally associated with more positive attitudes. For instance, a previous study in the same region showed that the conversion of a tourism bed night levy in one of the lodges in the early 1990's into community projects and individual dividends fostered support for the lodge, the neighboring national park and wildlife. However, the study concluded that funds should be disbursed more regularly to sustain wider attitudinal changes (Roe et al. 2001). In Indonesia, Walpole & Goodwin (2002) found that receiving benefits positively contributed to attitudes toward tourism but not toward conservation.

We make a distinction between actually receiving benefits and perceiving to receive benefits, because one does not necessarily imply the other. Our results show that actual benefit reception improves people's attitudes toward the conservancy, while the perception of benefits improves people's attitudes toward tourism. This highlights the importance of combining data on real benefits with data on perceived benefits (Allendorf et al. 2006). Almost three quarters (72%) of the respondents in the four tourism conservancies reported not perceiving benefits; however, more than half of

those (58%) actually had received some kind of tourism benefit. Most people (63%) who received benefits reported that they perceived no benefit from tourism.

Thus, even if tourism really provides benefits, it appears that many people do not perceive tourism to do so. But, at the same time, tourism is also not perceived to make people incur costs. In fact, 64% of the total sample (n=454) perceive neither costs nor benefits. Another 20% perceive benefits only, 12% perceive costs only, and 4% perceive both benefits and costs. Whatever effects (positive and negative) tourism may have on local people, they go largely unnoticed. Tourism does not seem to be perceived as either good or bad; it may just be an activity that happens, and that people accept but do not feel strongly engaged in, unless they are formally employed (full or part time) in the tourism industry (70% of tourism employees perceive benefits without perceiving any costs).

Factors Leading to More Negative Attitudes

We identified cost perception to shift people toward more negative tourism and conservancy attitudes. Like benefits, costs can be disaggregated into perceived and real costs. During interviews, respondents commonly raised, formally or informally, the issue of human-wildlife conflict as a concern. Crop raiding and predatory animals have been a challenge for rural people since before tourism and before conservancies, but stricter hunting laws associated with the development of tourism and conservancies may, or at least be perceived to, limit local people's options to fend off wildlife. Crop raiding has been shown in studies elsewhere to be negatively correlated with conservation attitudes (Allendorf et al. 2006; De Boer and Baquete 1998). In our study, 69% of the sample suffered from crop raiding, regardless of their cost perception. Of those, 85% did not perceive to suffer costs from tourism. Thus despite the real toll from

wildlife, most people do not pass the blame on to tourism activities. However, even if few people perceive costs from tourism (16% of the overall sample), those people have more negative attitudes toward tourism and the conservancy. They also tend to be quite vocal, and thus this small but loud group of people may present a distorted view of how the community at large feels about the role conservancies and tourism have in human-wildlife conflict issues (personal observation).

Despite the extent of crop raiding incidents, it appears that most people like wildlife, which confirms a trend toward increasingly positive attitudes toward wildlife in the Caprivi (Skyer 2004). This was not always the case and it remains unclear whether these more positive attitudes are linked to changes in environmental governance, expectations of financial profits or cultural affinity (Bond et al. 2003). Nonetheless, more supportive wildlife attitudes appear to have contributed to the recovery of wildlife species (Bond et al. 2003; Weaver and Skyer 2003), which can help the region and the conservancies strengthen its tourism potential. However, despite liking wildlife, most people also feel like there is too much of it. While this may appear to be two contradictory viewpoints, it is not an uncommon combination. It could be a fairly typical case of “Not In My Back Yard” attitudes that have been widely documented with rural communities elsewhere in the world (Ericsson et al. 2008; Taylor and Pedersen 1998). Further studies could provide more details about attitudes toward different species and different kinds of land use conflicts.

Conclusion

A better understanding of conservation and tourism attitudes is important for the diverse group of stakeholders involved in the management of such programs (Shrestha and Alavalapati 2006; Winter et al. 2005). Conservancy leaders and governmental and

non-governmental extension agents charged with helping them, need to know how local residents feel about the conservancy but also about tourism, on which the conservancies' finances rely. This knowledge will help them address their constituents' needs and foster popular support for their activities. Tourism operators are not as concerned with conservancy attitudes, but care about tourism attitudes because they prefer to conduct their business in a favorable environment. We recognize, however, that attitude toward tourism is different from attitude toward specific tourism operators. At the individual operator level, there may be a number of additional issues that may facilitate or severely hinder management or community relations.

We have identified factors that could shift people toward more positive attitudes of conservancies and tourism. Expanding employment in the sector would be beneficial, but expectations of what tourism and conservancies can do in terms of curbing unemployment need to be realistically managed. Unemployment is a macro economic problem that requires attention from the Government of Namibia because the job supply from either tourism operators or conservancies will inevitably fall short of local demand. There are a series of factors that are more within the realm of what conservancies and tourism operators can control. Conservancies should ensure their activities respond to their constituents' needs and improve their lives, strengthen their communication strategies to correct misconceptions and increase transparency, and expand their membership base.

CBNRM is not a panacea for conservation and development because its success requires an adaptive implementation approach, responding to a complex combination of factors (Adams and Hulme 2001). Ultimately though, the capacities and willingness of

the communities play a critical role (Barrow and Murphree 2001). Therefore, attitudinal research is a valuable tool for conservation and tourism managers because it can help them foster a more supportive social environment for their work.

Table 4-1. Distribution of agreement with attitudinal statements

Attitude toward the conservancy	Agree (%)	Neutral (%)	Disagree (%)
The work the conservancy does is important	71%	6%	23%
The conservancy has provided jobs for people in the village	74%	5%	21%
The conservancy does not benefit anyone in the village	50%	9%	41%
The conservancy was created for the betterment of our village	70%	5%	24%
I would be happier if the conservancy was not there	45%	7%	48%
The conservancy has created problems in my life	46%	6%	48%
The conservancy has caused conflicts among local villagers	45%	10%	45%
The conservancy has been the cause of increased crime in the village	22%	7%	71%
The conservancy has created business opportunities for villagers	34%	9%	57%
The conservancy has contributed to education in the village	41%	10%	49%
The conservancy has brought positive changes to village life	57%	7%	36%
I live better because of the conservancy	38%	7%	55%
I do not support the work of the conservancy	38%	7%	55%
Attitude toward Tourism	Agree (%)	Neutral (%)	Disagree (%)
Tourist lodges provide employment for the village	63%	9%	28%
Tourism generates money for the village	52%	11%	37%
Safari hunting brings money to the conservancy	77%	15%	9%
Tourist lodges are good for the village	74%	11%	15%
Not included in either attitudinal indices	Agree (%)	Neutral (%)	Disagree (%)
Tourism brings problem animals	36%	9%	56%
I think safari hunting is bad for the village	21%	10%	69%
I like conflict in the village	4%	1%	95%
The conservancy does not protect wildlife	29%	3%	68%
Education is not important	21%	1%	78%
I like wildlife	81%	3%	16%
There is too much wildlife	85%	6%	9%

Data weighted by fnlwt

Table 4-2. Attitude toward conservancy

	Dislike (in percent)	Neutral	Like	Mean CAI (max. 100)	Lin. St. Error	CAI range
Tourism conservancies						
Balyerwa	10	28	62	65.2	2.7	7.7 - 96.1
Mashi	26	54	20	48.4	1.6	13.5 - 90.4
Mayuni	33	32	35	50.7	2.8	11.5 - 92.3
Kwandu	24	45	31	51.5	2.2	13.5 - 92.3
Subtotal	24	40	36	53.6	1.2	7.7 - 96.1
Non-tourism conservancy						
Bamunu	20	28	52	61.1	2.4	17.3 - 100
Total	23	37	40	55.6	1.12	7.7 - 100

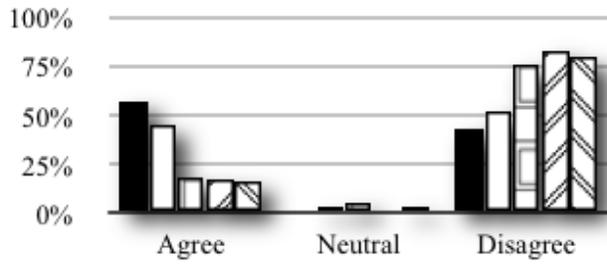
Data weighted by fnlwt

Table 4-3. Attitude toward tourism

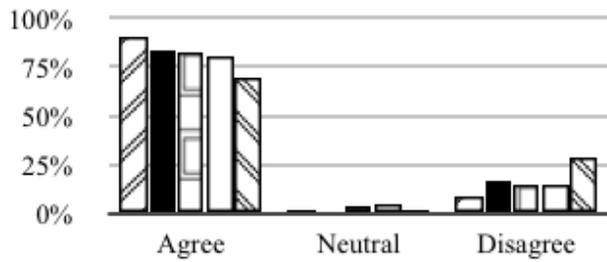
	Dislike (in percent)	Neutral	Like	Mean TAI (max. 100)	Lin. St. Error	TAI range
Tourism conservancies						
Balyerwa	2	12	87	80.5	2.4	12.5 - 100
Mashi	16	31	53	63.3	2.2	12.5 - 100
Mayuni	14	19	67	65.7	3.2	0 - 100
Kwandu	14	8	78	74.2	2.8	0 - 100
Subtotal	12	19	69	70.0	1.4	0 - 100
Non-tourism conservancy						
Bamunu	19	29	52	64.9	3.1	0 - 100
Total	14	22	65	68.6	1.3	0 - 100

Data weighted by fnlwt

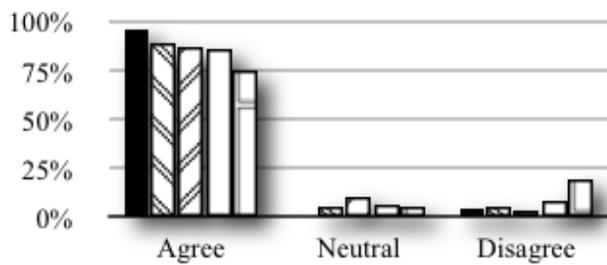
The Conservancy does not protect wildlife



I like wildlife



There is too much wildlife



Kwandu
 Mashi
 Bamunu
 Balyerwa
 Mayuni

Data weighted by *fnlwt*

Figure 4-1. Distribution of attitudes toward wildlife

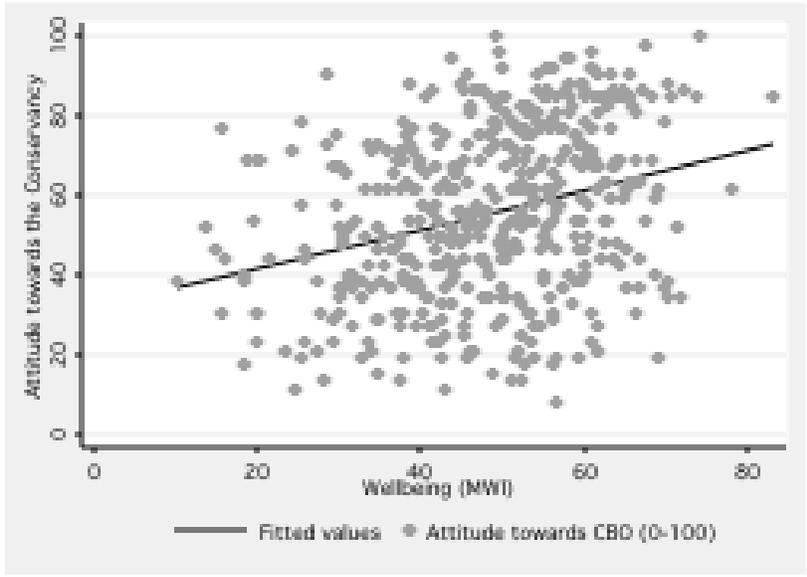


Figure 4-2. Conservancy attitudes vs. wellbeing

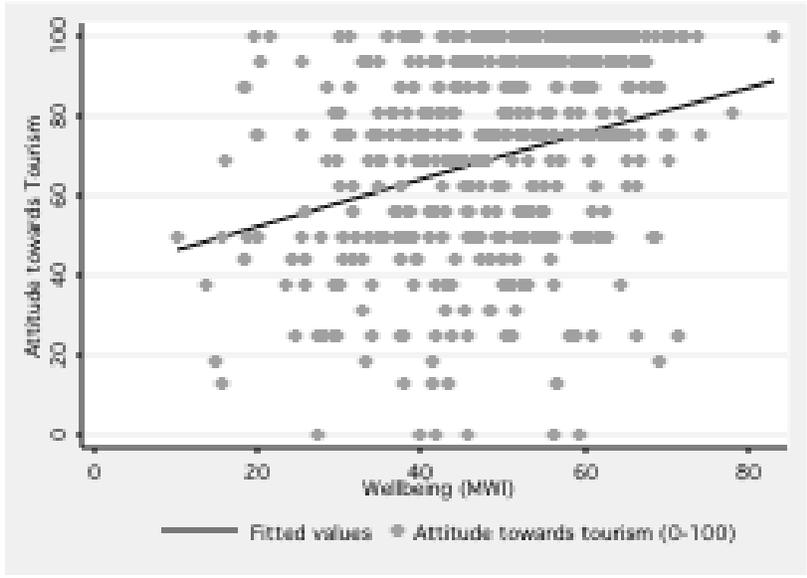


Figure 4-3. Tourism attitudes vs. wellbeing

Table 4-4. Attitude toward conservancy and tourism

	Dislike	Neutral	Like	Mean	Lin. St.
	(%)			(max. 100)	Error
Attitude toward the Conservancy					
Member	23	38	39	54.8	1.4
Non Member	26	50	24	48.8	2.2
Attitude toward Tourism					
Employed in tourism	4	4	93	81.6	3.4
Not Employed in tourism	12	19	69	69.9	1.3

Data weighted by fnlwt / Totals may not sum up to 100 due to rounding

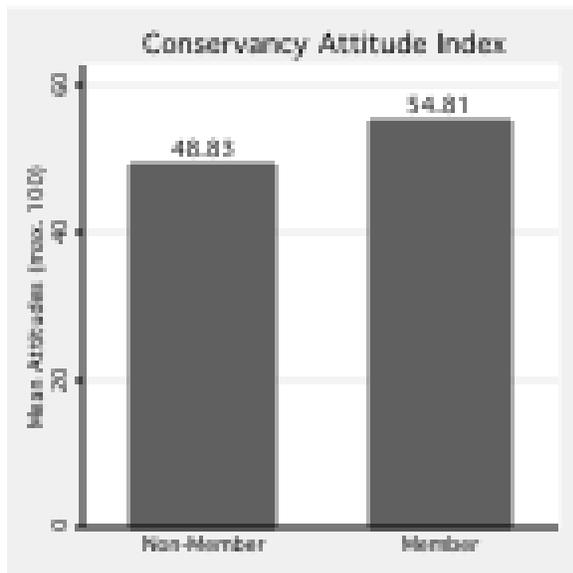


Figure 4-4. Conservancy attitudes by conservancy membership

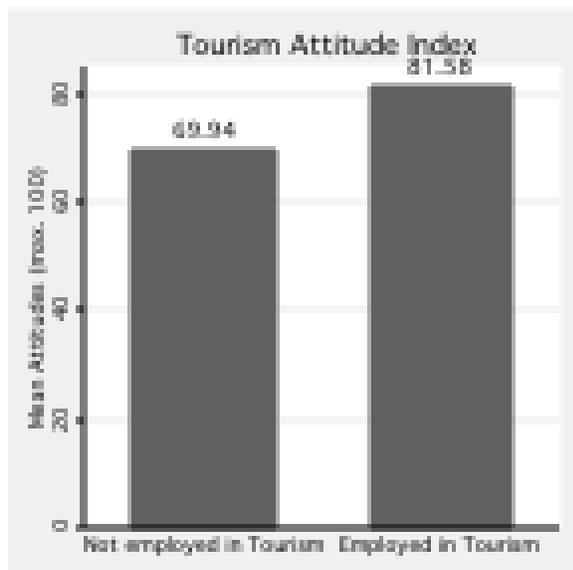


Figure 4-5. Tourism attitudes by tourism employment

Table 4-5. Regression results for conservancy attitude index model

Conservation Attitude Index (CAI)	Coef.	Linearized Std. Err.	t	P>t	[95% Conf. Int]	
Base score***	44.73	6.35	7.05	0.00	32.25	57.21
Wellbeing***	0.40	0.08	4.95	0.00	0.24	0.56
Tourism community***	-18.24	3.33	-5.48	0.00	-24.78	-11.70
Benefit reception***	9.07	2.35	3.86	0.00	4.45	13.70
Cost perception***	-9.70	2.20	-4.40	0.00	-14.03	-5.37
Balyerwa Conservancy***	10.48	2.99	3.51	0.00	4.60	16.36
Conservancy membership***	5.31	2.14	2.48	0.01	1.10	9.52
Household size**	-1.07	0.46	-2.33	0.02	-1.97	-0.17
Tourism employment*	10.83	6.05	1.79	0.07	-1.07	22.74
Crop raiding	-3.27	2.11	-1.55	0.12	-7.42	0.87
Education	0.41	0.31	1.30	0.19	-0.21	1.02
Mayuni Conservancy	-3.53	3.14	-1.12	0.26	-9.70	2.65
Age (centered)	0.06	0.07	0.90	0.37	-0.07	0.19
Benefit perception	1.64	2.38	0.69	0.49	-3.03	6.32
Kwandu conservancy	-1.87	2.86	-0.66	0.51	-7.49	3.74
Gender	1.36	2.54	0.54	0.59	-3.63	6.35
Female headed household	0.05	2.75	0.02	0.99	-5.36	5.46

* significant at 90% confidence; **significant at 95% confidence; *** significant at 99% confidence

F=13.56, p=.00, R²=.37 (Data is weighted by fnlwt), n=412 (outliers were deleted)

Table 4-6. Regression results for tourism attitude index model

Tourism Attitude Index (TAI) Coef.	Linearized Std. Err.	t	P>t	[95% Conf. Int]	
Base score***	50.17	7.22	6.95	0.00	35.98 64.37
Wellbeing***	0.65	0.09	7.43	0.00	0.48 0.82
Household size***	-2.21	0.55	-4.04	0.00	-3.28 -1.13
Tourism employment***	8.84	3.01	2.94	0.00	2.93 14.75
Conservancy membership***	7.21	2.50	2.89	0.00	2.30 12.13
Benefit perception***	7.43	2.60	2.86	0.01	2.32 12.55
Kwandu conservancy*	5.96	3.25	1.83	0.07	-0.43 12.34
Cost perception*	-4.91	2.72	-1.81	0.07	-10.27 0.44
Mayuni Conservancy*	-7.06	3.97	-1.78	0.08	-14.87 0.75
Balyerwa Conservancy	5.07	3.34	1.52	0.13	-1.49 11.63
Female headed household	-4.59	3.08	-1.49	0.14	-10.64 1.46
Crop raiding	-3.38	2.41	-1.40	0.16	-8.13 1.36
Tourism community	-4.04	3.62	-1.12	0.27	-11.15 3.07
Gender	-1.57	2.91	-0.54	0.59	-7.30 4.15
Benefit reception	1.36	2.58	0.53	0.60	-3.71 6.43
Age (centered)	-0.01	0.08	-0.10	0.92	-0.16 0.14
Education	0.01	0.33	0.04	0.97	-0.64 0.66

* Significant at 90% confidence; **significant at 95% confidence; *** significant at 99% confidence

F=12.8, p=.00, R²=.33 (Data is weighted by fnlwt, n=412 (outliers were deleted))

CHAPTER 5 CONCLUSION

Introduction

Our research was motivated by our desire to contribute to more effective conservation and development strategies. We believe one of the greatest challenges of the 21st century is to change how we measure development to encompass multiple dimensions. In particular, we must improve the quality of people's lives and ensure the sustainability of natural resources' use. For rural communities, nature-based tourism has the potential to meet both of these objectives. Previous research has illustrated the opportunities and pitfalls of tourism for environmental conservation (Boo 1990; Isaacs 2000). Our research focuses on the human dimensions of tourism.

Tourism's currently limited impacts on people's lives do not imply that it should be abandoned as a rural development strategy. The growth of tourism to national GDP is expected to be the second fastest in the world over the next ten years (World Travel and Tourism Council 2009b). In rural Caprivi, it is one of the few economic activities, and generates significant revenues for the companies involved as well as for the conservancies (NACSO 2006). We believe tourism revenues can and should contribute more to improving people's lives. Undoubtedly, this is challenging, especially because the hurdles are more a matter of human and institutional capital than of financial capital.

We know from the adaptive management literature that successful project implementation requires to continually monitor the impacts of management decisions against previously defined objectives (Salafsky et al. 2002). We are aware that there are numerous challenges that can hinder tourism's positive impacts (Ross and Wall 1999). Thus, we set out to document if and how nature based tourism improves people's lives

and if people who are better off are more supportive of conservation. Our research was centered around these two questions, but before we could attempt to answer them, we first had to ask and answer another question: how do you measure the quality of someone's life? If we do not know how to measure something, we cannot monitor it; if we cannot monitor it, we cannot manage it.

Developing a Wellbeing Measure

Quality of life, or wellbeing as we've referred to it through most of this dissertation, is an assessment of how good one's life is (Cummins 1998). Evidence from a number of investigators has indicated that well-being is best conceived as a multidimensional phenomenon that includes both subjective and objective elements (Costanza et al. 2006). According to bottom-up spillover theory, overall life satisfaction is at the top of a hierarchy that comprises of multiple life domains (Sirgy et al. 2000). Thus, wellbeing can be measured as an aggregate assessment of one's life, such as subjective wellbeing, but can also be disaggregated into a series of measurable subindices (Diener et al. 1997; Cummins 2005). As such, we adapted a conceptual model of wellbeing which placed subjective wellbeing at the core of a multidimensional assessment incorporating aspects of one's wealth, health and education combined with perceptions of their economic, social, political and infrastructural contexts (Cahyat et al. 2007; Gonner et al. 2007). Here, we discuss the merits of the wellbeing index we developed, and toward the end of this chapter, we'll discuss its limitations.

The Multidimensional Wellbeing Index (MWI) we developed for this study is a useful contribution for rural development practitioners and scholars, particularly in the developing world. While it was developed for use in the Caprivi, our experience in creating this index, as presented in Chapter 2, is relevant for application in other regions

of Namibia as well as other countries. It is conceptually sound and embraces the multidimensional approach favored by development scholars. Furthermore, it can easily be tailored for local relevance. Finally, it is relatively easy to implement and could be adapted within community based monitoring schemes.

Multidimensional Approach

One of the key concerns for many developing countries is to curb poverty, as recommended by the United Nations Millennium Development Goals, and by a number of national development strategies (United Nations 2000; Office of the President 2004). Poverty is increasingly recognized as a multidimensional construct, and wellbeing can be considered the absence of poverty (Gonner et al. 2007). As such, the MWI can be used in the context of poverty studies to assess development objectives. Furthermore, the MWI presents the advantage of different levels of analysis. It offers a summary overview of people's wellbeing with a single measurement that can be used by policy makers for rapid assessments, but can also be disaggregated into specific indices illustrating people's wellbeing within specific life domains. This is important for policy makers who want to target interventions for maximum impact. For example, in our study, we see that people are much less satisfied with their health (HCI) than with their social context (SSI). Thus, it may be more important to provide better health services, such as clinics, than to facilitate more social interactions. The life domain subindices can even be broken down further, to the indicator level, to better understand the kinds of interventions that would help improve people's wellbeing. However, to that effect, we suggest organizing focus groups to elicit potential intervention programs from the community residents.

Local Relevance

During the development of our Multidimensional Wellbeing Index (MWI), we incorporated participatory research techniques to ensure that the MWI captured life concerns relevant to people in the Caprivi. These concerns were generally similar to concerns expressed by people from other cultural backgrounds, suggesting a relatively universal typology of the elements of a good life (International Wellbeing Group 2006; Cahyat et al. 2007; Higgs 2007). The operationalization of the indicators for each subindex (HCI, WCI, ECI, ESI, SSI, PSI and ISI) however requires local adaptation. For instance, while wealth (WCI) is an important element for people's wellbeing assessments in multiple cultural contexts, it may not be adequately measured through the same indicators in different places. In rural Caprivi, documenting people's assets and cattle ownership is a better measure of wealth than documenting people's income. We feel that our approach has merit for application in other locales. We feel confident that the MWI could be used elsewhere in Namibia, but also in the greater Kavango-Zambezi region. However, whenever possible, we advise conducting focus groups to discuss what constitutes a good life and thus check that all essential elements are included in the final measure.

Furthermore, different life domains may be more or less important in their impact on people's overall wellbeing assessments. Some people may value material wellbeing more than the political environment in which they live. For instance, in our study, we note that health (HCI) is more important (i.e. is weighted more heavily) than political context (PSI) in the MWI regression model. Not surprisingly, weighting domains in the computation of composite indicators is a debated topic (Trauer and Mackinnon 2001; Wu and Yao 2006). Perhaps to avoid such controversy, some wellbeing indices do not

weight and do not provide an explanation for this approach. However, no weighting is still a form of weighting – equal weighting (Hagerty et al. 2001). We adopted a regression based approach to determine the weights of the different subindices on MWI, but other techniques are also available.

Ease of Implementation

The MWI is a relatively easy tool to deploy and use to monitor people's wellbeing. It is conceptually clear, short, inexpensive and customizable. Because this research was conducted with some financial and logistical constraints, we had to develop a measure of wellbeing that could be easily implemented in the field without extensive logistical and technical support. Other multidimensional approaches have been developed, such as the Sustainable Livelihood Framework, but their adoption is hampered by the variety of technical skills they require in data collection and analyses (Ashley and Hussein 2000). While more complex measures have their rationale, we feel it is important to also have simpler tools at one's disposal. In the CBNRM context, it is particularly important to foster research techniques that can be adopted by local people, who often face technical and financial limitations. Even beyond CBNRM, we argue that community based monitoring should be encouraged in order to empower local people achieve their development goals. We believe the MWI is conceptually clear enough for local people to see how it reflects their quality of life. That said, we acknowledge that it can be further refined, and believe the indicators are straight forward enough that local people could decide to delete, add, or modify them as they see fit. The data for this study were collected by people with grade 10-12 education after a two day training. People with similar education could conduct simple analyses and interpretation to answer locally designed questions if a slightly more extensive training was provided.

Using a Wellbeing Measure for Tourism and CBNRM Studies

CBNRM projects in southern Africa often turn to nature-based tourism as a rural development driver. These projects hinge on the assumptions that tourism will improve host residents' lives, and in turn, residents will be more supportive of conservation and further tourism. Our main motivation to develop a measure of wellbeing was more practical than theoretical. We wanted to use it to better understand the links between nature-based tourism and conservation in the context of CBNRM.

Our results show that in Caprivi, tourism's contribution to people's wellbeing is limited. It affects specific subdomains of wellbeing more than overall wellbeing. While tourism generates substantial revenues for operators and to a lesser degree to conservancies, the trickle-down effects are weak. Within our sample, conservancies received 233,000 USD from tourism fees in 2007, but residents do not perceive that these revenues make a difference in their lives. Our study shows that most residents do not perceive tourism to benefit them, but at the same time, they do not perceive any cost from it either. This is consistent with other socioeconomic assessments of tourism. Benefits derived from tourism in southern Africa, and specifically within the context of CBNRM, are often found to be too modest to improve people's living conditions and thus unlikely to satisfy people's expectations (Vorlaufer 2007; Hill et al. 2006; Kiss 2004).

When we disaggregate the MWI into its sub domains, we note that tourism may have an impact on some aspects of wellbeing. In particular, we note that tourism employees feel better about their social and economic contexts. Employment opportunities in rural Caprivi are rare, and working in one's home area has significant value because it fosters social network and "safety nets" (Long 2001). Furthermore, in

this rural context, where there are very few economic drivers besides tourism, any job opportunity is highly sought after and can help families meet their economic needs (Lindberg 2003). That said, we observe that a number of other factors besides tourism employment and income have stronger impacts on wellbeing's sub domains. For instance, education and people's perceptions of tourism's benefits play a more significant role in shaping people's wellbeing. The notion that tourism alone makes people better off is not strongly supported by our results. While tourism certainly contributes to alleviate some of the challenges posed by underdevelopment, it struggles to provide significant relief (Tooman 1997).

There may be a number of less tangible benefits from tourism, which are not taken into account by our wellbeing measure (Long 2001). For instance, from a development perspective, Scheyvens (1999) argues that tourism should be assessed in terms of the empowerment it provides to host communities. Even though conservancies' struggle with equitable benefit distribution and other governance issues, they are strengthening local capacity, at an individual and institutional level, to identify and resolve issues related to the provision and management of common and public goods, such as natural resources and development projects (Long 2001). In that sense, the involvement of communities with tourism through conservancies are a wedge for more social, political and institutional changes that can influence rural development (Songorwa et al. 2000).

Another intangible benefit of tourism is its potential to affect people's environmental attitudes (Balmford et al. 2009). In Namibia, conservancies are widely believed to have helped shape much more favorable attitudes toward conservation

among rural residents, leading to the integration of wildlife tourism enterprises in their livelihood strategies (Weaver and Skyer 2003).

Our study shows that higher wellbeing levels foster support for conservation and tourism. These linkages cannot be taken for granted, and may not be replicated elsewhere. For instance, Walpole and Goodwin (2002) found that economic benefits from tourism around Komodo National Park (Indonesia) were positively correlated with favorable tourism attitudes but not with support for conservation. In Caprivi, we did not observe this disjunction but may see a trace of it. People are more favorable toward tourism than toward conservancies, and the effects of wellbeing are larger on tourism attitudes than on conservancy attitudes.

Wellbeing is not the only factor contributing to this support, but it is one factor for managers of such projects to consider. Tourism and conservation efforts will be more successful over the long term if they enjoy popular support by local residents (Alexander 2000; Andereck and Jurowski 2005) Thus, improving people's lives is not just important for its intrinsic ethics, but also to advance conservation and tourism objectives.

Study's Limitations

The methods and results presented in this study are a valuable contribution for scholars and practitioners working on nature-based tourism, rural development and community-based conservation issues. However, we want to highlight the following limitations that may affect the interpretation of results and inspire future research. These limitations concern wellbeing measurement challenges and the determination of causal relationships between dependent and independent variables.

Limitations of Wellbeing Measures

Quality of life research is subjective to some degree, and thus operational instruments will inevitably yield disagreement by some people (Costanza et al. 2006). While the MWI possesses some strength, it also suffers from weaknesses, mainly in terms of operationalization, comparability potential, and “truthfulness.”

Operationalization of the MWI

Measuring people’s wellbeing is complex and every use of a measurement instrument teaches us something on how to improve it. Thus, the index we developed could be refined in a number of ways. First, we could consider alternative regression models, exploring other link functions, variable sets and weights. Second, some indicators could be added, deleted or modified from the MWI. For instance, existing literature and our own preliminary research indicate that the environmental context is an important sub dimension of people’s wellbeing (International Wellbeing Group 2006). Yet, the MWI was unable to incorporate environmental indicators because the indicators we designed were too subjective. Third, the MWI provides a quantitative measure of wellbeing, which could be paired with additional qualitative data. Such information would highlight the complex and subtle relationships between people’s wellbeing, attitudes and their surrounding context.

Comparability restrictions

The MWI was designed for use in Caprivi, but a review of the literature suggests that the elements of a good life in Caprivi are not that much different from results in other places (International Wellbeing Group 2006; Higgs 2007). That said, it is possible that overall wellbeing assessments for people in other regions or countries, or even possibly other ethnic groups in Caprivi (such as San communities), would include a

slightly different set of subindices, or a different weighting scheme. Thus, we would recommend conducting focus groups and pilot studies in other areas before deploying the MWI elsewhere.

For instance, the MWI does not include measures of people's satisfaction with their spiritual or religious life, but literature suggests that this sub domain is important to some people (International Wellbeing Group 2006). Additionally, the weights assigned to different subdomains within the MWI, may vary from place to place and thus makes comparative studies difficult (Qizilbash 1997).

Furthermore, other instruments have been used to measure wellbeing in other places, such as the Everyday Quality of Life (EQLI), and these may not be directly comparable with the MWI. Different tools may be adapted to different contexts, and researchers should consider their research questions when selecting a data collection instrument.

Elusive truthfulness

The other weakness of the MWI is that it sometimes fails to balance perception versus reality. While we tried to include a mix of subjective and objective indicators, the objective indicators could be bolstered. The most glaring shortcoming affected our attempt to document the environmental context (ESI). We wanted to assess the presence of certain keystone species, or the extent of bush encroachment, and asked our respondents about these. We thought this would provide an objective indicator because we were not asking how people felt about these natural resources and that people would know the actual status of these resources. Unfortunately, the responses were limited by people's knowledge and perception of the status of these resources. Our results showed that people did not agree on, and in many cases did not know, the

status of those resources. As a result, we were unable to compute the Environmental Sphere Index. To correct this, future versions of the MWI should combine indicators collected through interviews and others collected through third party assessments. For instance, in the case of the ESI, we could conduct wildlife and vegetation surveys or include results of existing studies if available.

Another factor that can detract from the truthfulness of the data is inherent to social science studies. People do not always give accurate answers. Some people don't understand the questions. Some people purposefully give wrong answers. Reasons for this are too numerous to account. To reduce this risk, we try to develop trusting relationships with respondents (by clearly explaining the research objectives and what it can and cannot do for people) and build internal checks within the questionnaire. However, we are aware that we cannot entirely control this process. We believe that a longer term study, with increased local participation, would probably yield more reliable results as trust relationships take time to build.

Determining Causality

The causal relationships, between tourism, wellbeing and people's attitudes toward conservancies and toward tourism, are difficult to establish. We tried to establish causal effect of tourism by comparing four communities with tourism (treatment) to a "control" community without tourism, and furthermore by comparing people working in the tourism industry to people not working in the tourism industry. However, we also could have included more items in our questionnaire explicitly tying the dependent and independent variables. Kim (2002) illustrates how causal effects of tourism on the quality of life of residents of Virginia (USA) can be assessed with numerous items linking tourism to specific economic, social, cultural and environmental wellbeing

impacts. Furthermore, our study design was cross sectional, thus providing a snap shot in time of people's wellbeing and attitudes. These designs have the advantage of being relatively quick, and cost effective. They also offer strong external validity because they rarely suffer from sample attrition, and offer samples which can be very representative of the theoretical population (DeVaus 2001). However, causality is difficult to establish due to the absence of time and the potential presence of confounding variables. A different study design, such as longitudinal, could have been used to measure wellbeing at multiple time intervals, and ideally including a base line before the start of tourism activities.

We thus recommend repeating this data collection effort over time to improve our understanding of the relationships between tourism, wellbeing and people's attitudes. Future iterations of the MWI should (1) better balance objective and subjective indicators, especially for, but not limited to, the environmental context, (2) consider alternative models to integrate these indicators, (3) be paired with qualitative data, and (4) consider temporal variations.

Future Research

This dissertation opens the way for additional research in Namibia and elsewhere to better understand the links between conservation and development. First, we wish to fine-tune the MWI from a conceptual and a modeling perspective. Additional statistical exploration of interactive effects and mediating variables could reveal more powerful wellbeing models. Furthermore, we will reevaluate the indicators and subindices with national stakeholders and fellow researchers, with a particular interest in participatory research that would lead to a streamlined wellbeing measure that could be used within community based monitoring programs. As the importance of wellbeing research is

getting increased attention by renowned economic philosophers, policy makers and funding agencies, we believe there is an opportunity window to shift our development measures to indicators and goals toward more holistic approaches (Stiglitz et al. 2009). Furthermore, we believe that inadequate benefit distribution mechanisms constrain the impacts of tourism. Benefit distribution is affected by a number of governance factors, including transparency and accountability. As such, we are interested in investigating the links between the extent of good governance within CBNRM and people's wellbeing (Collomb et al. in review). In particular, we would like to expand research into community quality of life to understand people's satisfaction with community based services, since these services are the ones CBNRM is most likely to have a direct impact over. Previous research has shown that community satisfaction feeds into overall personal wellbeing (Sirgy et al. 2000). We also wish to continue exploring the relationship between real and perceived impacts of tourism and conservancies. Such a better understanding could lead to more favorable attitudes from local residents, and help deliver benefits that really matter to people. Finally, since nature-based tourism is used as a conservation and development strategy in many countries around the world, we would like to expand this kind of research elsewhere in order to learn from other places. We believe conservation projects still struggle with social research, and that a focus on multidimensional wellbeing, expanding beyond material goods, is extremely relevant to meet the development challenges of the 21st century.

Conclusion

Rural development and sustainable natural resources management are intricately linked in Africa. International funding agencies continue to support Integrated Conservation and Development Projects, with a growing emphasis on community-based

approaches (Newmark and Hough 2000; Hulme and Murphree 2001a). Nature-based tourism will likely remain one of the main economic drivers of these projects, given the expected growth of the sector in the region (Balmford et al. 2009; World Travel and Tourism Council 2009a). In Namibia, its revenue generating potential has been well established (Weaver and Skyer 2003; Barnes et al. 1999; NACSO 2007). While this is a worthy accomplishment, the next issue affecting the success of conservancies centers around whether tourism revenues actually filter down to improve people's lives and foster increased support for conservation. International policy makers, and leading economic scholars, are realizing that classic economic indicators may not provide a complete picture of development progress (Stiglitz et al. 2009). This is because development amounts to more than employment and income, and that attempts to reduce poverty should aim to improve people's wellbeing across multiple dimensions (Sen 1999; Gonner et al. 2007). As such, we set out to document the impact of nature-based tourism on people's wellbeing and subsequently, the impacts of wellbeing on conservation support. Our research confirmed that a multidimensional wellbeing focus is a challenging but necessary approach to address the concerns of rural residents (Ashley 2000a). Despite people's relatively positive attitudes toward tourism, tourism's impacts on people's wellbeing in the Caprivi are minimal. The little that it does should not be dismissed because there are few other development drivers in the region; however, all stakeholders – rural residents, private sector, governments, NGOs and donors – should strive to maximize its potential.

Finally, conservancies implement CBNRM principles, but those principles are not a panacea for conservation and development (Adams and Hulme 2001). It is one strategy

that works under a certain set of circumstances, and granted that all those involved want to make it work. The greatest advantage of this strategy is that it is based on the notion of mutual benefits and cooperation so there are incentives in place for people to work together through problems and identify solutions. However, some practitioners warn against initiatives that merge conservation and development (Oates 1995). What should be remembered though is that CBNRM can be implemented in many different ways, and failures may be at times due to poor implementation rather than bad concepts.

APPENDIX A
FINAL QUESTIONNAIRE

INTERVIEW NUMBER _____	GPS WAYPOINT # _____	
DATE (D/M/Y): _____	START TIME: _____	END TIME: _____
NAME OF INTERVIEWER _____	INDUNA _____	
CONSERVANCY _____	VILLAGE AREA _____	

1. EXPLAIN “BASIC IRB INFORMED CONSENT”:

- This survey should take between one hour and one and a half hours.
- You do not have to answer any question you do not feel comfortable with.
- All Information is confidential
- You can stop the interview process at any time
- You can ask for clarification on any question at any time

2. POINT OUT THAT THIS QUESTIONNAIRE IS ABOUT THE INDIVIDUAL AND THE INDIVIDUAL’S HOUSEHOLD, AND NOT THE COMMUNITY.

3. THE QUESTIONNAIRE SHOULD BE TAKEN IN A PRIVATE SETTING, AS FAR AS POSSIBLE.

GENERAL INFORMATION

1. We are interested in learning about the people who live in your household. For each household member, please tell us the following:

Code	Relationship with head of household	Age or date of birth	Male/ Female	Education Level	Salaried Employment (yes/no)	Is person living in household for at least 9 months a year?	If 18, is person a registered member of the conservancy?
1	Interviewee						
2	Others						
3							
4							
5							
6							
7							
8							
9							
10							

2. a. Have you always lived here? b. If no, when did you move here? _____

1 Yes 2 No

3. Main source of lighting in household (MARK WITH ✓):

Electric power line Firewood Paraffin Generator
 Gas Solar Candles Other (specify) _____

4. Main source of cooking in household (MARK WITH ✓):

Household Questionnaire (March 2008 Dissertation Research) - 145

Electric power line Charcoal Paraffin Generator
 Gas Solar Firewood Other (specify) _____

5. Tick the following assets your household owns, has access to or does not have access to:

Asset	Own	Access	No Access	Asset	Own	Access	No Access
Car				Water Storage Tank			
Bicycle				Pit Latrine			
Canoe				Radio			
Sledge				Television			
Plough				Cell Phone			
Hunting/fishing equipment				Generator and/or solar panels			
Tractor				Other (WRITE)			

WELLBEING ASSESSMENT

6. Is your household prosperous?

1 No, it is not prosperous

2 Fairly

3 Yes, it is prosperous

7. How easy is it to get to Katima Mulilo?

1 Easy

2 Difficult, but usually possible

3 Very difficult / impossible

8. Have there been any shortages of food for more than 1 month during the past 12 months?

1 Yes

2 No

9. Where does your household get drinking water?

1 Public Tap

4 River (same location as where livestock goes)

2 Well/borehole also used by livestock

5 River (different location as where livestock

goes)

3 Well/borehole not used by livestock

6 Other (WRITE) _____

10. Is the drinking water that you have access to clean?

1 Yes, always

2 Yes, but only sometimes

3 No

11. Has drinking water become easier or harder to obtain in recent years?

1 Easier

2 Harder

3 Remained the same

11. a If easier or harder, why?

12. In the event of sickness, do members of your household always receive modern medical treatment from a doctor, nurse, midwife, or traditional care from a healer?

1 Never

2 Sometimes

3 Yes, always

4 Nobody has been sick during the last 12 months

13. How much of the natural environment (e.g. bush, floodplain, river) around your village is damaged?

Household Questionnaire (March 2008 Dissertation Research) - 146

- | | |
|------------------|---------------|
| 1 Half or more | 3 None |
| 2 Less than half | 99 Don't know |

14. Are reedbank (*mutobo*) still present in the bush/floodplain/river near the village?

- | | | |
|-------|------|---------------|
| 1 Yes | 2 No | 99 Don't know |
|-------|------|---------------|

15. During the past 12 months, have any non-timber forest products (e.g. fish, birds, wild animals, grass, poles, etc..) been extracted to the extent that they have virtually disappeared?

- 1 Yes, or there are almost no such products left in our area
- 2 No
- 99 Don't know

16. What is water quality like in the nearest river?

- | | |
|--------------|---------------|
| 1 Bad | 3 Good |
| 2 Reasonable | 99 Don't know |

17. How is maize sufficiency in your household?

- 1 We always grow or buy enough maize
- 2 Sometimes we cannot grow or buy enough maize
- 3 We can never grow or buy enough maize

18. How willing are village community members to help each other (doing work or financially)?

- | | | |
|--------------------|----------------------|----------------|
| 1 Not very willing | 2 Reasonably willing | 3 Very willing |
|--------------------|----------------------|----------------|

19. How are feelings of mutual trust among community members in the village?

- 1 Low
- 2 Medium
- 3 High (most people are trustworthy)

20. Do conflicts frequently arise between people or families in the village?

- | | |
|-------------------|----------------|
| 1 Yes, frequently | 2 Rarely occur |
|-------------------|----------------|

21. Can you gather natural products (fish, grass, reeds, poles, timber, etc.) in the region around your village to sell?

- 1 Gathering natural products is prohibited
- 2 Yes, but with difficulty
- 3 Easily

22. How do you usually get information about what is going on in the region and in the country?

31. How difficult is it to get to the nearest market?

- 1 Very difficult/impossible
- 2 Difficult, but usually possible
- 3 Easy

INCOME AND EXPENDITURES

32. What are the things that you and other members of your household did to make money in 2007? Please list all activities and what was earned from each in 2007. Also, please rank their importance to the household, with "1" being most important.

Sources of Income	Rank	Value (N\$)
Crops		
Livestock Sales		
Fishing		
Employment		
Pensions		
Remittances		
Farm Labor		
Craft Sales		
Natural Product Sales (e.g. Firewood, poles, thatching grass...)		
Other (WRITE):		

33. Has the ranking of these activities changed since tourism has started? 1 Yes 2 No

33a. If "Yes", how?

34. Are the household's sources of income regular?

- 1 No regular income source
- 2 Yes, most income sources are regular

35. If people in the household were employed in 2007: a. who did they work for? b. what was their salary? c. full time (FT) or part time (PT)?

Household member code	a. Employer	b. Salary	c. FT/PT

36. If products (other than crafts) were sold, who purchased them?

Product	Buyer *	Sale value (N\$) (price X amount)
Cash Crops		
Livestock Sales		
Fishing		
Firewood		
Poles for Construction		
River reeds		
Papyrus		
Thatching Grass		
Palm Leaves		
Medicinal Plants		
Edible Plants		
Other (WRITE):		
Other (WRITE):		

* write 1 for conservancy, 2 for tourism lodge, 3 for hunter, 4 for other (specify)

37. Did your household receive meat, cash loans, other cash income, or any sort of non-cash assistance (transport, clothes, etc..) from either a conservancy, tourism lodge or hunter in 2007?

What	How much in 2007?	From who? *
Meat		
Cash loan		
Other cash income (WRITE)		
Non-cash assistance (WRITE)		
Non-cash assistance (WRITE)		

* write 1 for conservancy, 2 for tourism lodge, 3 for hunter, 4 for other (specify)

38. Aside from earning money, what are the things that you and your household do to provide for yourselves?

(These are subsistence activities, not cash earning activities) Please list all activities.

Activities	✓ if household engages in it	Subsistence activities	✓ if household engages in it
Crops		Thatching Grass	
Livestock		Palm Leaves	
Fishing		Medicinal Plants	
Firewood		Edible Plants	
Poles for construction		Other (WRITE):	
Reeds		Other (WRITE):	
Papyrus			

39. Has anything changed in these activities changed since tourism has started? ? 1 Yes

2 No

39a. If "Yes", how?

40. Please list all your expenses for a year's time. How much do you spend on each expense? Example: 200 N\$ per year or 30 N\$ per month. Also, please rank their importance to your household, with "1" being most important.

Expense category	Approximate amount (N\$) (price X amount)	Time frame (per year, per month, etc.)	Rank
Food			
School			
Transport			
Medical Care			
Clothes			
Labor			
Building Materials			
Household electronics (radio, TV, cell phone...)			
<i>Please fill in additional items on the back of page.</i>			

SUBJECTIVE QUALITY OF LIFE

The following questions ask how happy you feel with different aspects of your life, on a 5-point scale. You may feel

- 1 ☹️☹️ Very unhappy
- 2 ☹️ Unhappy
- 3 😐 Neutral: neither happy nor unhappy
- 4 😊 Happy
- 5 😊😊 Very happy

- 41. Thinking about your own life and personal circumstances, how do you feel about each of the following aspects?
- 42. Over the **past ten years**, have your feelings changed? (more happy now [↗], less happy now [↘], or stayed the same [↔]).
- 43. If your feelings have changed, please explain why. (CONTINUE ON BACK OF PAGE IF NECESSARY).

	Now (41)					Has it changed? (42)			Why has it changed? (43)
	Very unhappy.....Very happy					↗	↔	↘	
	☹️☹️	☹️	😊	😊	😊😊				
A your life as a whole?									
B your shelter and living conditions?									
C your own health?									
D your achieving in your life?									
E your personal relationships (marriage, communication with friends and family)?									
F your personal safety (from violence, theft, etc...)?									
G being a member of your village?									
H your future security (having access to land, having good crops, being free, education, etc..)?									
M the availability of water for cattle and crops?									

ATTITUDES

44. I am going to read multiple statements. For each statement, please tell me if you:

1	✓✓	agree a lot
2	✓	agree a little
3	-	neither agree or disagree
4	×	disagree a little
5	××	disagree a lot

[GIVE ONLY ONE ANSWER PER ITEM]

#	Item	Agree a lot	Agree a little	Neither agree or disagree	Disagree a little	Disagree a lot
44.1	The work the conservancy does is important	✓✓	✓	-	x	xx
44.2	Tourist lodges provide employment for the village	✓✓	✓	-	x	xx
44.3	Tourism generates money for the village	✓✓	✓	-	x	xx
44.4	The conservancy has provided jobs for people in the village	✓✓	✓	-	x	xx
44.5	I like conflict in the village	✓✓	✓	-	x	xx
44.6	The conservancy has created problems in my life	✓✓	✓	-	x	xx
44.7	The conservancy has created business opportunities for villagers	✓✓	✓	-	x	xx
44.8	The conservancy has contributed to education in the village	✓✓	✓	-	x	xx
44.9	Safari hunting brings money to the conservancy	✓✓	✓	-	x	xx
44.10	The conservancy has caused conflicts among local villagers	✓✓	✓	-	x	xx
44.11	The conservancy has brought positive changes to village life	✓✓	✓	-	x	xx
44.12	The conservancy has been the cause of increased crime in the village	✓✓	✓	-	x	xx
44.13	The conservancy does not benefit anyone in the village	✓✓	✓	-	x	xx
44.14	The conservancy does not protect wildlife	✓✓	✓	-	x	xx
44.15	Education is not important	✓✓	✓	-	x	xx
44.16	I like wildlife	✓✓	✓	-	x	xx
44.17	The conservancy was created for the betterment of our village	✓✓	✓	-	x	xx
44.18	I live better because of the conservancy	✓✓	✓	-	x	xx
44.19	I would be happier if the conservancy was not there	✓✓	✓	-	x	xx
44.20	Tourist lodges are good for the village	✓✓	✓	-	x	xx
44.21	I do not support the work of the conservancy	✓✓	✓	-	x	xx
44.22	Tourism brings problem animals	✓✓	✓	-	x	xx
44.23	I think safari hunting is bad for the village	✓✓	✓	-	x	xx
44.24	There is too much wildlife	✓✓	✓	-	x	xx

IF PEOPLE VOLUNTEER DETAILS OF WHAT THEY LIKE OR DISLIKE ABOUT THE CONSERVANCY AND/OR TOURISM, TAKE NOTES HERE AND ON BACK OF THE PAGE.

IMPACT OF TOURISM

45. Do you benefit from tourism? 1 Yes 2 No
45a. If yes, how?

46. Does tourism negatively affect you? 1 Yes 2 No
46a. If yes, how?

RISK PERCEPTION

In some places, people face many problems, including things that are not sure and unknown. For example, in some places people are worried about drought, some people are worried about livestock diseases, and some are worried that other people might take their land. Now we would like to ask you about the things that you are worried about?

47. First, list these worries in the table below.
48. Then, rank these worries: Which is the biggest problem or the most serious? Which is the next most serious, etc.?

Problem/concern/worry	Rank

FARMING

IF HOUSEHOLD IS INVOLVED IN FARMING, GO TO QUESTION 49. IF NOT, GO TO QUESTION 56.

49. What are the main crops you farm (1 for most important, 2 for next, etc...)
Maize ___ Sorghum ___ Millet ___ Pumpkins ___
Beans ___ Melons ___ Ground Nuts ___ Other (WRITE) _____

50. How many bags (and of what size) did you use for your household consumption in 2007?

Crop	Number of bags	Size of bags

51. If you sold any crops in 2007, how many bags did you sell and for how much?

Crop	Number of bags	Size of bags	Sale price

52. Did you have any problems with crop raiding in 2007? 1 Yes 2 No

53. How much did you lose?

- a. All
- b. More than half
- c. Less than half
- d. Almost nothing

54. Has crop raiding increased or decreased or remained the same since as far back as you can remember?

- 1 Increased
- 2 Decreased
- 3 Stayed the same

55. If crop raiding has increased or decreased, why has it changed?

56. Please indicate the number of livestock your household owns:

Livestock species	Number	Livestock species	Number	Livestock species	Number
Cattle		Chickens		Sheep	
Goats		Pigs		Donkeys	
				Others	

57. Did you have any problems with predators attacking livestock in 2007? 1 Yes 2 No

58. Have predator attacks on livestock increased or decreased or remained the same since as far back as you can remember?

- 1 Increased
- 2 Decreased
- 3 Stayed the same

59. If attacks on livestock have increased or decreased, why has it changed?

60. Would it be OK to contact you again in coming weeks or next year? 1 Yes 2 No

END OF QUESTIONNAIRE

THE FOLLOWING QUESTIONS SHOULD BE ANSWERED BY THE RESEARCH ASSISTANT (DO NOT ASK THE RESPONDENT):

61. What is the respondent's mother's tongue?

Mayeyi

Mafwe

Other _____

Mbukushu

Mbalangwe

Don't know

Totela

Masubuya

62. What is the quality of the respondent's house like?

1 Below standard
standard

2 Standard

3 Above

63. According to you (the research assistant), what is the wellbeing of the respondent?

1 Below standard
standard

2 Standard

3 Above

APPENDIX B ITEMS USED IN DEVELOPING MWI

The Multidimensional Wellbeing Index includes 34 indicators grouped under 8 subindices. After each item, we denote by “Q#” the questionnaire item number from which the information was derived (See Appendix A). We also indicate which items were adapted from the CIFOR wellbeing index (CWI) by “*” and from the Personal Wellbeing Index (PWI) by “†.” The CWI and PWI also included a number of indicators not included in the MWI (see Cahyat et al. 2007 and International Wellbeing Group 2006 for details).

Subjective Wellbeing Index - SWI

- Is your household prosperous? (Q6) *
- Do you consider your household to be poor? (Q25) *
- On a scale from 1(very unhappy) to 5 (very happy), thinking about your own life and personal circumstances, how do you feel about your life as a whole? (Q41A) †

Health Core Index – HCI

- Have there been any shortages of food for more than 1 month during the past 12 months? (Q8) *
- Is the drinking water that you have access to clean? (Q10) *
- In the event of sickness, do members of your household always receive modern medical treatment from a doctor, nurse, midwife, or traditional care from a healer? (Q12) *
- On a scale from 1(very unhappy) to 5 (very happy), thinking about your own life and personal circumstances, how do you feel about your own health? (Q41C) †

Wealth Core Index – WCI

- Do you own a vehicle? (Q5) *
- How many assets do you own? (Q5)
- How many cattle do you own? (Q56)
- What is the quality of the respondent’s house like? (Q62) *

Education Core Index – ECI

- Highest level of education for respondent (Q1) *
- Highest level of education in household (Q1)

Political Sphere Index – PSI

- Can you gather natural products (fish, grass, reeds, poles, timber, etc.) in the region around your village to sell? (Q21) *
- How do you usually get information about what is going on in the region and in the country? (Q22) *
- Do you or other members of your household participate in decision-making processes in your village? (Q23) *

Social Sphere Index – SSI

- How willing are village community members to help each other (doing work or financially)? (Q18) *
- How are feelings of mutual trust among community members in the village? (Q19) *
- Do conflicts frequently arise between people or families in the village? (Q20) *
- On a scale from 1(very unhappy) to 5 (very happy), thinking about your own life and personal circumstances, how do you feel about being a member of your village? (Q41G) †

Economic Sphere Index – ESI

- How is maize sufficiency in your household? (Q17) *
- Number of income sources (Q32) *
- Are the household's sources of income regular? (Q34) *

Infrastructure Sphere Index – ISI

- How difficult is it to get to the nearest secondary school? (Q26) *
- What are lessons like in the school that children in the village usually attend? (Q27) *
- How difficult is it to get to the nearest health facility (dispensary, community health centre, hospital, etc.)? (Q28) *
- How good are the healthcare services where villagers in your community usually go for treatment? (Q29) *
- Have any training, agricultural extension, courses or enterprise assistance activities been held in your village over the past 12 months? (Q30) *
- How difficult is it to get to the nearest market? (Q31) *
- How easy is it to get to Katima Mulilo? (Q7)

The following subindex and indicators were expected to be included in the MWI, but were left out as explained in Chapter 2:

Natural Sphere Index – NSI

- How much of the natural environment (e.g. bush, floodplain, river) around your village is damaged? (Q13) *
- Are reedbuck (*mutobo*) still present in the bush/floodplain/river near the village? (Q14) *
- During the past 12 months, have any non-timber forest products (e.g. fish, birds, wild animals, grass, poles, etc..) been extracted to the extent that they have virtually disappeared? (Q15) *
- What is water quality like in the nearest river? (Q16) *

APPENDIX C
MISSING VALUES FROM INDICATORS

Table C-1. Missing values: Complete list

Item	% of missing values	Item	% of missing values	Item	% of missing values
NTFP	44.9%	trainrec	0.6%	ed	0.2%
BioIndRec	39.6%	maizesuffrec	0.4%	inforec	0.2%
EnvDam	32.5%	dwcrec	0.4%	numincsce	0.2%
RivH2OQual	14.7%	MedTmt	0.4%	regincsce	0.2%
SchoolQual	12.8%	HseQlty	0.4%	Help	0.2%
HlthQual	3.0%	ProdGath	0.4%	Conflict	0.2%
VDM	0.8%	townaccrec	0.2%	HlthAccess	0.2%
SchoolAccess	0.8%	FoodShortage	0.2%		
Qolmbr	0.8%	vhcle	0.2%		

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BIOGRAPHICAL SKETCH

Jean-Gael “JG” Emptaz-Collomb was born and lived in France until completing a *Baccalauréat* in life sciences from the *Ecole Active Bilingue* of Paris. He moved to Washington, D.C. to attend The George Washington University, from which he graduated in 1996 with a Bachelor of Science in Biology. He spent the next eight years working for international environmental non-governmental organizations.

From 1997 to 1998, JG was a research assistant at the Gorilla and Chimpanzee Research Station (SEGC) in Lopé National Park (Gabon). From 1998 to 2002, he worked for the World Resources Institute (WRI), where he managed the central African component of a logging monitoring network, Global Forest Watch (GFW). While he was based in Washington, D.C., JG spent 3-4 months a year traveling to central Africa, gathering data and establishing partnerships. During his time at WRI, he led the publication of three reports on logging in Cameroon and Gabon, and secured funds to expand GFW to the Republic of Congo. In 2003, JG moved back to Gabon to work for the Wildlife Conservation Society (WCS) as a technical assistant for the National Park Task Force. He spent 18 months coordinating the collaborative efforts of international NGOs, international donors and local governmental agencies to establish Gabon’s new National Park network. He worked closely on legislative issues and the development of an ecotourism vision.

JG started his PhD program in interdisciplinary ecology in fall 2004 within the School of Natural Resources and the Environment at the University of Florida.