

Governance of Protected Areas in the Serengeti Ecosystem, Tanzania

by

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B.Sc. Sokoine University of Agriculture, 2002
M.Sc. University of Reading, 2006

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

in the Department of Geography

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University of Victoria

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The purpose of this dissertation is to assess the contribution of protected areas (PAs) to the attainment of both conservation and social outcomes including poverty reduction within the Greater Serengeti Ecosystem in Tanzania. The research focused on the role of governance as a factor influencing the attainment of these goals.

This research was carried out in the Serengeti, Ngorongoro and Meatu districts of Tanzania in 2012. Two villages were selected from each district using stratified sampling techniques to obtain villages bordering many PAs including the core PA (i.e. Serengeti National Park). A mixed methods approach was used in this research which comprised of quantitative interviews with 389 households, key informants interviews with 88 stakeholders, 12 focus group discussion and document analysis. The study used a quantitative questionnaire to measure the effectiveness of governance as perceived at the household level. The questionnaire yielded 10 governance factors that accounted for 85% percent of the explained variance using factor analysis.

The findings indicated weak governance particularly for Ikorongo-Grumeti Game Reserve. When examined across the ecosystem, weak linkages were evident between the PA actors and other actors such particularly at local community level. There was no difference in governance scoring between community-based PAs and the more traditional top-down government owned PAs. Furthermore, local communities were not adequately represented in PA governance despite being important actors. Findings indicated mixed

results in terms of conservation and social outcomes. Results indicate implied relationship between mixed outcomes and weak governance with weak outcomes thought to be related to weak governance.

This study recommends adaptations in the Serengeti ecosystem particularly the reengineering of the ecosystem governance structure to bring onboard more actors in decision-making and management processes and actions through increased linkages between governance actors, governance structures and processes.

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ACKNOWLEDGMENTS

The accomplishment of this work is as a result of support I have received from various people and organizations who I am thanking here. First and foremost I thank my Supervisory Committee for their tireless support, advice and constructive criticism throughout the course of this study. Special thanks go to Dr. Philip Deaden my main supervisor and Dr. Rick Rollins the co-supervisor, for their constant support from proposal stage to the write-up. Thanks to Rick for his support with the design of household survey tools and advise on statistical analysis for this work. Thanks are due to Dr. Grant Murray (Vancouver Island University) and Dr. Marlea Clarke (University of Victoria) for their support during my studies at the University of Victoria and their comments in various aspects during this work. I am also indebted to Dr. Leslie King (Royal Roads University), Dr. Rosaline Canessa (University of Victoria) and Dr. Lance Robinson (ILRI Nairobi) for their various supports to my studies at the University of Victoria.

Second most, I wish to acknowledge those who offered financial and logistical support for my studies, the International Development Research Council of Canada (IDRC) and Social Sciences and Humanities Research Council of Canada (SSHRC) for financial support, and to the College of African Wildlife Management Mweka for their logistical and transport support during the field part of this study.

The following deserve sincere thanks for their facilitation during the data collection in the Serengeti ecosystem. Elibariki Bajuta, Fredy Victor Oleledidi, Nganana Ole Mothi and Betekire Lubunga, all from the Ngorongoro District Council. Emilian Kihwele (SENAPA), David Mwakipesile (Ikorongo-Grumeti Game Reserves), Omary Ismail (Meatu District Council), Seki (Singita-Grumeti Reserves Ltd), Curthbet Boma (Serengeti District Council), Omary Ismail (Meatu District Council), Asanteeli Melita (NCAA), and David Rukiko (TANAPA). I am immensely thanking Longoi Paroriki, Linus Tiothem (NCAA) and Francis Kandoya (NCAA) for their field research assistantship. I am also indebted to my field drivers, Mr. Samwel Said and Mr. Marungu Mombya from the College of African Wildlife Management, Mweka. Mr. Philemon Tenu

from the National Institute for Medical Research (NIMR, Tanzania) is acknowledged here for his advice on statistical issues particularly in data coding. Others are Ms. Clara Manasse Temu and Sr. Sia Temu for their assistance in data entry. My friend Magnus Mosha of Frankfurt Zoological Society-Mahale Mountains Ecosystem Management Project provided moral support and encouragement throughout the course of my PhD studies.

Dr. Victor Kakengi (TAWIRI), Miss Suzan Chenya and Misters Alex Choya and Imani Nkui (Wildlife Division, Tanzania) are acknowledged for their facilitation in securing of the necessary research permits for this research. I thank TANAPA, NCAA, and Wildlife Division managements for providing me with permissions to carry out this research in protected areas under their management. I am also grateful to all the research participants in various villages, protected areas and public and private institutions and organizations who shared their time and knowledge of the Serengeti ecosystem with me. They did me a great service and they deserve thanks.

Above all I am incredibly grateful to my family for great sacrifices you underwent for all the time I was away for my studies. Due thanks are to my wife Juliana-Bahati Jonasi Shirima, I thank you very much for taking care of our family and parents despite your busy schedules in school. You have really mastered the matriarch role while still *mpora* (a newly wedded). My brothers and sisters, in-laws and your families in Tanzania, Kenya and United States, I am indebted to your support for all my schooling years. Most sincerely you have been a candle light to me and I cherish your sincere love, may God grant you a prosperous future. *Aikenyi sana wana wa-ama na kishari. Mndumii nawa wanze ukundi, pfinya na kirumi.*

I am also indebted to my friends and families in Canada who made me feel happy during my stay in Canada. Ms. Janice Riseborough, Mr. Walt Astofooroff and Mrs. Joanne Astofooroff, Mr. Bob Juras and Mrs. Mirijana Juras, I thank you very much and you are welcome to Tanzania - *The land of Kilimanjaro and Serengeti*. I am also indebted to my fellow students in the MPARG lab for their support in particular Masuruli B. Masuruli, Enock Makupa, Agyare Andrew, Emanuel Aquah, Jones Arthur, Nathan

Bennett, Luba Restchniwsk, Melisa Hauzer and Sky Augustine. You all provided a wonderful lab team. I am also indebted to the administrative staff in the Geography department in particular Darlene Lee.

Lastly, my sincere regards to all people and organizations I interacted with during the course of my PhD studies. In one way or another you have all helped in the accomplishments of this work, I am sincerely grateful for your support and hope that your support is not left unacknowledged.

DEDICATION

This dissertation is dedicated to my parents, my *papa Mwalimu* Ndesiotafu Wilbard Kisingo Temu and my *mama* Mka-Rauya Ida Issack Silayo. You were my first teachers and mentors into education life and you taught me to respect and love the environment. *Ikyo mulengilosha nakyo kingisitsie iha. Aikenyi sana wafee wako na Mndu mii nawatarame nawawanze pfinya, ukundi na maka ifoi iha uyana.* Dedication also goes to the late *Sokoro* Kitenana Yohane Mo'Chaambiri of Bwitengi village in Serengeti District. The numerous stories you made to me about the pre-colonial Serengeti and co-existence with wildlife before the creation of PAs natured in me an interest in wildlife conservation.

CHAPTER 1 INTRODUCTION

*"The survival of our wildlife is a matter of grave concern to all of us in Africa.
These wild creatures amid the wild places they inhabit
are not only important as a source of wonder and inspiration,
but are an integral part of our natural resources
and our future livelihood and well being..."*
Julius K. Nyerere, Arusha Manifesto, 1961

1.1 Background information

1.1.1 Study purpose, objectives and research questions

The purpose of this dissertation is to assess the contribution of protected areas (PAs) in the greater Serengeti ecosystem in Tanzania to the attainment of both conservation and social goals, including poverty reduction. The dissertation focuses on the role of governance as a factor influencing the attainment of these goals. Governance of PAs refers to “the interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders get their say in the management of PAs” (Graham et al., 2003:2). To contribute to this research purpose the following research objectives were posed;

1. To evaluate the effectiveness of PA governance as perceived by respondents (stakeholders) using a quantitative approach.
2. To explore different approaches to PA governance on the Serengeti ecosystem, and to examine the effectiveness of each form of governance, as perceived by communities (households).
3. To examine conservation and social outcomes of PAs in the greater Serengeti ecosystem, and to relate these findings to PA governance structures, particularly relationships between different actors (linkages).

The study feeds into a wider scale study, “Protected Areas and Poverty Reduction, a Canada-Africa Research and Learning Alliance” (PAPR). The aim of PAPR is to address the

challenges of reducing rural poverty and promoting environmental sustainability through a focus on PAs and adjacent communities in Canada, Tanzania and Ghana

(<http://www.paprproject.com/>).

The purpose of this introductory chapter is to describe the research purposes and objectives, review pertinent literature on the subject of PAs and governance, set out research methods used, provide the general outline of this dissertation, and propose a knowledge mobilization plan for the findings.

1.1.2 Biodiversity conservation and protected areas

Conservation goes back thousands of years to when areas were set aside as hunting reserves and/or as special places related to cultural and spiritual values (Gurung, 2010; Reeve, 1998). Species and habitats were traditionally conserved owing to their importance to the livelihood of communities. Some were even considered sacred. For example, Herodotus, a Greek historian who lived and traveled in the 5th century BC, reported that Egyptian societies (from about 3000 BC to about 300 AD) worshiped sacred, glossy and hermit ibises as the God Thoth (God of Wisdom). These species were highly protected, and the intentional or accidental secular killing of the sacred ibis was punishable by death (Outwater, 2011). In another account, more than 2000 years BP an Indian emperor Ashoka established the first recorded “game laws” that provided protection for certain species of mammals, birds and fish (Talbot, 1984). Emperor Ashoka further established protected forest areas aimed at controlling human activities to avoid harmful impacts on wild living resources, which in turn affect human wellbeing (Talbot, 1984). These places had systems for regulating interactions between individuals and the environment, and resolved conflicts over environmental resources (Paavola, 2007; Reeve, 1998).

Despite the long history of conservation and PAs, global biodiversity has continued to decline at a rapid rate, with several species becoming extinct due to human influences. The past four decades has seen a rapid decline in population and extent for vertebrates in both marine and terrestrial habitats (Butchart et al., 2010). This rate of biodiversity loss potentially increases the vulnerability of ecosystems to changes in climate and ocean acidity, and reduces the safe boundary levels of ecosystem processes (Rockstrom, 2009). Human activities responsible for this loss in biodiversity include conversion of natural ecosystems to agriculture and other land uses,

wildfires, increase in aggregate human consumption of the planet's ecological assets, deposition of reactive nitrogen, overharvesting of fish stocks, and the introduction of new species into land and freshwater environments (Butchart et al., 2010; Rockstrom, 2009). It is this catastrophic decline in biodiversity that provides the rationale for PAs and a need to integrate biodiversity into broad-scale land use planning (Butchart et al., 2010:1168).

In the past two decades, conservation has followed two major approaches: 1) establishing PAs to protect wild species and natural systems, and 2) promoting restraints in the harvest and consumption of wild species and their products (Chape et al., 2005; Kideghesho & Mtoni, 2010; Robinson, 2011). This study focuses on the role of PAs, defined as “a clearly defined geographical space, recognized, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Dudley, 2008:8). PAs are set aside to maintain functioning natural ecosystems, to act as refuge for species, to maintain ecological processes, and to provide social benefits for local communities, such as economic revenue generated from nature-based tourism (Dearden et al., 2005; Dudley, 2008).

As scholars have noted, not only do PAs serve a variety of key purposes, they are diverse in terms of their specific objectives, size, and protection status (Gillespie, 2009). Over the past century, the global number and extent of nationally designated PAs have dramatically increased, approaching 160,000 terrestrial and marine PAs, covering over 24 million square kilometers (UNEP-WCMC, 2012). Dudley (2008) presents the IUCN definitions of different types of PAs based on their objectives and management systems, and how PA systems are developed and managed (Table 1).

Table 1. IUCN Categories of Protected Areas

Category	Description
I (a) Strict Nature Reserves	Areas strictly set aside to protect biodiversity and geological/geomorphological features; human visitation, use and impacts are strictly controlled.
I (b) Wilderness Areas	Large unmodified or slightly modified areas protected and managed to preserve their natural conditions.
II National Parks	Large natural or near natural areas set aside to protect large-scale ecological processes, provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.
III Natural Monument	Areas set aside to protect specific natural monument. They are generally quite small and often have high visitor values.
IV Habitat/Species Management Areas	Aim to protect particular species or habitats. Most often need regular, active interventions.
V Protected Landscape/Seascape	Areas where long-term interactions of people and nature has produced significant ecological, biological, cultural, and scenic value.
VI Managed Resource PAs	Conserved ecosystems and habitats, together with associated cultural values and traditional natural resource management systems, e.g. sustainable natural resource management.

Source: Summarized from (Dudley, 2008).

1.1.3 New forms of PAs: a shift in conservation paradigm

Some conservationists favor what may be thought of as “*strict conservation*”. These scholars argue for more attention to biodiversity conservation in all aspects of design, implementation and governance of PA projects (e.g. Locke & Dearden, 2005; Miller et al., 2011). Miller et al. (2011) argue for PAs and conservation policies that strictly limit human presence, and advance biodiversity protection as the primary goal of conservation efforts (Miller et al. 2011). PAs that rely on extraction and uses of the nature resource base have been critiqued as ecologically unsound and exacerbating ecological impacts by encouraging people to move closer to PAs (McShane et al., 2011; Scholte & de Groot, 2010; Songorwa & du Toit, 2007). In this view, the bottom-line is that PAs need to concentrate on conservation outcomes. At the same time, when there is a need to broader social and economic issues, these can be used as a vehicle to sustainable management of resources.

Other scholars, the “*social conservationists*”, advocate for sustainable use, privileging conservation-oriented development and welfare-oriented goals such as poverty alleviation and social justice (Miller et al., 2011). These kinds of conservationists argue for a “new paradigm”

for PAs which focus attention to include social and economic objectives as well as conservation and recreational ones, while also helping to meet the needs of local people (Philips, 2003). They argue that costs associated with PA initiatives, ranging from crop destructions, livestock predation, conflicts between human and wildlife and between local communities and conservationists, are rarely compensated (Igoe & Croucher, 2007; Kideghesho & Mtoni, 2010). To these scholars, how effectively these demands are met will determine to a large extent whether the enormous increase in PAs remains in perpetuity or if much of it will gradually be degraded and, in time de-gazetted (Stolton, 2010).

Within this debate, it is also noted that the traditional top down state imposed approach to the designation and management of PAs (the strict conservation approach) has often had negative impacts on livelihoods of nearby communities, through forced displacement and denial of access to natural resources that are vital to human needs (McShane et al., 2011). For instance, over 85% of PAs established in Latin America and sub-Saharan Africa were associated with state expropriation of customary tribal lands, dismantling villages, exiling communities, and denial of access to natural resources (Hess, 2001; Lockwood, 2010; Sachedina, 2008; Veit et al., 2008). This history has resulted in PAs being associated with poverty among their neighboring communities. However, Wittemyer et al. (2008) found PA creation may benefit rural inhabitants by providing access to road networks, employment, foreign aid, increasing scarce ecosystem services (e.g., firewood, bush meat, and clean water), and areas of safety during strife. These increased social, economic and occupational opportunities are what cause human population growth around PAs to be significantly higher than that observed in matched areas away from PAs (Ferraro et al., 2011; Wittemyer et al., 2008).

Several factors influenced the change in conservation paradigm from state-led to community involvement in conservation. Such factors included resolutions after the World Park Congress (WPC) in Bali in 1982 and the mainstream development theories in the late 1970s and early 1980s. Such mainstream policies advocated for local empowerment, popular participation, democratization, and devolution of power, all of which influenced the conservation and development processes and brought with it new demands in re-examining PAs and how they are managed (Balducci, 2009; Naughton-Treves et al., 2005). The argument has been for PAs to allow the local communities to benefit materially and socially from PAs by augmenting local incomes

(Naughton-Treves et al., 2005; West & Brockington, 2006). A related assumption made was that PAs could become more effective and sustainable if local users were able to manage, or at least be involved in the management of the resource, and derived benefit from it (Baldus, 2009). The Convention for Biological Diversity (CBD) reaffirmed this by making fair and equitable sharing of the benefits arising out of the utilization of genetic resources among its core primary objectives (CBD, 1992). The 1992 Rio Declaration Principle 10 recognizes environmental issues as best handled with the participation of all concerned citizens at the relevant levels.

One aspect of the new paradigm is the emergence of “community-based conservation” (CBC). Despite the good reasons, some CBC projects are said to be too bureaucratic in implementation, involving costly, complex procedures that communities are unable to follow (Nelson et al., 2007). CBC programs have in some cases failed to show their values at household levels as benefits from CBC sponsored projects are sometimes realized at the community level (Kaltenborn et al., 2008). Furthermore, some CBC approaches are thought to have resulted at times in degraded areas (Persha & Blomley, 2009). For example Persha & Blomley (2009) found that although there was significantly less illegal logging in the communal forest managed areas in Tanzania, subsistence pole cutting was common. Furthermore, the communally managed forest areas were most disturbed by recent logging and pole cutting, which manifested in more degraded indicators of forest conditions (lower mean tree size, basal area, density of trees < 90 cm dbh, and aboveground biomass and higher overall stem density) (Persha & Blomley, 2009).

The new paradigm in conservation set foot in Tanzania following a combination of factors. First are the resolutions from the 1982 World Park Congress in Bali that discussed the need for involving communities in conservation (Dasmann, 1984). Secondly, the economic hardships that faced the country in 1970s and 1980s coupled with the IMF and World Bank economic policies which among other things aimed at reducing spending by central governments (Desai, 2009). These economic conditions had a serious impact in the availability of financial resources for employing and paying PA staffs but also for paying other services in the PAs. This created an increased wave of poaching which created a need for more community involvement in pilot projects in the Selous and western Serengeti ecosystems. Thirdly, CBC was cemented in 1998 with the release of the first wildlife policy in Tanzania which recognized the role of local communities in conservation. This marked the establishment of the new forms of wildlife PAs in

Tanzania, the “Wildlife Management Areas” (WMAs). These are PAs established for purposes of effecting community-based wildlife conservation in areas which are: (a) outside of core PAs; (b) used by local community members; and (c) within the village land (United Republic of Tanzania, 2007, 2009). WMAs are established to provide local people with management responsibility and usage rights over the wildlife resources with the expectation of halting loss of wildlife populations, and ensuring that local people benefit from their conservation (Wilfred, 2010). WMAs are heralded by Tanzania as a home grown CBC approach, meant to promote conservation outside PAs and to bring prosperity to rural communities by giving rural people the authority and capacity to conserve wildlife on their own land, and to allow them to partner with investors in wildlife-based business ventures (Igoe & Croucher, 2007). WMAs are expected to adhere to mechanisms of equitable distribution of costs and benefits targeted at promoting wildlife conservation, enhancing economic development and poverty reduction (United Republic of Tanzania, 2009). Details of WMAs operations are provided by Nelson et al. (2007).

Despite these developments, WMAs are faced with several challenges, such as the rapid increase in human pressure as people are attracted to these areas in anticipation of improved livelihoods. This has created management problems in the WMAs, including human land-use activities that limit wildlife dispersal and potentially destabilize wildlife population dynamics, poor resource use diversification, and lack of sustainable use of natural resources in the WMAs (Wilfred, 2010). All of these challenges contribute to undermining the contribution of WMAs to conservation and sustainable livelihoods.

1.1.4 Involvement of actors in PAs governance

Persistent poverty, accelerated resource depletion, climate change, and ecosystem degradations are challenges to biodiversity conservation and thought to be compounded by inadequate governance (Dietz et al., 2003; McShane et al., 2011). In some instances, the absence of effective governance institutions can limit the effectiveness of PAs in meeting conservation and social outcomes. It is argued that centralized state ownership of resources such as wildlife, forest and fisheries, and failure of the central governments capacity to enforce restrictions on use has sometimes led to conditions of open access exploitation (Nelson, 2010). Examples of this failure include the destruction of many of the world’s fisheries, and pasture lands in many regions, such as East African rangelands. Thus, reengineering of PA governance is aimed at

bringing more players on board in order to attain conservation objectives. This contributes to the observation that PAs usually contribute to conservation when managed effectively (Dearden et al., 2005).

Processes of decentralization for natural resources management in many countries over the past three decades have often promoted local, more democratic participation in governance (Ngoitiko et al., 2010). Such reforms have meant that top-down and state dominated PA governance arrangements have been contested and often replaced by collaborative management, partnership arrangements, delegated authority, and community arrangements (Dearden, 2002; Lockwood, 2010). As mentioned previously, this led to the change in conservation orientation to involve local communities since the World Park Congress in Bali (1982). However, it is argued that in some cases governments have retained considerable power, resulting in weakened incentives for communities to promote conservation. This can exacerbate negative attitudes and hostilities amongst local communities towards PAs (Kideghesho, 2006). These issues have contributed to the attempts to shift conservation power and responsibilities to indigenous and local communities, non-governmental organizations (NGOs) and individual landholders (Baird & Dearden, 2003; Borrini-Feyerabend et al., 2006; Lockwood, 2010).

In response to changes in conservation actors, diverse PA governance models and structures have emerged beyond the traditional direct management by government agencies. The fifth World Parks Congress in Durban in 2003 recognized four categories of PA governance (Borrini-Feyerabend et al., 2006). These PA governance models are categorised based on decision-making, ownership, management authority, and responsibilities, as briefly discussed below (Dudley, 2008; Kothari, 2006a, 2006b; Ostrom, 1999);

- *Government PAs* involves a government agency or body holding authority, responsibility, and management accountability under state property regime.
- *Private governance* involves PAs falling under individuals, cooperatives, NGOs or corporate control and ownership under private property regimes.
- *Community conserved areas* are natural and modified ecosystems with significant biodiversity, ecological services and cultural values, voluntarily conserved by indigenous

peoples in local and mobile communities through customary laws or other effective means.

- *Collaboratively managed PAs* are officially designated PAs where decision-making power is shared between state agencies and other partners including indigenous peoples and local communities, NGOs, individuals, or private sector institutions.

Good governance is a prerequisite for effective management of global PA systems, and is fundamental to securing the political and community support essential for their development and, indeed, their survival (Locke & Dearden, 2005). The changing conservation environments call for changes in ideology to encourage and support rural populations to value and desire conservation and PAs (Lockwood, 2010; Polasky et al., 2008).

Effective PA governance requires mutual understandings and support amongst actors. This entails a number of considerations: careful definition of user rights and responsibilities in PAs, greater participation by those dependent on the resources, downward and horizontal accountability of decision-makers, better monitoring of PA outcomes, stronger enforcement of property rights and governance arrangements, and investment in institutional capacities at local, regional, and national levels (Agrawal et al., 2008). To elaborate on some of these considerations, definition of *user rights* and responsibilities, and *enforcement of property rights* gives land owners, especially at local levels, participation in decision-making for PA resources resulting in increased stewardship towards such resources. *Downward accountability* requires that PA decision-makers are answerable to the stakeholders at local level, which is important for communities to hold PA management and decision-makers accountable for their actions. On the other hand, *horizontal accountability* involves answerability of PA management and decision-makers to other PAs, NGOs and district administration. Instituting accountability of decision makers allows a more transparent decision-making with regard to investments, conservation decisions, which can potentially results in more support from local actors to PA management processes and actions.

In an international study of PAs, Dearden et al. (2005) found a shift from government as a sole decision-making authority, to consultative decision-making where more actors are brought on-board. However, there is still a great deal of power owned by the government that has not

diffused to other PA actors. For example, central governments still own over 86% of world's forest and wooded areas, with private and communal ownerships accounting for the remaining proportion (Agrawal et al., 2008). Even though there is a strong move to shift from state control to people centered governance arrangements, state orientation is still useful under certain circumstances such as in managing endangered species (Baird & Dearden, 2003). Furthermore, both formal PAs and CBC play important roles in landscape management to reflect societal values, but a common societal acceptance of the needs for PAs is needed (Dearden, 2002). For example, in some instances high value resources attract attention from both protection and destruction, making it important to have government ownership in place or some sort of mixed management between the locals/resource users and the government (Baird & Dearden, 2003).

As a consequence of these developments, current thinking about PA governance strives to take decision-making authorities to more actors through coordinating of social relationships, shaping of power relations, and setting direction to achieve strategic objectives (Heck et al., 2011; Jones et al., 2011; Robinson, 2011; Stoker, 1998). Good PA governance responds to the principles and values freely chosen by the affected peoples of a country and enshrined in their constitution, natural resource laws, PA legislations and policies, cultural practices and customary laws (Dudley, 2008). The United Nations Development Program (UNDP) brought forward principles of good governance that have been further synthesized by the Institute on Governance and summarized into five key principles (Table 2).

Table 2. Human rights principles of good governance as synthesized by the United Nations Development Program (UNDP) and Institute on Governance

Principles by Institution	
Institute on Governance	UNDP
Legitimacy and Voice	Participation; Consensus orientation
Direction	Strategic vision
Performance	Responsiveness; Effectiveness & Efficiency
Accountability	Accountability; Transparency
Fairness	Equity; Rule of law

Summarized from (Graham et al., 2003)

Governance principles are essential in PA governance as they provide a yard stick for assessing the quality of existing governance regime (Graham et al., 2003). The Durban Congress and the CBD-Program of Work on Protected Areas encouraged improving the quality of governance, through establishing criteria, principles and values to guide actions (Borrini-Feyerabend et al., 2006). In putting forward good governance principles, societal context needs to be considered in their implementation (Graham et al., 2003). This is a result of values held or assigned to PAs by different actors in the society (Robinson et al., 2012). Thus, the relevant actors (stakeholders) are better placed to determine, understand and define what constitutes good governance in a given situation (Borrini-Feyerabend et al., 2006; Graham et al., 2003). The bottom-line should not necessarily be to make local communities have the final say in decisions, but rather to ensure communities are part of decision-making for the PAs and to understand the rationale for those decisions (Dearden, 2002). However, in some areas this involvement of PA actors in decision-making for PAs in their locality remains a challenge.

1.1.5 Insularized PAs, the issue of scale, and a need for ecosystem-based management

A major concern of PA management and governance has to do with scale and the relationship of PAs to surrounding landscapes, including other PAs, other resource management regimes, and nearby communities. For example, it is argued that landscapes under private or community ownership can extend and link PAs across a mosaic of landscapes, ecosystems and property types (Kitamura & Alex, 2013:211). This has given rise to a consideration of ecosystem-based management (EBM) and related approaches. EBM refers to a comprehensive approach that involves sustainable management of natural resources while recognizing the position of humans in the process of producing these services (Espinosa-Romero et al., 2011; Grumbine, 1994). It comes with the realization that different components of an ecosystem may flow across to adjacent land uses and where social values may vary. Cooperation between many actors and institutional sectors of the society is required to manage what are often complex and complicated interactions (Johnson & Agee, 1988). For example, in the Serengeti ecosystem, elephants move in and out of PA boundaries, damaging crops and causing destruction to properties in the process while, lions and wild dogs are known to move from Serengeti PAs and attack livestock in the surrounding villages. Within the context of PAs, EBM focuses on the

relationships between a PA and the larger ecosystem containing the PAs, to include the human component (villages) and the other land uses.

Due to increased insularisation of PAs and the need to involve other land uses in conservation, EBM is advocated by some scholars to protect ecological structures, while providing sustainable flows of goods and services for people (Forbes et al., 2003; Newmark, 1996). The success in EBM involves meeting intended objectives through inclusive public involvement and participatory consensus approach in integrating and balancing goals for PAs and adjacent areas (Berkes, 2012; Keough & Blahna, 2006). However, implementing EBM is made challenging because of competing interests among stakeholders, undeveloped or inappropriate governance structures, poor science, or lack of political will and capacity. For example, centralized state-sponsored EBM plans often ignore sustaining and fostering of ecological services (Aswani et al., 2012). The EBM approach, stands in contrast to the managing solely at the PA level - an approach that limits the potential of PAs to realize important conservation and social outcomes.

In a similar vein of thinking as EBM, the social-ecological system model recognizes patterns of resource use and management by humankind as complex social-ecological systems composed of multiple subsystems and internal variables at multiple levels (Ostrom, 2009). In complex social-ecological systems resource systems (PAs, land uses), resource units (wildlife, livestock), users (tourists, pastoralists), governance systems (PA agencies, community-based organizations - CBOs), and local government administration interact to produce outcomes through a system of feedbacks (Ostrom, 2009).

1.1.6 Development, poverty and PA management

Development considerations need to be taken into account when discussing PA management. However, the whole meaning of development has been a confusing concept as it has changed focus over time depending on the prevailing economic and political atmosphere. While development ideas have their roots to older debates about modernity and progress that stretches back to at least the 18th Century (Kiely, 2007), the modern concept of development can be traced to the speech by Harry Truman, the president of the United States of America in 1949 who spoke of underdeveloped areas (Schafer et al., 2009). Truman mentioned inadequate food,

disease, primitive economic life, and poverty as measures for underdevelopment while recognising scientific advancement and industrialization as indicators for economic development (Schafer et al., 2009). Its featuring in academic field started in the decades following the end of WWII and the launch of ‘international development’ as both academic and political project with policy implications. After this speech and for several decades, ‘development’ was traditionally defined and understood in economic terms with levels of industrialization and economic growth being key indicators of “development”. These principle economic measures of development were sometimes – and slowly – supplemented with other non-economic social indicators, such as gains in literacy, schooling, health and welfare, political participation and democracy, urbanization, technology, higher income and greater material welfare (Desai, 2009). These were referred to as the ‘social indicators of development’.

During the 1970s, economic development came to be redefined in terms of the reduction or elimination of poverty, inequality, and unemployment within the content of a growing economy. “Redistribution from growth” became a common slogan. In other words, economic growth was still seen as central to development, but additional issues were integrated into the understanding of what constituted development (Desai, 2009). Things started changing following the debt crisis in 1970s and 1980s. Structural adjustment policies (SAPs) were designed and imposed on countries in the global south with pretext to increase global competitiveness, including trade and investment liberalisation, followed later in 1990s by removal of controls on the movement of financial capital (Kiely, 2007). Neo-liberal policies saw the International Monetary Fund (IMF) and World Bank acting as instruments of the capitalist powers to restrict state intervention in economies of developing nations. Neo-liberal policies often implemented through Structural Adjustment Programs (SAPs) entailed comprehensive state intervention to re-engineer whole economies in favour of private often foreign financial capital (Desai, 2009). However, neo-liberal policies are contested by the fact they are a double standards where by developed countries achieved their developed status by adoption of protectionist policies to their economies (Kiely, 2007), while these policies push for freeing the developing economies from such protectionist policies.

Linked to economic development is the relationship between development and poverty. Thus development is sometimes defined in relation to adequacy of human dwellings, adequacy

of infrastructure (such as roads, schools, and communication systems), adequacy of nutrition and healthcare (Schafer et al., 2009). On the other hand, poverty can be considered as a multi-dimensional phenomenon, involving not only vulnerability and a lack of assets/opportunities, but also lack of power or voice (World Park Congress, 2003). Poverty includes the social and psychological burdens of daily survival entailing lack of capabilities that enables a person to live a life he/she values, encompassing such domains as income, health, education, empowerment, and human rights (Schafer et al., 2009; Sen, 1999). Poverty is the state for the majority of the world's people and nations – especially for those in the so-called developing world: countries in Africa, Asia, and Latin America. Out of seven continents of the world, Africa is the poorest continent in the world. Thus, it is no surprise that there is an important link between development, poverty alleviation and PA management. PAs can contribute to poverty alleviation and hence development of neighbouring communities in a number of ways: through the sustainable harvest of resources within PAs, through the impact of PA staff on local businesses, through the impact of tourists on local business, and through provision of employment (e.g. in park concessions).

For years, “economic advancements” such as the expansion of cities, growing levels of industrialization and other related changes has been viewed as responsible for much of the environmental degradations in the world, from loss of wetlands and wildlife habitats to agriculture, pollution of soils, water and air, to increase in greenhouse gases leading to climate change, which in turn can undermine economic development (World Commission on Environment and Development, 1987). Thus the quest for economic development alongside the desire and actions associated with improving all citizen's quality of life need to be understood with reference to resource limitation, the carrying capacity of ecosystems, and the needs of future generations (Talbot, 1984). This consideration aligns and builds on past international declarations on sustainable development including those in Stockholm (1972), Rio de Janeiro (1992) and Johannesburg (2002). These declarations advanced the notion of “three pillars of sustainable development”: environmental, economic and social (Anríquez & Stamoulis, 2007). Environmental sustainability is also included in the Millennium Development Goals (Goal 7) and country specific economic growth and poverty reduction programs. For example, Tanzania's National Strategy for Economic Growth and Poverty Reduction II (NSGPR II) recognizes sound economic governance of natural resources as critical for poverty reduction (United Republic of

Tanzania, 2010). This strategy recognizes that lapses in natural resource governance have the potential to severely hamper production and productivity that poor people are dependent on for their livelihood (United Republic of Tanzania, 2010). Thus, economic activities of any kind (including PAs) should promote life sustenance, through provision of adequate income, employment, improvement in income distribution, an adequate education, and political participation (Seers 1979 as cited in Schafer et al., 2009).

Intact ecosystems provide a wide range of benefits, from the water and climate regulation roles, waste assimilation and storm regulation, the cultural and aesthetic benefits, ecosystem processes, raw materials and recreational opportunities (Fisher et al., 2011). For example, Nelson (2010) asserts that the majority of Africa's human population relies on the resources that grow or live on the land, and the ecological services which underpin agricultural and pastoral livelihoods. Despite this contribution, it is estimated that 60% of the world's ecosystem services are being rapidly degraded (Millennium Ecosystem Assessment, 2005). This degradation has caused PAs to be useful in ensuring sustenance of important life support systems and ecological processes.

PAs provide refuge for species and ecological processes and also space for natural evolution and future ecological restoration (Stolton, 2010). PAs have at times helped push local economies out of the poverty trap, by providing tourism business opportunities, supplying ecosystem services, improved infrastructure, or enhanced supplies of ecosystem services (Andam et al., 2010; Ferraro et al., 2011). For example, Balmford et al. (2002) estimated total goods and services from effective global PAs network to be between US \$4400 and US\$5200 billion annually. Furthermore, Richardson et al., (2012) found households in Game Management Areas in Zambia enjoyed higher levels of income overall, particularly through wage earnings and self-employment. These findings explain the close linkage between conservation of environment and natural resources to economic and social development.

Currently, the rapid rate of land-use and resource change taking place in many tropical countries increases the need to act fast to secure strong PA networks (Stolton, 2010). Likewise, conservation is increasingly looking beyond PAs to entire ecosystem management (Stolton, 2010). The consequences of conservation activities are experienced, perceived, and understood differently between different groups in societies, as a function of social systems and pre-existing

power relations (Hirsch et al., 2011). Thus, it is critical to consider different scales (ecological, socio-economic, spatial and temporal) and context, as characteristics of decision-making differ from one social-ecological landscape to another (Hirsch et al., 2011). The emerging social paradigm means that different stakeholders are expected to have a say on the creation and management of a PA. Also, how PAs are managed will often depend on a complex process of negotiation, trade-offs and agreements (Stolton, 2010). However, these changes should avoid putting at risk the integrity of PA conservation values.

1.2 The Study area

This section covers aspects of the study area. It begins with the general overview of PA issues in Tanzania and then center to the Serengeti ecosystem (Figure 1).

1.2.1 Global significance of Tanzania's PA system

Tanzania is endowed with a number of PAs that make up over 35% of its total land area (World Bank, 2011). The country is home to some globally renowned PAs covering important ecological, landscape and scenic features and providing habitats for some of the world's endangered species of wildlife such as black rhinos, African wild dogs and elephants. Tanzania PAs are renowned in Africa for high concentrations of endemic species of animals and plants (Green et al., 2012). For example, in the Eastern Arc Mountain Nature and Forest Reserves at least 96 vertebrate species are endemic, including four endemic or nearly endemic species of primate (Green et al., 2012). The Selous Game Reserve, which is also a World Heritage Site, is the largest PA in the African continent with over 54,000 square kilometers (United Republic of Tanzania, 2007). The Serengeti and Kilimanjaro National Parks and Ngorongoro Conservation Areas are all World Heritage Sites (UNESCO, n.d.).

Apart from conservation aspects, the Tanzanian PAs are the base for the rapidly growing nature-based tourism industry. Tanzanian PAs provides opportunities for wildlife-based tourism (photographic & hunting), ecotourism, adventure tourisms and geo-tourism (Eagles, 2002). Tourists get the opportunity to visit and learn, and to appreciate nature while providing an important contribution to economic growth and poverty alleviation (Eagles, 2002).

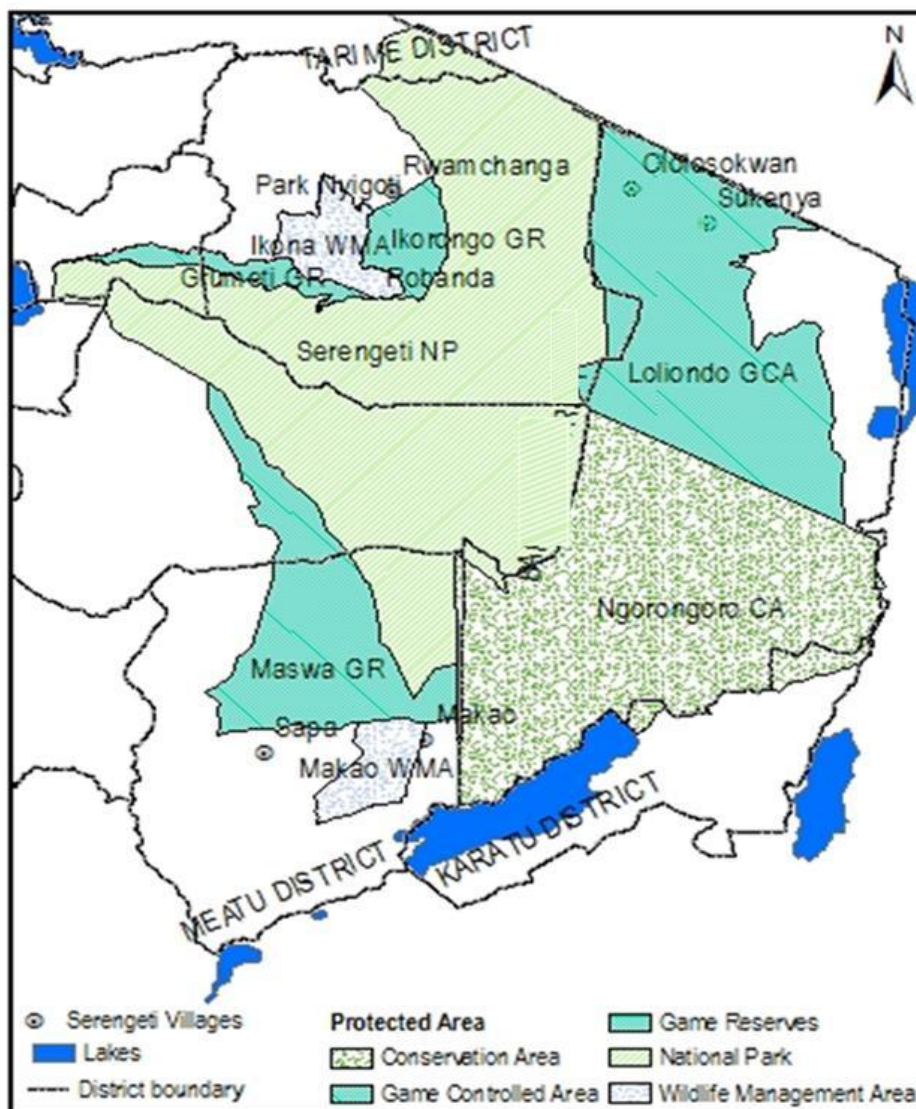


Figure 1: Location of the Serengeti ecosystem in Tanzania

1.2.2 Challenges to PAs in Tanzania

Tanzanian PAs face challenges with historical, political, anthropogenic and ecological origins. These challenges are discussed in the following sections, with particular attention focused on: PA categorizations, human population increase and associated pressures, and governance failures. Before discussing these challenges, it is important to identify the coverage of PAs. Tanzania has extensive coverage of PAs which include nature reserves, national parks, game reserves, marine and forest reserves that fall under IUCN categories I-VI (Table 3). However, despite the wide coverage of PA estates in Tanzania, only a few of these are within the core conservation categories I-IV, while many of the PAs fall under IUCN categories V and VI.

Having few PAs under higher PA categories (I-IV) increases the challenge to not only PAs but also the general conservation priorities particularly in ecosystems where sensitive resources (e.g. migratory species and watersheds) are covered by small part that fall under categories I-IV while the rest of the area falling in lower PA categories.

Table 3. Categories of PAs in Tanzania

Tanzanian PA category	IUCN Category	Management Authority	Management description in Tanzania
Nature Reserves	Ia (Strict Nature Reserve)	Forest Division	<ul style="list-style-type: none"> Managed for biodiversity conservation
National Parks	II (National Park)	Tanzania National Parks	<ul style="list-style-type: none"> Managed for conservation of resources through non-consumptive tourism activities
Ngorongoro Conservation Area	III (Natural Monument) and V (Protected Landscape)	Ngorongoro Conservation Areas Authority	<ul style="list-style-type: none"> Managed for wildlife and tourism activities with support to livelihood of communities residing in the PA
Game Reserves	VI (Managed Resource Protected Areas)	Wildlife Division	<ul style="list-style-type: none"> Managed for tourist hunting Settlement prohibited except for families of employees
Forest Reserves	V (Habitat Management Areas)	Forest Division	<ul style="list-style-type: none"> Forest areas managed for biodiversity, water-catchment and forest products
Marine Parks and Reserves	II (National Park)	Marine Parks and Reserves Unit	<ul style="list-style-type: none"> Marine areas managed for biodiversity, tourism and associated livelihoods
Game Controlled Areas	VI (Managed Resource Protected Areas)	Wildlife Division/District Councils	<ul style="list-style-type: none"> Settlement and other land uses prohibited and hunting under licence from Director of Wildlife
Wildlife Management Areas	VI (Managed Resource Protected Areas)	Wildlife Management Areas Authorized Associations	<ul style="list-style-type: none"> Promote conservation outside formal PAs by giving people authority and capacity to engage in wildlife management activities. Local communities allowed to partner with investors in wildlife based business

Human population growth and associated conflicts such as habitat loss and fragmentation

Human population growth is already being acknowledged as a significant conservation problem in Tanzanian PAs (Polasky et al., 2008). The population of Tanzania has grown rapidly from around 12 million in 1967 to about 45 million in 2012 (United Republic of Tanzania, 2013). It is also documented that population increase has been higher around some PA boundaries when compared to other areas (Estes et al., 2012). Although comparative population data for the Serengeti ecosystem over this period is not available, it can be noted that from 2002 to 2012 the Serengeti experienced population growth from 2,318,903 to 2,903,484 (an increase of 25.2% in 10 years) (United Republic of Tanzania, 2002, 2013)¹ (Figure 2). Regions in the Serengeti ecosystem have therefore experienced annual average population growth rates of between 2% and 4% since 1988 (Polasky et al., 2008). This population increase around PAs within the ecosystem has resulted in conflicts associated with PA boundary extensions, encroachment for PAs, and the persistent use of force by both conservationists and communities (Ngoitiko et al., 2010). The challenge is how to conserve wildlife within the context of a growing human population that places a high priority on the economic development necessary to reduce poverty (Polasky et al., 2008).

¹ Population estimates based on Ngorongoro, Serengeti, Rorya, Tarime, Munda, Magu, Busega, Itilima, Bariadi and Meatu districts

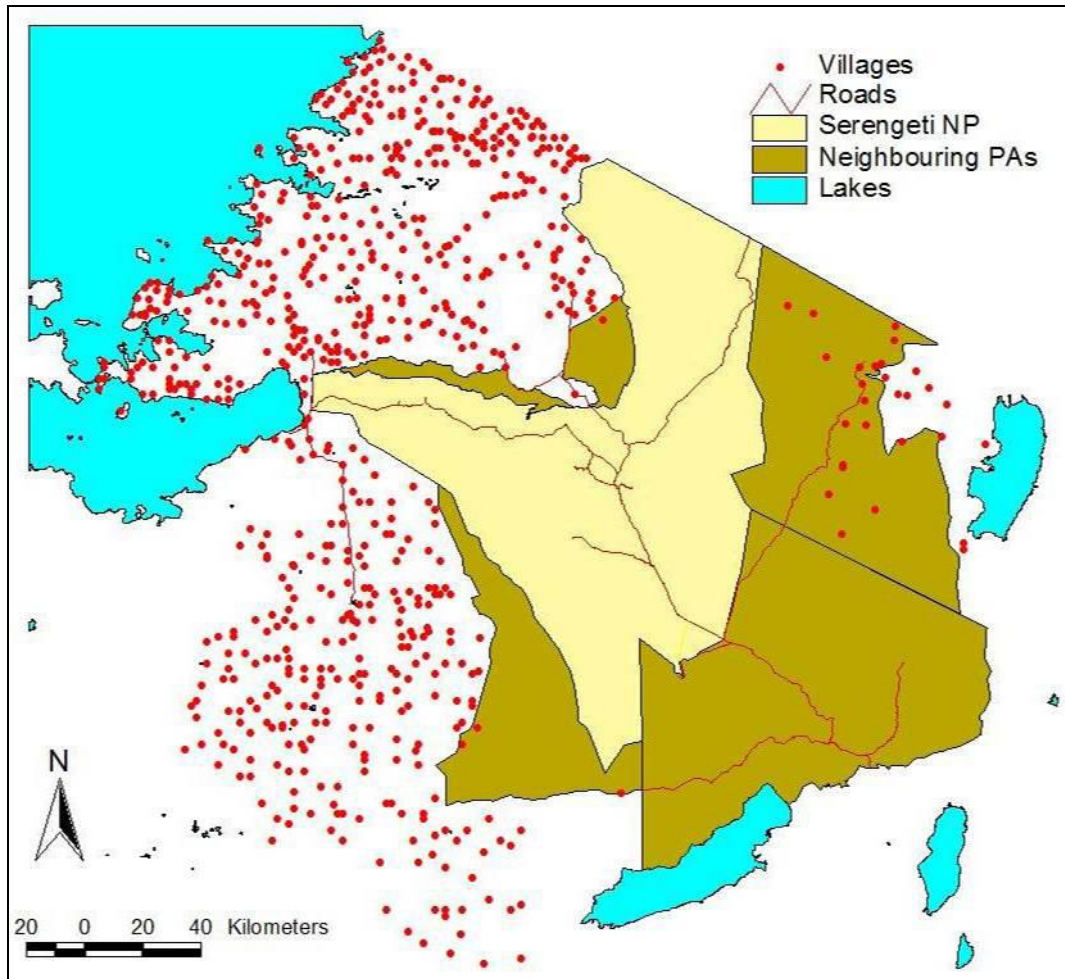


Figure 2: Settlement distribution around the Serengeti ecosystem (Source: Tanzania National Parks, 2005)

Decentralization and recentralization; failures in governance

Decentralization refers to “any political act in which a central government formally cedes powers to actors and institutions at lower levels in a political-administrative and territorial hierarchy” (Ribot et al., 2006:1865). For example, decentralization can involve transferring of natural resources ownership and management responsibilities to the lower levels of community administration such as a village council. On the other hand, recentralization refers to a variety of strategies used to obstruct decentralization by transferring insufficient or inappropriate power, choosing local institutions that favor the interests of central governments, or making policy and implementation choices that serves to preserve the central interests and power (Ribot et al., 2006).

In Tanzania, various degrees of decentralization have taken place with respect to some PAs and the country has seen the emergence of community-managed PAs and other forms of collaborative management since mid 1990s following the economic reforms. These processes have enabled the inclusion of more actors in PA governance and opened up conservation initiatives and the tourism industry to local and foreign investors such as tourism operators and hoteliers. However, despite successes in the Tanzanian forest sector, policy and legal reforms in 1990s including widespread ecological recoveries and new local benefits, power over PAs remains concentrated in the central government. This is seen by some as a hijacking of the rights of villagers to determine access and rights to resources (Blomley et al., 2008; Nelson, 2010). Furthermore, the Tanzania Wildlife Conservation Act of 2009 has considerably extended the authority of the central government over land use on community lands (United Republic of Tanzania, 2009). For example, under this legislation non-consumptive tourism operation fees on village lands are collected by the central government. Even though it might be seen as an important step in ensuring accountability in revenue collection and spending, it is argued by some people as a sweeping disempowerment of local communities over revenue generated by local lands and resources (Nelson, 2010). Re-engineering of governance, market, and community institutions to achieve equitable, fair, and sustainable management of decentralization is inevitable to ensure successful empowerment of local communities (Ostrom et al., 2007).

Reforms in natural resources management are mainly challenged by logistical and financial problems, and community disempowerment. For example, in the east of the Serengeti ecosystem, these reforms are blamed for causing land-grabbing and appropriation by government and outsiders in the name of investment in tourism industry and intensive agriculture (Ngoitiko et al., 2010). This has created long-term conflicts between communities, government and investors with PAs caught in between (Ngoitiko et al., 2010).

Effective decentralization requires accountable institutions at all levels and secure participation in decision-making at local levels. Reluctance to relinquish authorities in key areas through choice of power and institutional arrangements is seen as perpetuating recentralization by central authorities (Wunsch, 2001). Decentralized natural resources management has often resulted in limited impact, as a result of persistent institutional barriers that limit local rights and economic benefits (Nelson et al., 2010).

The current governance structure for Tanzanian PAs is complicated, with a number of state agencies, central and local governments, communities and non-government organizations directly and indirectly involved as the government has attempted to broaden the governance regime. There are some challenges with this amount of governance complexity and it is one of the main goals of this dissertation to contribute towards understanding this complexity and its impact on PA outcomes.

Gender inequalities of Tanzanian PA

PAs and conservation efforts have had a profound effect on gender worldwide with women being ignored in PA and conservation Planning (West et al., 2006). In Tanzanian societies there are significance differences between the living situation of men and women, where women are on average lower in most indicators of human development e.g. maternal health and education (Detraz, 2010). Women in rural areas of Tanzania are burdened with performing roles such as ensuring food security to their families and collection of firewood and water which are sometimes far from their homes and close or within the PAs. Furthermore, PAs can cause problems to women through increased loss of crops to wildlife, decreased land and associated resources, and increased work burden for those with husbands working in PAs (Detraz, 2010; Songorwa, 1999). This makes it especially important for women to be connected to the environmental resources and a reason to desire their involvement in decision-making and management of PAs.

In addition to the gendered effects of PAs and conservation efforts, women have been marginalized or, in some cases, even abused by PA authorities. For instance, there are reports of abuses by PA authorities including incidences of beatings and rape of village women around Arusha National Park (Detraz, 2010). This is one clear example of insecurity faced by women around Tanzanian PAs. Furthermore, expansion of PA can mean that women have to go further to collect water and fuel wood, thus increasing their chances of insecurity. This is also the case when expansion results in displacement of communities, thus increasing insecurity to women (Detraz. 2010). A good example of insecurity to women as a result of PAs is in Loliondo in the eastern Serengeti where reports of human right abuse by government and private PA actors have been reported in recent years (Leader-Williams et al., 2009; Neumann, 1995). While women are

the daily users and managers of natural resources largely for the benefit of others, they are not involved in major decisions that affect the resources and the environment, with customary laws giving men more power over resources and decision-making (Detraz, 2010). Thus, gender cannot be ignored from management of Tanzanian PAs as it constitutes a fundamental element on perspectives on security and environment (Detraz, 2010). Successful PA governance in Tanzania will require a look on how to incorporate gender perspectives in PA decision-making and management.

1.2.3 Serengeti ecosystem ecology, history, location and protection status

The Serengeti ecosystem protects one of the biologically most productive habitats in the world (Polasky et al., 2008). Expansive populations of migratory ungulates and associated carnivores, wide range of habitats, and other flora and fauna make it unique (Costello et al., 2008; Sinclair et al., 2008). The southeastern plains are tree-less (except for areas around Olduvai gorge) with alkaline adapted grass species that are also grazing tolerant such as *Digitaria macroblephera* and *Sporobolus ioclades* (Sinclair et al., 2008). To the west the ecosystem is dominated by deep rooted grass species such as *Themeda triandra*, *Pennisetum mezianum*, and *Cymbopogon excavatus* (Sinclair et al., 2008). To the northwest in the nutrient poor granitic soils, *Hyparrhenia* grass species dominate the *Acacia* woodlands which tend to change to *Terminalia* and *Combretum* domination on sandy soils (Sinclair et al., 2008). Wildebeest, zebra, elephants, Thomson's gazelles, Grant's gazelles, elands, ostriches, lions, hyenas, buffaloes, giraffes and hippopotamus are among the common fauna species (Sinclair et al., 2008).

The vast majority of the Serengeti ecosystem in Tanzania lies within some type of PA with various governance models combining state, community, private and partnership based models (Figure 1). These PAs have had a profound effect on the ecosystem, through various policies that have dictated human actions since 1921. The history of conservation in Serengeti ecosystem spans pre-colonial, colonial eras and contemporary times (Table 4). These different eras are associated with various governance arrangements setting rules for regulating resource use within the ecosystem. A major outcome is that local people have lost the right to use the land and resources within the PAs (McCabe et al., 1992; Polasky et al., 2008). In addition, wildlife species are facing restricted range outside the PAs. From Table 4, major changes in PA

governance in the Serengeti Ecosystem to involve other actors in particular the local communities began in 1989 with the setup of the Serengeti Regional Conservation Strategy. This project was based on integrated conservation and development projects striving to manage PAs, creating buffer zones around PAs, and promoting local development (Polasky et al., 2008). This was followed by the establishment of the Ngorongoro Pastoral Council in 2000, Ikona WMA in 2003, and later Makao WMA.

The ecosystem is important for the economy in Tanzania with over 50% of tourists to Tanzania visiting the Serengeti yearly (Gereta et al., 2003). The ecosystem is part of the northern tourism circuit that forms the backbone of Tanzania's tourism industry and is the most visited and highest revenue earner of all PAs in the country (Eagles & Wade, 2006; Gereta et al., 2003). Although comprehensive tourism data covering the entire ecosystem are not available, those for the Serengeti National Park indicate an increase in the number of tourists (local and international) from 128,742 to 515,864 in the period from 2000/2001 to 2010/2011 (SENAPA, 2012). Likewise, visitor statistics for Ngorongoro Conservation Area indicates an increase from 222,666 to 590,617 between 2001 and 2011 (NCAA, 2012).

Compared to other regions in Tanzania, the regions within the Serengeti ecosystem have lower per capita income and are more heavily dominated by agriculture and natural resources harvests (Polasky et al., 2008). People in the Serengeti ecosystem are generally small-scale farmers, pastoralists and agro-pastoralists living in small to medium sized villages and dependent on natural resources for their livelihoods (Galvin et al., 2008). Many villagers utilize resources in the ecosystem for fuel and as a source of protein and income (Galvin et al., 2008). Finally, local communities in the Serengeti ecosystem are comparatively poorer with an annual per capita income of TZS (Tanzanian Shillings) 154,101 (equivalent to US\$97.5), much lower than the estimated national average of TZS 748,000 (equivalent to US\$473.32) (Schmitt, 2010). Furthermore, between 2007 and 2008, 51.3% of the people in the Serengeti ecosystem lived under the basic needs poverty line compared with the national rural average of 37.4% for rural areas nationally (IFAD, n.d.; Schmitt, 2010).

Table 4. Timeline for Protected Areas Governance in the Greater Serengeti Ecosystem, Tanzania

Post Colonial Serengeti	
2013 February	Serengeti and NCA declared among the 7 natural wonders in Africa
2012	New Tanzania WMA regulations gazetted adding an extra member from the AA to the District Natural Resources Advisory Board
2011	People who “invaded” Makao WMA forcefully evicted
2009	The New Wildlife Conservation Act enacted. Recognize the private PAs and Wildlife Ranches
2008	Mwiba Wildlife Ranch initiated in Makao area southern Serengeti
2007	Wildlife Policy of Tanzania revised to include wetlands and took out more issues to deal with WMAs
2007	Gazettment of the New Non-consumptive wildlife regulations that increase the state handling of the wildlife business outside PAs
2005	Ikona WMA receives a WMA User Right
2003	Ikona WMA declared
2000	Ngorongoro Pastoral Council established
1999	Tanzania land Acts (4 and 5) enacted, replace former land Ordinance and gives more power to village governments over lands falling in the village boundaries
1998	The Wildlife Policy of Tanzania came into being, a move towards establishment of WMAs as community based protected areas Kijereshi Game Controlled Area upgraded to a Game Reserve
1993	Grumeti and Ikorongo Game Reserves established
1992	The UAE royal family through Ortello Business Corporation (OBC) controversially awarded exclusive rights for hunting in the entire Loliondo Game Controlled Area
1989	Serengeti Regional Conservation Strategy established
1981	Serengeti National Park and Ngorongoro Conservation Area established as a World Heritage Site and a Biosphere Reserve
1974	The Wildlife Act Cap. 12 enacted
1962	Maswa Game Reserve established as a PA
1961	Maasai Mara National Reserve established in Kenya
Serengeti during the colonial period	
1959	Boundaries realigned to include areas between Banagi and Kenyan boarder, NCA established, Maasai moved out of the SNP and settled in NCA, other tribes evicted from the park
1956	Commission of enquiry on establishment of SENAPA
1951	Serengeti declared National Park including Ngorongoro highlands and southern Serengeti
1940	PA status conferred to Serengeti
1937	Sport hunting was stopped in Serengeti
1930	An area of 2286Km ² declared a game reserve in southern and eastern Serengeti
1890	Rinderpest epidemic devastate the herbivores in the Serengeti Ecosystem
Pre-colonial Serengeti	
Before 1890	Management of the ecosystem under the hunters, gatherers, pastoralists and peasant communities

Compiled from (IKONA, 2011; NCAA, 2010; Polansky et al., 2008; Sinclair et al., 2008; Tanzania National Parks, 2005; United Republic of Tanzania, 1998)

1.2.4 Threats to biodiversity in the Serengeti ecosystem

The increase in human population within the Serengeti ecosystem has had direct and indirect impacts to the ecosystem. For instance, human-made fire, used to alter grassland/woodland mosaics, is more prevalent (Anderson et al., 2008). At a more local scale individual settlement, roads and paths, and cultivated land now fragment the landscape. The single most important type of land cover change around the Serengeti ecosystem is conversion to agriculture, ranging from small patches of subsistence cultivation to large areas under mechanized farming (Anderson et al., 2008; Estes et al., 2012). This agricultural spread is responsible for lost heterogeneity in the ecosystem, with implications for availability of wildlife grazing/browsing resources, and blockage of migratory routes (Anderson et al., 2008). If left unchecked, the human impacts in the Serengeti ecosystem may have severe negative consequences to the survival of entire ecosystem.

Despite its apparently endless bounty, the Serengeti ecosystem is an ecological island in a rising sea of humanity. The core of this ecosystem that lies within the Serengeti National Park in Tanzania and Maasai Mara National Reserve in Kenya remains largely intact (Sinclair et al., 2008). However, the northern reach of the ecosystem in Kenya has been converted to mechanized agriculture while the southwest reaches around the Maswa Game Reserve in Tanzania have been turned into cotton fields (Kideghesho, 2006). For example, Estes et al., (2012) found that between 1984 and 2003, areas closest to the park in western Serengeti exhibited agricultural conversion rates of between 1.6% and 2.0% of the land area per year, while the areas farthest from the PA showed steadily decreasing annual conversion rates from 1.0% to 0.1% per year. The high population growth rate and conversion rate near to the PA boundaries is attributed to lack of arable land in areas with high population densities away from park boundaries. People likely moved away from areas where resources have become scarce or depleted, to places where resources are still available, which happen to be close to the PAs as they have been protected (Estes et al., 2012).

The increase in human population and agricultural expansion will likely take over more land around PA boundaries, further reducing resources for wildlife (Estes et al., 2012; Sinclair et al., 2008), and increasing the vulnerability of poor people and wildlife, thus leading to more human-wildlife conflicts. Already persistent poverty, increased human-wildlife conflicts, and

increased human population around PA boundaries, coupled with low involvement of communities in PA management issues are major problems in the Serengeti ecosystem. These are likely only to get worse.

Human influence around the ecosystem is felt inside the PAs as a result of increased poaching, human-livestock-wildlife disease transmission, road traffic across the plains, and political interference in PA management (Tanzania National Parks, 2005). For example, the plans by the Tanzanian government to construct a two-lane road across the Serengeti have drawn heated debates from scholars and conservationists, some who are for and others who are against the road - all of whom support their arguments with reference to the potential impacts to the wildlife and people. For example, Dobson et al., (2010) are opposed to the construction of the road through the ecosystem because it will potentially significantly hamper wildebeest migration. They cite evidence from other ecosystems to demonstrate the fact that migratory species are likely to decline precipitously, causing the Serengeti ecosystem to collapse, and even flip from being a carbon sink into a major source of atmospheric carbon dioxide (Dobson et al., 2010). On the other hand, other scholars are of the view that the same wildebeest are currently crossing other transportation arteries in the ecosystem (Homewood et al., 2010), and therefore the new road will not have additional negative consequences. Proponents of the road are mainly local communities in western Serengeti wanting better access to markets (e.g. Arusha). Opponents of the road are mainly national and international actors who are concerned about possible negative impact of the road on conservation and nature-based tourism (Homewood et al., 2010). These possible new developments and the debates created suffice to show the fate of this unique ecosystem is threatened by a variety of human activities.

1.3 Conceptual framework for PA governance assessment used in this study

Evaluation of PA governance effectiveness has become a crucial aspect of their management, and empirical evaluation of PA performance and impacts has gained increasing attention and notoriety as a conservation priority (Pomeroy et al., 2005). Concurrently, the concept of management effectiveness has gained a foothold as part of the theory and practice of monitoring and evaluating PAs (Borrini-Feyrabend et al., 2004). This growing interest has been partly driven by a widening use of objective evaluations to assess future needs and adapt current practices to improve effectiveness of management efforts and to optimize related human and

financial resource allocation (Pomeroy et al., 2005). Evaluation of the effectiveness of governance systems is actually an opportunity to learn from the past in shaping the future. According to Hockings et al., (2006), it is possible to have a PA that meets its output targets but continues to degrade. Likewise, it is possible to have a badly managed PA which, nonetheless, maintains its broader values. Thus, PAs should be assessed for their capacity to deliver benefits (conservation and social) (Borrini-Feyarabend et al., 2004), however, they should be evaluated for their effectiveness in attaining biodiversity conservation as the core objective of PAs according to the IUCN (Dudley, 2008). Evaluation of PA governance can reveal necessary changes to the management strategies or activities (Hockings et al., 2006). Furthermore, governance effectiveness evaluations can serve multiple audiences, e.g. donor agencies, policy makers, management teams, and conservation and development NGOs (Pomeroy et al., 2005).

This study looked at governance principles, how they are perceived, and the interactions and communications between various governance actors in the Serengeti ecosystem, using the governance principles suggested by UNDP and Graham et al., (2003) (Table 2). Evaluation of governance outcomes also assessed the extent to which attainment of PA and ecosystem management objectives was perceived by stakeholders.

Linkages between ecosystem actors and PA outcomes are central to this study, as illustrated in Figure 3. There are three related components; social-ecological system, governance process and ecosystem governance outcomes that operate in the Serengeti ecosystem.

This study employs a social-ecological governance approach to examine interactions among different actors in the Serengeti ecosystem. This approach seeks to combine perceived social and ecological outcomes mainly by examining governance structure, processes and outcomes. Thus, the use of social-ecological system in this study emphasizes the integrated concept of humans in nature, and stresses the complex relationship between social and ecological systems.

1.3.1 Social-ecological system

The Social-ecological system in the Serengeti ecosystem is comprised of three important components; the PAs, land uses, and the ecosystem actors. The social-ecological system is based

on links and communications that are present between the ecosystem actors, land uses and PAs (arrows).

Protected areas

PAs are the focal point of conservation in the ecosystem, by providing refuge for species populations, and protection and maintenance of ecosystem goods and services. Some PAs in the ecosystem are consumptive (allowing consumptive use of resources within them) and some are non-consumptive (managed mainly for indirect/tourism use). Some are managed by government and government agencies while others are managed by communities. Depending on PA management, a variety of conservation and social outcomes are attainable.

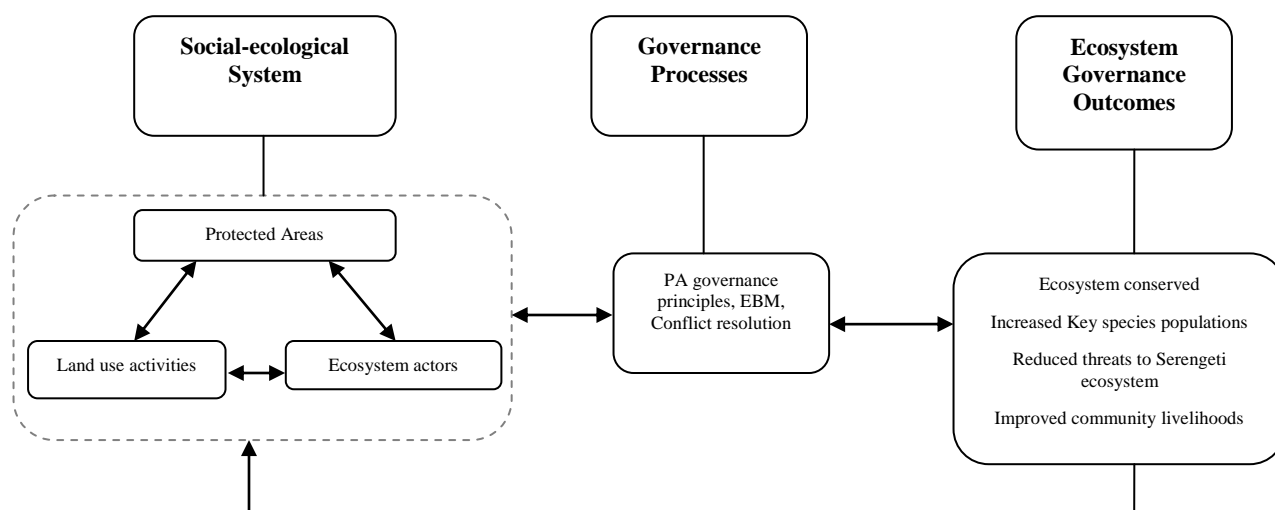


Figure 3: Conceptual framework for PA governance in the Serengeti ecosystem

Ecosystem actors

The Serengeti ecosystem is composed of a plethora of actors including PA managers and personnel, researchers, political and administrative personnel, cultural leaders, members and personnel working for CBOs and NGOs, and the general public within the ecosystem. These actors have different outlooks on the ecosystem resources with diverse expectations and values on how they should be managed and how costs and benefits should be dispensed.

Land uses

The Serengeti ecosystem is comprised of various land uses inside and outside of PAs. Pastoralism for example occurs in Ngorongoro Conservation Area and Loliondo Game Controlled Area. How and where the various land uses are performed, dictates how different components of the ecosystem complement each other and so dictate to a greater extent the sustainability of ecological processes, functions of the ecosystem and likelihood of survival of wildlife populations.

1.3.2 Governance processes

Governance processes include the various processes that take place in the ecosystem. These processes are dictated among other things by the communication and linkages that exist between various actors in the ecosystem. These processes include who is involved and responsible for what aspects of ecosystem management, the distribution of ecosystem costs and benefits, power distribution amongst ecosystem actors, and conflict management mechanisms. Governance processes are critical to the production of ecosystem governance outcomes.

1.3.3 Ecosystem governance outcomes

Expected conservation and social outcomes for PAs in the Serengeti ecosystems are varied and are contained in the World Heritage Convention, the Tanzania's Wildlife Policy, Tanzania National Parks (TANAPA) Corporate Strategy and specific PA management plans as summarized in Table 5. The World Heritage Convention aims at the identification, protection, conservation, presentation and transmission to future generations of cultural and natural heritage of Outstanding Universal Value (UNESCO, 1972). At the ministerial level in Tanzania, the goal of conservation is to attain sustainable conservation of natural and cultural resources, and development of responsible tourism for all (United Republic of Tanzania, 2007). On the other hand, the Tanzania National Parks aims to be the highest globally rated institution in sustainable conservation and provision of exceptional tourism services (Tanzania National Parks, 2010). These various conservation goals are concerned with sustainable conservation and are used as a basis for setting targets for various PAs in the Serengeti ecosystem.

Conservation related outcomes include aspects such as increases in the population of key species in the ecosystem, and reduction of threats to the ecosystem - in particular those that are anthropogenic in nature. The end result is the maintenance of the ecosystem integrity. With regard to social outcomes, this involves the contribution of the ecosystem to the socio-economic development of the people within the ecosystem. This can be evaluated by ecosystem actors and scholars in terms of amount of infrastructures that have been built or maintained in the ecosystem, and contribution to the growth of capital and community wellbeing within the communities in the ecosystem. In this study, the contribution of PAs to social well-being of the communities is evaluated by looking at such aspects like income generated as a result of flourishing of small-scale business and employments as a result of conservation related activities.

Table 5. Conservation objectives for the PAs in the Serengeti ecosystem Tanzania

PA	Park Purpose	Key points
Serengeti National Park	To conserve and protect the Serengeti ecosystem, its habitats, biodiversity, migrations of large mammals and birds, and its endemic and threatened species. Through safeguarding <i>the ecosystem's status as an area of national and international importance, as a Biosphere Reserve and a World Heritage Site; optimizing long-term economic benefits to the nation, through sustainable, low impact utilization that maintains the ecosystem's wild aesthetic beauty; promoting and maintaining an effective and mutually beneficial partnership with neighboring communities; preserving all sites of archaeological, historical and cultural importance and maintaining and promoting the scientific research and educational functions of the Park</i>	Ecosystem conservation, long term economic benefits, mutual beneficial partnerships with communities
Ngorongoro Conservation Area Authority	To be a self-financed World Heritage Site that provides sustainable benefits for NCA indigenous residents, Tanzanians and guarantees protection of natural, cultural and archaeological resources for global community.	Conservation, sustainable benefits, peaceful co-existence
Ikona WMA	Protect and conserve all the natural resources and their environment and contribute significantly in improving livelihoods of communities	Conservation, improving livelihood

Source: Compiled from (IKONA, 2011; NCAA, 2010; Tanzania National Parks, 2005)

1.4 Description of specific data collection methods

This study used a combination of methods to gather data, including: key informant interviews, focus group discussions, household quantitative questionnaire interviews and document analysis. These methods are detailed below and summarized in table 6.

1.4.1 Key informant interviews

Key informant interviews were the main source of qualitative data. A set of open-ended interview questions (Appendix 1-3) was used to generate discussions on governance principles, perceived outcomes, and barriers to ecosystem-based approach. A total of 88 key informants were interviewed from the ecosystem. Key informants included 24 key informants from the six villages (Robanda, Parkinyigoti, Ololosokwan, Kakesio, Makao and Sapa), including members of Village Councils (VCs) and Village Environmental Committees (VECs), religious leaders, teachers, health workers, CBO staffs, resource user group leaders, and retired public servants; 34 key informants selected from PA managers, staffs and WMA officials within the ecosystem. In addition, 30 key informants were selected from NGO staffs, district administrators, tourism and hunting operators, and researchers within the ecosystem. In compiling an interview list for key informants, primary key informants were identified in collaboration with the relevant leaders in a place. Following this, a snowballing sampling method was employed to get the rest of the group (International Institute of Rural Reconstruction, 1998). Interviews for each key informant lasted for about an hour, and were recorded and transcribed soon after each interview.

Key informant interviews provided information about local level governance of PAs in the Serengeti ecosystem, interactions amongst various actors in light of EBM, and PA governance outcomes in the ecosystem. This information is used in Chapter 4 with regard to discussing the governance structures and outcomes for the Serengeti ecosystem. A summary of research questions answered by key informant interviews is given in Table 6.

Table 6. Summary of data collection methods and respective research questions

Research question/objective	Required information	Research Method Used
To evaluate the effectiveness of PA governance as perceived by respondents (stakeholders)	Governance models in Serengeti ecosystem, how are they practiced and actors involved, property ownership, how are governance patterns structured in policy and by-laws	Document analysis Key informant interview Focus group discussions Questionnaire survey
To explore different approaches to PA governance on the Serengeti ecosystem as perceived by respondents (households)	Nature of interactions, participation, and powers exercised by various actors. Adequacy of representation, interactions, participation and access to information, local mechanisms regulating natural resources use, reduction of political marginalization, and ensuring wider access to PA decision making, powers and roles of actors e.g. Village Environmental Committees (VECs) and Village Councils (VCs)	Key informant interview Focus group discussions Questionnaire survey
To examine perceived conservation and social outcomes of PAs in the greater Serengeti ecosystem, and relate these findings to the governance structures, particularly relationships between different actors (linkages)	Achievements of current governance models, How have present governance models facilitated ecosystem based management (planning and execution of conservation activities), ethics, rationality and good governance principles	Document analysis Key informant interview Focus group discussions

1.4.2 Focus group discussion

Focus group discussions are open-ended discussions extending between one and two hours with small numbers of people, generally between three and ten following a set of detailed guidelines designed to generate discussion on a particular topic (International Institute of Rural Reconstruction, 1998; Robson, 2011). A set of questions (Appendix 4) was used to guide these discussions aimed at gathering information about the local level participation in governance and perceived achievement of the governance system for the neighboring PA. Focus group interviews were used in this study to triangulate the results obtained from key informant interviews. This information is used in discussing the governance structures and outcomes for the Serengeti ecosystem in Chapter 4. See Table 6 for a summary of research questions answered by focused group discussions.

Three focus group discussions were done for men, women and youth for each village except for three villages (Sapa, Kakesio and Ololosokwan) where only one focus group was held per village as they declined having separate groups probably due to mistrust among themselves. A total of 49 participants were involved in focus group discussions from the six villages. Selection of participants followed recommendations by International Institute of Rural

Reconstruction (1998), by considering background knowledge relevant to PA governance in Serengeti. Participants were sampled from a list of members working, or who had previously worked, in the VECs, VCs, WMAs, and other aspect of natural resources management, while observing gender balance. For generalizability of data from the group to the whole population, the method was supplemented by data from key informant interviews and household questionnaire surveys.

1.4.3 Household questionnaire survey

Face to face structured interviews (Appendix 5) were conducted to gather data about the local level evaluation of PA governance in the ecosystem. One individual was involved from each of the 389 households in the six villages which were randomly selected from the village register. Upon arrival at their residence one adult member per household (aged 18 years and above) was asked for the participation in the study. Efforts were done to convince women to participate in the interview, however this proved difficult as fewer women agreed to participate as compared to men. This situation caused a male biased sample with women accounting for about 30% of the sample. The fact that fewer women were interested in the study or agreed to participate might stem from the strong male dominance in decision-making in the respective societies, but also the high proportion of male headed households in rural Tanzanian communities (Gillingham & Lee, 1999). However the findings of this study should not have a notable risk as a result of underrepresentation of women in the household sample as more women were included in the key informant and focus group interviews.

A household is defined in this research as a group of one or more persons living together under the same roof or several roofs within the same dwelling and eating from the same pot or making common provision for food and other living arrangements (Kideghesho, 2006). Observations from the focus group discussions and key informants interviews and field questionnaires pre-testing were used to modify the questionnaires. The household questionnaire (Appendix 5) was developed from a review of literature (Buteau-duitschaever, 2009; Dearden et al., 2005; Eagles et al., 2012; Graham et al., 2003; Hannah, 2006; Hockings et al., 2006; Lockwod, 2010; UNDP, 1997). Thirteen governance criteria were developed for social-ecological governance assessment (Table 7)

A list of statements was developed related to each of these 13 governance criteria. In addition, information generated through key informants interviews and focus group discussions were used to modify the questionnaire to suit the Serengeti ecosystem. All statements were translated to Swahili, a common language for local communities in the Greater Serengeti Ecosystem in Tanzania.

Table 7. Governance criteria developed from a review of literature

S/N	Governance factor
1	Legitimacy
2	Transparency
3	Accountability
4	Involvement
5	Fairness
6	Participation
7	Strategic vision
8	Achievements/outcomes
9	Ecosystem based management
10	Effectiveness
11	Responsiveness
12	Consensus orientation
13	Powers

Ten people were chosen from two villages in the ecosystem (Sukenya and Rwamchanga) for pilot surveys to test the instrument. Based on the results of the pilot survey, 65 statements were retained, based on the amount of time it took to complete the whole survey instrument and the capability of the people in the test population to understand the statement. Some of the retained statements were refined to ensure their proper coverage of intended information, and also bringing the correct meaning in the Swahili edition of the survey instrument. Psychometric scaling was done for each statement in the questionnaire using a five-point Likert scale: strongly disagree (1), somewhat disagree (2), neutral (3), somewhat agree (4) and strongly agree (5).

The questionnaire had four main parts;

- Introductory part that explained the objectives for the interviews, and included questions about demographic characteristics,
- Governance processes part with statements covering the various governance principles,
- Outcomes part that included roles, achievements, and conflict resolution strategies, and

- Ecosystem-Based Management part that covered various aspects to include communication and linkages amongst various actors in the ecosystem and the evaluation of EBM.

1.4.4 Document analysis

Documentary analysis of maps, newspapers, books, and minutes of meetings, letters, memoranda, speeches, magazine articles, reports and other relevant documents about PA governance in the Serengeti ecosystem was used to supplement data from other methods. This technique involved a qualitative analysis of what is in the document (Robson, 2011). Following Krippendorff (2004), content analysis paid attention to content and context, as well as reliability and validity of the document in use. This method has a setback; the documents in question were not structured with the need of the observer in mind (Robson, 2011). However, these problems were overcome in this study through the use of other methods in addition to document analysis. Document analysis was used to triangulate information obtained from the other three methods. This information is used in discussing the governance structures and outcomes for the Serengeti ecosystem in Chapter 4. See Table 6 for a summary of research questions answered by document analysis.

1.4.5 Data analysis

Quantitative data derived from key informants' interviews and household questionnaire surveys were coded and analyzed using Statistical Package for Social Sciences (SPSS) 18 software and Microsoft Excel.

Qualitative data obtained through focus group interviews, key informant interviews, household questionnaire surveys and document analysis were analyzed descriptively using themes and categories from the data questions. Coding involved following the responses and categorizing, collating and filtering the data to identify and extract dominant themes.

1.5 Organization of the dissertation

This dissertation is organized around three principal papers, as well as this introduction, and a concluding chapter on overall discussion linking the three research papers to the core research purpose. The introduction chapter serves to set a framework for this dissertation,

explaining the background information about PAs, governance and the Serengeti ecosystem. It further provides the details for the methods used in this research. The concluding chapter provides overall conclusions, re-integrates the findings into the literature and explains the management implications of the present findings. The three papers are:

I A quantitative analysis of PA governance from a community perspective

This paper explores the development of a questionnaire to quantitatively measure perceptions of PA governance. This study adds to the development of indicators and monitoring and evaluation techniques for PA governance.

II Community evaluation of protected area governance in the Serengeti ecosystem, Tanzania

This paper assesses the overall perceived strength of the PA governance system in the Serengeti ecosystem and explores the variability in governance among the different PAs in the ecosystem based on the perception of local communities. It asks whether the new forms of PAs that are more community oriented have higher governance evaluations than the traditional PAs.

III Examining PA governance and outcomes for conservation and development in the Serengeti ecosystem, Tanzania

This paper describes the interactions amongst governance actors, and the perceived outcomes of PA governance including conservation, development processes and movement towards EBM for the Serengeti ecosystem.

CHAPTER 2

A QUANTITATIVE ANALYSIS OF PA GOVERNANCE FROM A COMMUNITY PERSPECTIVE

“Earth provides enough to satisfy every man's needs, but not every man's greed.”

Mahatma Gandhi

Abstract

Protected areas can provide important benefits to conservation and to communities, but a key factor in the effective delivery of these benefits is the role of governance. This paper describes the development of a method for measuring effectiveness of protected area governance, as perceived by stakeholders. The paper used factor analysis to group governance related statements into 10 coherent factors that demonstrate high psychometric validity as measured by factor loadings, explained variance, and alpha reliability. The paper concludes that quantitative surveys can be used to evaluate governance of protected areas across several social-ecological domains.

Key words

Protected areas, governance, qualitative methods, quantitative methods, governance criteria

2.1 Introduction

Protected areas (PAs) can provide important benefits to conservation and to communities. However, PA governance is key to the provision of these benefits to individuals and communities. PA governance refers to the “interactions among structures (i.e. institutions), processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders have their say in the management of PAs” (Graham et al., 2003:2). This empowerment and engagement of a wider variety of actors is thought to bring a more efficient and just system of PAs, accorded with wider and deeper mainstream support (Lockwood, 2010).

PAs create a flow of socio-economic and environmental costs, as well as benefits to adjacent communities (Stolton, 2010). Costs include livestock depredation, crop raiding, destruction to properties, loss of life and insecurity from dangerous wildlife. On the side of

benefits, PAs attract investments in tourism, hence creating jobs for local communities and business, and contributing to infrastructure development as well as improving environmental protection. However, a common perception is that elite groups tend to be the main beneficiaries from conservation while the marginalized and underprivileged sectors in these communities remain poor. At times, this perception leads to responses by communities that compromise PA objectives, such as unauthorized utilization of wildlife resources to improve their living standards (Brockington, 2003; Nelson, 2007; Ribot, 1999). Given this, some authors (e.g. Dearden, 1996) go so far as to view all forms of development, not just conservation interventions, as activities that promote inequalities in affected communities. Even if development does not necessarily lead to deepening inequalities, the unequal distribution of costs and benefits from PAs is shaped by access to power and decision-making (i.e. governance), and in turn influences communities' experiences of and attitudes toward conservation as well as their actions towards PAs and PA resources, such as wildlife.

In the face of continuing environmental degradation and biodiversity decline (Butchart et al., 2010; Rands et al., 2010), the global community has recognized the need to expand the amount of area within PAs, targeting 17% of the global land surface (CBD, 2010). However, PA establishment often leads to conflicts with local communities (Veit et al., 2008). To address such problems the fifth World Park Congress, held in Durban in 2003, recognized governance as being central to the conservation of PAs throughout the world (Dearden et al., 2005). Today governance is viewed as an important pre-requisite for effective PA designation and management.

Governance is concerned with creating the conditions for ordered rules and collective actions (Stoker, 1998). The last three decades have witnessed a shift in PA governance from PAs being predominantly the responsibility of the state to a multi-level system under which powers are diffused among a diversity of government, private and community-based actors (Lockwood, 2010). As such, governance involves more than just governments, and now involves non-government actors such as Non-Government Organizations (NGOs), Community Based Organizations (CBOs), private sector organizations and individual citizens (Eagles et al., 2013). For some scholars (e.g. Jones et al., 2011), governance is the steering of human behavior through a combination of people, state and market incentives in order to achieve strategic objectives. In

short, governance is primarily concerned with social coordination, shaping power relations and direction setting (Robinson, 2011).

The emphasis currently in a wide number of areas, including PA governance, is now on ‘good governance’. Good governance is a term that has become a part of the vernacular of a large range of international development institutions and other actors to describe how public institutions conduct public affairs and manage public resources (Brinkerhoff & Brinkerhoff, 2002; Punyaratabandhu, 2004; Sharma, 2007; UNESCAP, 2013; World Bank, 1989). The concept was popularised in the 1980s by the World Bank and other international financial institutions during the period of structural adjustment policies (SAPs) and related political and economic reforms (Brinkerhoff & Brinkerhoff, 2002; Punyaratabandhu, 2004; Sharma, 2007; World Bank, 1989). It was used as a way of comparing ineffective economies or government with viable economies and governments. For the World Bank, good governance rested on the assumption that in order for market-oriented development strategies to be effective, the political systems that surround them must be accountable, transparent, responsive, efficient and inclusive (Punyaratabandhu, 2004; UNESCAP, 2013). As such, good governance addresses economic institutions and public sector management, including transparency and accountability, regulatory reform, and public sector skills and leadership (Brinkerhoff & Brinkerhoff, 2002; Sharma, 2007). Other organizations, like the United Nations and European Commission, also began to use the term, but tended to use it more broadly to highlight democratic governance and human rights aspects of political governance usually avoided by the World Bank (Brinkerhoff & Brinkerhoff, 2002; Sharma, 2007). According to the United Nations, good governance has eight major characteristics: “it is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law. It assures that corruption is minimized, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society” (UNESCAP, 2013).

Good governance is now widely used in the literature on wildlife management, conservation and governance surrounding PAs. In essence, good governance in PAs responds to the principles and values freely chosen by the concerned people and country, and enshrined in their constitution, natural resource laws, PA legislation, policies and practices, including cultural

practices and customary laws (Dudley, 2008). It also includes criteria such as: accountability, fairness, legitimacy, transparency, participation and responsiveness just to mention a few. In a global survey, Dearden et al. (2005) found governance to be a major factor affecting the abilities of PAs to achieve their goals. Governance is important for maintaining ecological integrity, and also for facilitating greater participation of civil societies in PA management and enhancing the long-term sustainability of those PAs (Eagles et al., 2013). The greater participation of a wider group of actors in PA decision-making and management is a fundamental objective for governance.

The shift in PA governance in the past three decades to include more actors has been facilitated by various factors such as; greater scientific understanding on the role of humanity in shaping the environment and landscape, cultural and social awareness of local and indigenous communities, and acknowledgement of human rights particularly related to the environment (Lockwood, 2010). PA governance also reflects a better understanding of the functions of PAs within the larger landscape. This notion of “ecosystem-based management” (EBM) implies a comprehensive approach to management of ecosystems that involves management of species populations, their evolutionary and ecological processes and services while recognizing the position of humans in the process of producing these services (Espinosa-Romero et al., 2011; Grumbine, 1994; Keough & Blahna, 2006).

EBM comes with the realization that different components of an ecosystem may flow across to adjacent land uses and social values and to manage such interactions requires cooperation among many institutional sectors of the society (Johnson & Agee, 1988). However, challenges in PA management are inherently complex, requiring multi-scaled (local, regional, national and global) formal and informal, horizontal as well as vertical linkage approaches that allow actors to address shared problems in a concerted fashion (Lockwood, 2010; Strickland-Munro et al., 2010). Formal and informal institutions are composed of rules used to govern the interactions of people and access to natural resources (Hauzer et al., 2013; Ostrom, 2009). The shape and character of formal and informal institutions are influenced by the policy and institutional context of an individual country, such as Tanzania and its PAs. In turn, institutions control access and regulate the use of resources (such as in the Serengeti ecosystem in Tanzania) (Jones & Murphree, 2004). Vertical linkage implies a link from lower level institutions such as

village level to the higher levels such as PAs, whereas horizontal links exist between actors at the same levels e.g. between PAs or villages.

Other factors that facilitated the greater emphasis on PA governance include: recognition of the rights of people to have a say in decisions that affect them; democratization and devolution of central government powers; and political economic forces that can lead to more business-like approaches (Lockwood, 2010). The United Nations Development Program (UNDP) in 1997 put forward ten principles of good governance that were synthesized by diverse authors including the Institute on Governance who summarized them into five key principles (Table 8). These are the basic principles that have been variously applied by scholars to approach and study governance in PAs.

Table 8. United Nations Development Program (UNDP) and the Institute on Governance principles of good governance

Principles by Institution	
Institute on Governance	UNDP
Legitimacy and Voice	Participation; Consensus orientation
Direction	Strategic vision
Performance	Responsiveness; Effectiveness & Efficiency
Accountability	Accountability; Transparency
Fairness	Equity; Rule of law

Source: (Graham et al., 2003)

For the past one decade, scholars have worked on evaluating governance approaches, analyzing governance systems, and reviewing PAs governance performance, types and various other aspects from local to global levels (Borrini-feyerabend, 2003; Dearden et al., 2005; Eagles et al., 2012; Graham et al., 2003; Hockings et al., 2006; Jones et al., 2011; Lockwood, 2010; Murray & King, 2012; Robinson et al., 2012). Most of these scholars have used qualitative approaches in data collection and analysis citing a wealth of advantages from using them. In contrast, few studies have made use of quantitative techniques (e.g. Buteau-Duitschaever, 2009; Eagles et al., 2012). The lack of quantitative studies leaves a gap in the development of methods for studying governance to complement the widely used qualitative techniques. This paper discusses the development of a quantitative methodology for evaluating social-ecological governance for PAs as perceived by local communities with a focus on the Serengeti ecosystem in Tanzania. The development of a method, particularly a set of governance indicators, is an

important step for the engagement of stakeholders in conducting performance evaluation of PA governance aimed at achieving their governance goals and objectives (Heck, Dearden, McDonald, et al., 2011a). The use of local communities follows growing interests in community-based inputs into PA management due to their potential awareness of local circumstances compared to other PA actors (Heck et al., 2011; Dearden et al., 2005).

2.2 Study area description

The Serengeti ecosystem (Figure 4) contains some of the world's most renowned PAs, such as Serengeti National Park and Ngorongoro Conservation Area. These two PAs are World Heritage Sites, are also among the seven natural wonders of Africa (Tanzania National Parks, 2013; UNESCO, n.d.) Despite these accolades, there have been reports on dissatisfaction of communities with PA management in the Serengeti (Kideghesho, 2006; Schmitt, 2010). This has created tensions between conservationists and investors on one side and villagers on the other.

The Serengeti ecosystem contains the largest protected grassland and savanna in the world, defined by annual migration of wildebeest, and lies between latitudes $1^{\circ} 28'$ and $3^{\circ} 17'$ S and longitudes $33^{\circ} 50'$ and $35^{\circ} 20'$ E, spanning an area of about $30,000 \text{ km}^2$ (Polasky et al., 2008; Sinclair et al., 2008) (Figure 4). The area comprises of both consumptive and non-consumptive PAs (Table 9). Consumptive PAs are designed to allow direct use of wildlife resources in the form of hunting (e.g. Game Reserves and Game Controlled Areas) whereas non-consumptive PAs are designed and managed for indirect uses such as game viewing and photographic tourism (e.g. National Parks and Ngorongoro Conservation Area) (United Republic of Tanzania, 2009).

Table 9. Main management models of PAs and their characteristics in the Greater Serengeti Ecosystem, Tanzania

Name of PA	Ownership and management responsibility	IUCN Category	Size (Km ²)
Serengeti National Park	Government (TANAPA)	II (National Park) – conservation and non-consumptive tourism	14,700
Ngorongoro Conservation Area	Government – NCAA	III (Natural Monument) and V (Protected Landscape) – protection of specific natural monument (Crater), and for conservation of biodiversity, cultural and scenic values	8,200
Ikorongo-Grumeti Game Reserve	Government – WD	VI Managed Resource Protected Areas – consumptive and non consumptive tourism	3,797
Maswa Game Reserve	Government – WD	VI Managed Resource Protected Areas	2,765
Ikona Wildlife Management Area	Community-Based (CBO)	VI Managed Resource Protected Areas	242.3
Makao Wildlife Management Area	Community-based (CBO)	VI Managed Resource Protected Areas	768.9
Loliondo Game Controlled Area	Government (WD & NDC)	VI Managed Resource Protected Areas	4,200
Kijereshi Game Reserve*	Government (WD)	VI Managed Resource Protected Areas	65.72
Mwiba Wildlife Ranch*	Private (Mwiba Holdings)	VI Managed Resource Protected Areas	400
Loliondo I & II Forest Reserves*	Government (FD & NDC)	V Habitat Management Area – To protect important catchment areas	Unknown

The Serengeti ecosystem is inhabited by diverse ethnic groups from hunters and gatherers, pastoralists to agro-pastoralists (Galvin et al., 2008; Kideghesho, 2006), and is threatened by a rapid increasing human population. The population of Tanzania has grown rapidly from 12 million in 1967 to about 45 million by 2012 (United Republic of Tanzania, 2013). Comparative population data for the Serengeti ecosystem over this period is not available, but from 2002 to 2012 the Serengeti population grew from 2, 318,903 to 2,903, 484 (an increase of 25.2% in 10 years) (United Republic of Tanzania, 2002, 2013). This increase in human population and its associated agricultural expansion around the Serengeti ecosystem will likely take over more land around PA boundaries, thus reducing resources for wildlife (Estes et al., 2012; Sinclair et al., 2008) and increasing vulnerability of the poor people to human-wildlife conflicts. Already this human influence around the ecosystem is felt inside the PAs as a result of increased poaching, human-livestock disease transmission, road traffic across the plains, and political interference in PA management (Tanzania National Parks, 2005).

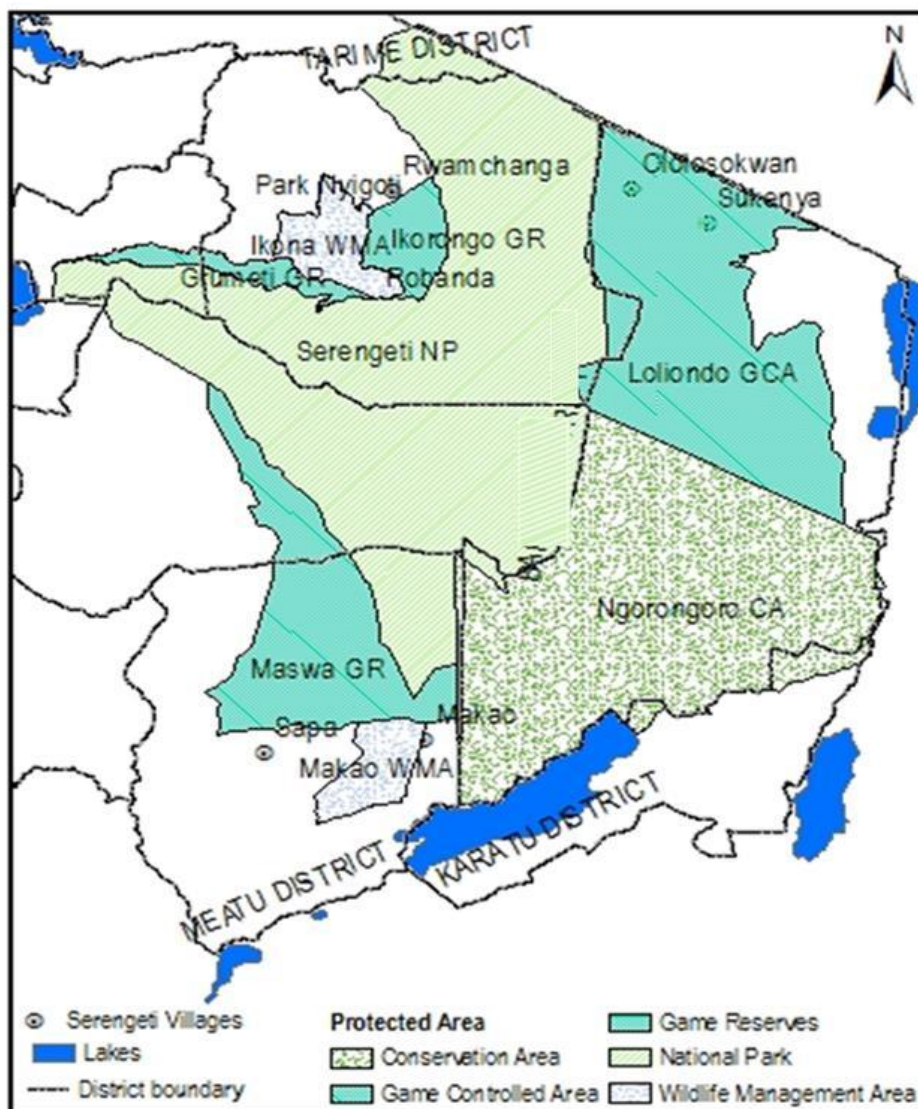


Figure 4: Location of the Serengeti ecosystem in Tanzania

2.3 Methods

2.3.1 Instrument development and testing

From a survey of the literature (Buteau-Duitschaever, 2009; Dearden et al., 2005; Eagles et al., 2012; Graham et al., 2003; Hannah, 2006; Hockings et al., 2006; Lockwood, 2010; UNDP, 1997) 13 governance criteria were developed for social-ecological governance assessment: legitimacy, transparency, accountability, involvement, fairness, participation, strategic vision, achievements/outcomes, ecosystem-based management, effectiveness, responsiveness, consensus orientation and powers. A list of 90 statements was developed based on their relatedness to the

13 governance criteria. All statements were translated to Swahili, a common language for local communities in the Greater Serengeti Ecosystem in Tanzania.

Ten people were chosen from two villages in the ecosystem (Sukanya and Rwamchanga) for pilot surveys to test the instrument. Based on the results of the pilot survey, 65 statements were retained, based on the amount of time it took to complete the whole survey instrument and the capability of the people in the test population to understand the statement (Table 11-20). For some of the retained statements, restatement was done to ensure their proper coverage of intended information and also to ensure the correct meaning of each concept in the Swahili edition of the survey instrument. A five-point Likert scale was used: strongly disagree (1), somewhat disagree (2), neutral (3), somewhat agree (4) and strongly agree (5).

Since this questionnaire used summated scales which are an assembly of interrelated items designed to measure underlying constructs, it was very important to understand its psychometric validity, i.e. whether the same set of items would elicit the same responses if the same questions are recast and re-administered to the same respondents (Santos, 1999). Validity is enhanced when multiple items (questions) are used to measure each underlying construct. In this way, there is a higher chance that respondents will have a clear understanding of the concept they are asked to evaluate. Psychometric validity entails the extent to which test scores exclusively measure their intended psychological construct(s) and guide consequential decision-making (Wasserman & Bracken, 2003). At the same time, reliability tests are especially important when derivative variables are intended to be used for subsequent predictive analyses (Santos, 1999). If the scale shows poor reliability, then individual items within the scale must be re-examined and modified or completely changed as needed (Santos, 1999). Cronbach's alpha, which is a numerical coefficient of reliability, was used for this study. Cronbach's alpha has become the popular measure of reliability in social sciences since its publication by Cronbach in 1951. Factor analysis was performed to find out which statements in the entire series of questions formed coherent subgroups that are relatively independent of each other. Factor analysis helps to determine the number of components or factors to be considered, extracting a set of components of factors from the correlation matrix, and rotating the components of factors to increase interpretability and its scientific utility (Tabachnick & Fidell, 1983).

2.3.2 Recruitment of the interviewees and survey administration

Study villages were selected through a stratified sampling from 87 villages in seven districts around the ecosystem. Selected study villages came from Serengeti, Ngorongoro and Meatu districts (Figure 4). In Tanzania, districts are administrative regions made up of several wards and in turn each ward is made of two to several villages. Two villages that bordered PAs were selected within each district. Where there was more than one PA in a district, the order of choice included a village bordering core PA (i.e. Serengeti National Park) first. Selection of villages bordering PAs for this study was based on the assumption that geographically adjacent communities will experience the greatest impacts arising from that area (Strickland-Munro et al., 2010). Independent stratified sampling for villages for each district was done to improve the efficiency of the statistical design and to yield a greater precision and thus smaller standard errors than a simple random sample (Schmitt, 2010). A household interview was carried out for 389 households in the 6 villages in the Greater Serengeti Ecosystem in Tanzania (Table 10). The survey was administered in the Greater Serengeti Ecosystem, Tanzania between May - November 2012. A possible concern with this approach is the lack of anonymity, although the issues pursued here are frequently discussed in these communities, and therefore not viewed as private matters. However, as noted in the introduction this approach might have contributed to the underrepresentation of women.

Table 10. Sample proportion

Village Name	Number of households (N)	Number of respondents (n)
Robanda	603	42
Park Nyigoti	130	21
Ololosokwani	1302	130
Kakesio	1130	114
Makao	432	63
Sapa	130	20
Total	3727	389

For this study a household represented a group of one or more persons living together under the same roof or several roofs within the same dwelling and making common provision for food and other living arrangements (Kideghesho, 2006). Recruitment made use of the local residence registers available in the villages, containing list of names of all village members

arranged with respective households. Selected households were visited or phoned to request an appointment for research introductions and requesting their participation. The survey was administered face to face. Prior to the interview, interviewees were presented with a list of seven PAs in the Serengeti ecosystem and were asked to identify one PA that they had sufficient knowledge to be used as a reference point for describing their opinions about governance on the questionnaire.

2.4 Results and discussion

Quantitative data derived from the household surveys were cleaned and coded into computer spreadsheet software for analysis using SPSS[®]. A factor analysis using Varimax rotation was performed to find out which statements in the series of questions formed coherent subgroups that are relatively independent (Tabachnick & Fidell, 1983).

Over two thirds of the respondents (about 78.1%) were between 21 and 50 years. Men accounted for 70.2% while women accounted for 29.8% of the respondents. Schmitt (2010) found females around Serengeti were 16% less likely than males to know of the park and 12% less likely to know of their closest PA. This lack of knowledge might have been a reason why fewer women agreed to participate in the study. However, the study design might also have contributed to the underrepresentation of women in the study. Randomization was done for households and in most cases women were less ready to offer an interview when compared to their male counterpart. This might reflect on the strong male dominance in decision-making in the respective societies, but also on the high proportion of male headed households in rural Tanzanian communities (Gillingham & Lee, 1999). However, these results should not have a notable risk as a result of women being underrepresented in the sample because more women were contacted for the subsequent methods (e.g. key informants interviews and focussed group discussions). As noted in Chapter 4, no difference in responses between genders was depicted.

Twenty four ethnic groups were represented in the sample population. Four ethnic groups were most populous, accounting for over 85% of all the respondents. These were the Maasai (56.6%), Ikoma (12%), Sukuma (10%) and Iraqw (7.2%). The least populous ethnic groups were Nyiramba, Hadzabe, Shashi, Nyaturu, Hehe, Arusha and Zaramo, contributing 0.3% each.

Results loaded into ten different factors with a cumulative explained variance of 85.4% when Principal Component Analysis was considered. Some factors combined items from two to three governance criteria. The highest factor score was 0.9 under the power factor while the lowest was 0.4 under inclusiveness.

An examination of the Kaiser-Meyer Olkin (KMO) measure of sampling adequacy resulted in high KMO statistics (0.89) suggesting that the sample was factorable. The results of the Bartlett's test were significant ($p < .000$) for the Bartlett's test of all constructs. These results from KMO and Bartlett's tests indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed.

The ten common factors that were extracted during factor analysis (Tables 11-20) were interpreted to represent: 1) legitimacy, 2) transparency and accountability, 3) responsiveness, 4) fairness, 5) participation, 6) ecosystem based management (EBM) and connectivity, 7) resilience, 8) achievements, 9) consensus orientation, and 10) powers. These indicative labels were determined by looking at the predominant concern for each factor, as recommended by Santos (1999).

Reliability comes to the forefront when variables developed from summated scales are used as predictor components in objective models (Santos, 1999). Each of the 10 governance criteria constructed after factor analysis were subjected to Cronbach's alpha reliability test to analyze the within group consistency for each governance criterion. Cronbach's Alpha analysis resulted in ten reliable and robust (>0.90) governance criteria/principles which were then used as reliable measures to define PA governance at the ecosystem decision-making level (Tables 11-20).

Reliability assessments produced well correlated items within ten governance criteria that constitute useful principles for evaluating social-ecological governance of PAs. Previous studies have shown similar trends in items measuring governance factors holding together well thus making them reliable (Buteau-Duitschaeffer, 2009; Eagles et al., 2012). However this study differs from previous studies (e.g. Lockwood, 2010) in the tendency for some of the criteria to combine to form single criterion, as presented and discussed below.

2.4.1 Legitimacy

Legitimacy (Table 11) is a key factor in the ethical acceptability of governance arrangement. It denotes the acceptance and justification of shared rule by a community concerning who is entitled to make the rules and how authority itself is generated (Lockwood, 2010). PAs can be legitimized through national or sub-national laws, or acquire legitimacy through the efforts of leadership effectiveness at producing outcomes (Lockwood, 2010; Newman et al., 2004). The five items that were used for legitimacy under Lockwood (2010) all loaded into one factor indicating a high degree of internal consistency. However, a sixth item, “upward accountability of PA managers” also loaded here, although it was included in accountability by Lockwood (2010). This item, although perhaps logically dissimilar to the rest of the items under legitimacy, was perceived by communities in the Serengeti to represent legitimacy. Lockwood (2010) argues that governing actors have responsibility to demonstrate commitment, through their decisions and actions to the purpose and objectives of the PA(s) over which they have some authority. This argument may hint at the reasons most community members in Serengeti took accountability of PA managers as a measure of legitimacy. The high Cronbach’s value for this criterion indicates strong internal consistency.

Table 11. Legitimacy

Items	Factor score	Source
• PA governing body has legal authority	0.795	Lockwood (2010) (Legitimacy)
• The governing body acts in accordance within its legal authority	0.786	Lockwood (2010) (Legitimacy)
• Stakeholders freely accept the governing body’s authority	0.780	Lockwood (2010) (Legitimacy)
• PA governing body has long standing cultural attachment to the area	0.762	Lockwood (2010) (Legitimacy)
• The governing body acts with integrity and commitment	0.714	Lockwood (2010) (Legitimacy)
• PA governing body is upwardly accountable	0.449	Lockwood (2010) (Accountability)
Reliability (Cronbach’s alpha)	0.943	
Percentage Variance Explained	8.85	

2.4.2 Transparency and accountability

Transparency refers to stakeholder’s right to know about matters that affects them (Lockwood, 2010). Stakeholders have the right to know about PA decisions, who has made the decisions, the means by which the decisions were reached and their justification (Lockwood, 2010). On the other hand, accountability encompasses such issues as acceptability of

responsibilities, answerability of governing bodies to both higher and lower level stakeholders, and the proper allocation of responsibilities to right levels of authorities (Lockwood, 2010). Transparency and accountability items from Lockwood (2010) loaded as a single criterion in this study (Table 12). However, Lockwood (2010) criticizes making transparency as a subset of accountability as used in Graham et al. (2003) suggesting that governance can be transparent but not accountable. In this study the two criteria seem to go together as suggested by Graham et al. (2003) and perceived by community members in the Serengeti ecosystem. The high Cronbach's value in this case also indicates the high degree of internal consistency among constituent items.

Table 12. Transparency and accountability

Items	Factor score	Source
• Governance and decision making is open to scrutiny by stakeholders	0.782	Lockwood (2010) (Transparency)
• Information is presented to stakeholders in ways they can understand	0.777	Lockwood (2010) (Transparency)
• The reasoning behind decisions is evident	0.773	Lockwood (2010) (Transparency)
• Achievements and failures are evident	0.759	Lockwood (2010) (Transparency)
• There are checks and balances for ensuring accountability in PA management	0.553	Hannah (2006) (Accountability)
• Power is exercised appropriately	0.543	Lockwood (2010) (Accountability)
• The governing body is answerable to its constituents (stakeholders)	0.520	Lockwood (2010) (Accountability)
Reliability (Cronbach's alpha)	0.942	
Percentage Variance Explained	9.28	

2.4.3 Responsiveness

Several items from past studies (Buteau-Duitschaeffer, 2009; Hannah, 2006; Lockwood, 2010) loaded together to make a criterion with 17 items, labeled as "responsiveness" (Table 13). In Lockwood (2010) inclusiveness stands as a single criterion with two items, while responsiveness and effectiveness are derived from the UNDP (1997) which were grouped as performance by Graham et al. (2003). Some statements in this criterion are derived from Hannah (2006). Responsiveness deals with how the PAs take care of complaints and criticisms, while effectiveness concentrates on processes and institutions that produce results to meet social-ecological needs and objectives. Resource management structures and strategies, legal structures and strategies of management, equitable representation and participation of stakeholders in management, compliance with management plans and management of resource use conflicts can be used to evaluate effectiveness (Ehler, 2003; Pomeroy et al., 2002). This study suggests that

some of the previously identified independent governance dimensions (responsiveness, performance, and inclusiveness) can be construed as a single factor.

Table 13. Responsiveness

Items	Factor score	Source
• PA governing body act on suggestions from village actors	0.690	Buteau-Duitschaever (2009) (Responsiveness)
• PA governing body responds readily to requests from village actors	0.684	Buteau-Duitschaever (2009) (Responsiveness)
• PA governing body is easy to reach by village actors	0.681	Buteau-Duitschaever (2009) (Responsiveness)
• PA governing body make efforts to reach villagers for inputs	0.678	Buteau-Duitschaever (2009) (Responsiveness)
• PA governing body identify threats and address them	0.675	
• PA governing body respond to criticism	0.658	Buteau-Duitschaever (2009) (Responsiveness)
• PA governing body respond to complaints	0.657	Buteau-Duitschaever (2009) (Responsiveness)
• PA governing body provide information to allow assessments of their performance	0.604	Graham et al. (2003) (Performance)
• PA governing body is cost effective and efficient	0.586	Graham et al. (2003) (Performance)
• PA governing body are effectively coordinated	0.568	Graham et al. (2003) (Performance)
• PA governing body have sufficient capacity to carry out their required roles	0.557	Graham et al. (2003) (Performance)
• PA governing body has participatory mechanisms for seeking views from actors in our village	0.458	Hannah (2006) (Legitimacy)
• PA governing body recognise grievances and solve internal and external disputes	0.440	Hannah (2006) (Fairness)
• Actors in our village are involved in PA management (Planning, decision making, execution of activities)	0.439	Lockwood (2010) (Inclusiveness)
• The PA governing body actively engage marginalised and disadvantaged stakeholders	0.418	Lockwood (2010) (Inclusiveness)
• Participatory mechanisms for seeking views from village actors are effective	0.416	Hannah (2006) (Legitimacy)
• I am informed about my roles in PA management	0.413	Padovan (2002) (Social indicator as cited in Loverington et al. (2008))
Reliability (Cronbach's alpha)	0.973	
Percentage Variance Explained	12.03	

2.4.4 Fairness

Fairness (Table 14) refers to two main things. First, the supportive judicial context characterized by respect for the rule of law and fair, impartial and effective enforcement of PA rules which are transparent, devoid of corruption and with the right for appeal; and secondly, fairness in the establishment and management of PAs (Graham et al., 2003). Fairness items

loaded in a single factor, thereby making a single criterion similar to what was suggested by Lockwood (2010). The six values had high factor scores and a high degree of internal consistency as evidenced by the Cronbach's value > 9 .

Table 14. Fairness

Items	Factor score	Source
• Stakeholders are heard and treated with respect	0.755	Lockwood (2010) (fairness)
• Decisions are made consistently and without bias	0.737	Lockwood (2010) (fairness)
• Intrinsic value of nature is respected	0.733	Lockwood (2010) (fairness)
• Human rights and local values are respected	0.719	Lockwood (2010) (fairness)
• There is respect for governors from higher or lower authorities	0.716	Lockwood (2010) (fairness)
• Benefits and costs of decisions are shared fairly	0.690	Lockwood (2010) (fairness)
Reliability (Cronbach's alpha)	0.955	
Percentage Variance Explained	9.20	

2.4.5 Participation

Participation is based on the premise that all men and women should have a voice in decision-making either directly or indirectly, and builds on the freedom of association and speech and capacity to associate constructively (UNDP, 1997). Greater participation by those dependent on the resources in management processes and decision-making is an important aspect in PA governance (Agrawal et al., 2008). In this study, participation included six items, four from Buteau-Duitschaever (2009) and one each from Lockwood (2010) and Leverington et al. (2008) (Table 15). This criterion embraces participatory issues from decision-making and planning, to processes and actions including conflict resolution. PAs are faced with diverse threats including global threats related to climate change, regional-scale issues such as habitat fragmentation and localized problems such as poaching, excessive visitors' impacts and waste disposal (Hockings et al., 2006). In many parts of the world, PAs are pressed by increased land use conflicts, human-wildlife conflicts and many other conservation related conflicts. Prevalence of conflicts has made it difficult to attain the dual aspects of conservation (ecological) and socio-economic development (through poverty reduction). The way in which PA managers deal with conflicts, particularly their use of participatory resolution methods will shape the direction PAs takes in the future. Therefore, it is important to ensure the careful treatment of people whose cultures or livelihoods are likely to be affected by the establishment and management of PAs (Dasmann, 1984). Participation underscores the need to include participatory conflict

identification and resolution mechanisms in the evaluation of social-ecological governance of PAs particularly in places where diverse values and interests are contested.

Table 15. Participation

Items	Factor score	Source
• Reasons for public involvement are clearly explained	0.817	Buteau-Duitschaever (2009) (Participation)
• Conflict resolution between the village and PA is satisfactory	0.817	Leverington et al. (2008) (Legal security)
• Those who contributed to the public participation process were taken seriously	0.816	Buteau-Duitschaever (2009) (Participation)
• Input is sought early in the decision-making process	0.801	Buteau-Duitschaever (2009) (Participation)
• Those who wanted to contribute to the public participation process had the opportunity to do so	0.790	Lockwood (2010) (inclusiveness)
• The structure of the public participation process results in appropriate recommendations	0.763	Buteau-Duitschaever (2009) (Participation)
Reliability (Cronbach's alpha)	0.962	
Percentage Variance Explained	10.05	

2.4.6 Ecosystem based management and connectivity

The EBM concept requires a holistic look at PAs by inclusion of values, interests, aspirations and other aspects of diverse actor groups. Successful EBM approach involves meeting intended objectives through inclusive public involvement and participatory consensus approach in integrating and balancing goals for PAs and adjacent areas (Keough and Blahna, 2006). In this study, this criterion had seven items that loaded into it, and their high reliability score make them a reliable measure of EBM (Table 16).

Table 16. Ecosystem-based management (EBM) and connectivity

Items	Factor score	Source
• PA governing body include village land use plans in their PA management plan	0.762	Hannah (2006) (Direction)
• PA and other PAs and villages conducts joint patrols	0.758	Hannah (2006) (Legitimacy)
• Village socio-economy is linked to conservation in the Serengeti ecosystem	0.751	Lockwood (2010) (Connectivity)
• PA governing body sits in ecosystem based forum meetings	0.749	Lockwood (2010) (Connectivity)
• PA governing body plans are consistent with ecosystem and national conservation agendas	0.748	Lockwood (2010) (Connectivity)
• PA governing body has good relationship with other actors such as NGOs, investors, district and regional authorities, communities	0.726	Lockwood (2010) (Connectivity)
• PA governing body coordinate with other PAs and villages in planning	0.711	Lockwood (2010) (Connectivity)
Reliability (Cronbach's alpha)	0.974	
Percentage Variance Explained	10.30	

2.4.7 Resilience

Resilience refers to the amount of change or disturbance that can be absorbed by a system before it is reconstituted into different processes and structures (Gunderson & Holling, 2002). Ecosystem resilience has three defining characteristics: 1) the amount of change the system can undergo and still retain the same controls on function and structure, 2) the degree to which the system is capable of self-organization, and 3) the ability to build and increase the capacity for learning and adaptation (Resilience Alliance, 2002). Although some loss of resilience is an inevitable feature of the cross-scale dynamism of complex adaptive systems (Walker et al., 2004), complete loss of resilience makes the system more fragile in the sense that it can easily be tipped into a contrasting state by stochastic events i.e. random processes such as extreme droughts (Scheffer et al., 2001). In PAs, resilience helps to measure the possibility for governance improvement or deterioration particularly in the face of disturbances such as floods, earthquakes, wild fires, and diseases outbreaks.

In a study by Lockwood (2010) resilience had five items (Table 17). In this study however, some of the items from Lockwood, (2010) did not translate well in Swahili (indicated in asterisks in Table 17) and so some adaptations were made to capture the meaning. Hannah (2006) and Buteau-Duitschaever (2009) provide some insights on risk management and satisfactory conflict resolution. In this study conflict resolution and risk identification and management are important ingredients of resilience. Again the items that loaded under this

criterion revealed a high degree of internal consistence when considering the high Cronbach's scores (Table 17).

Table 17. Resilience

Items	Factor score	Source
• Risks are managed effectively	0.742	Lockwood (2010); Hannah (2006) (Direction)
• Risks are foreseen by both the PA and village management	0.730	Lockwood (2010); Hannah (2006) (Direction)
• Conflicts are satisfactorily resolved	0.725	Leverington et al. (2008) (Legal security)
• Our village is in partnerships and collaborative relations with the PA	0.623	Hannah (2006) (Direction)
• The neighboring PA has a strategic vision	0.538	Graham et al. (2003) (Direction)
• The governing body has a culture of intentionally learning from experience and absorbing new knowledge	*	Lockwood (2010) (Resilience)
• The governing body has the flexibility to rearrange its internal processes and procedures in response to changing internal or external conditions	*	Lockwood (2010) (Resilience)
• Formal mechanisms provide long-term security tenure and purpose for the PA(s)	*	Lockwood (2010) (Resilience)
• The governing body utilises adaptive planning and management processes	*	Lockwood (2010) (Resilience)
• The governing body has procedures to identify, assess, and manage risks	*	Lockwood (2010) (Resilience)
Reliability (Cronbach's alpha)	0.954	
Percentage Variance Explained	7.03	

**Was not used directly, some adaptation were done by looking at other scholarly works*

2.4.8 Achievements/outcomes

Achievements are an important aspect of governance as they can help to steer the management if the right things are not happening. Hockings et al. (2006) explain the values that are expected as PA outcomes to include ecological and socio-economic dimensions. Ecological outcomes include ecosystem services and functions, biodiversity, landscape and geological factors. Socio-economic and cultural factors include cultural, social, economic, and education outcomes. The core of achievement evaluation in this paper has its roots in the IUCN management effectiveness framework (Hockings et al., 2006). It assesses whether management resulted in the achievement of the objectives of, and desired outcomes for, the PAs or system (Hockings et al., 2006). Although the items used in this study look very broad, in essence they capture the whole meaning of achievements (Table 18). First they capture the extent of achieving PAs objectives which in developing countries such as Tanzania includes both conservation and

socio-economic development. Secondly, they capture the extent of support of other actors for PA objectives. The issue of support draws attention to the interest of other actors such as pastoralists, NGOs, small scale farmers, tourism investors, local governments, researchers and many more who are useful for the achievement of PAs objectives. Perhaps future studies should consider adding other statements within this dimension to capture the thrust of “achievements”, as discussed above. Such statements may include those directly measuring aspects of ecological outcomes (e.g. number of animals, vegetation improvement), or willingness of community members in supporting specific aspects of PAs.

Table 18. Achievements

Items	Factor score	Source
• Other actors are in support of the PA	0.780	Hannah (2006) (Legitimacy)
• Neighboring PA achieves its objectives	0.771	Hockings et al. (2006) (Assessing outcomes)
Reliability (Cronbach’s alpha)	0.914	
Percentage Variance Explained	3.72	

2.5.9 Consensus orientation

Consensus orientation originates from the UNDP (1997) which was grouped together with participation into the legitimacy and voice criterion by Graham et al. (2003). Consensus recognizes that good governance mediates differing interests to reach a broad agreement on what is in the best interest of the group and where possible on policies and procedures (UNDP, 1997). Four items loaded into consensus orientation criteria in this study (Table 19). Consensus orientation is a pivotal aspect in achieving conservation objectives. In the Serengeti other actors have often been left out of conservation-related decisions such as those on investment, PA establishment and boundary demarcation, and the setting of park fees (Chapter 4). Issues of this nature have been a sphere of influence of conservationists and the government and few powerful private actors (Robinson et al., 2012). Leaving aside other actors in decision-making results in increasing resistance particularly from local communities and this makes it central to include consensus orientation in the evaluation of governance in PAs.

Table 19. Consensus orientation

Items	Factor score	Source
• Enough time is allocated for decision making	0.780	Buteau-Duitschaever (2009) (Consensus orientation)
• Ecosystem based forums are used in reaching decisions	0.775	Lockwood (2010) (Connectivity)
• PA decision making allows interactions with actors in your village	0.768	Buteau-Duitschaever (2009) (Consensus orientation)
• PA have mechanisms for reaching consensus decisions	0.723	Buteau-Duitschaever (2009) (Consensus orientation)
Reliability (Cronbach's alpha)	0.957	
Percentage Variance Explained	6.13	

2.4.10 Power

The use of power in analyzing PA governance was first advanced by Graham et al., (2003) who suggested five types of power that are involved in the governance of PAs, the planning, decision-making, revenue generation, spending, and entering into contracts power. Good governance is about the responsible exercise of power (means) in order to meet objectives (ends) (Graham et al., 2003). The result of their factor loading and Cronbach's reliability (Table 20) demonstrates the reliability of power as a measure of a single criterion.

It is important to evaluate the distribution of power amongst actor groups when evaluating PA governance due to its potential to influence how actors view the PA through other governance criteria. For instance, when communities associate PAs with government machinery there is a greater chance for communities to have a negative perception of governance. This is because communities feel that government has all the power and they are not really part of PA governance. In other words, power distribution can be a surrogate measure for participation in social-ecological governance in PAs. How power is exercised is a fundamental block in governance (Graham et al., 2003). Power deserves particular attention due to its potentially coercive nature and capacity for political manipulation.

Table 20. Power

Items	Factor score	Source
• Village actors have decision-making power	0.932	Graham et al. (2003) (Power)
• Village actors have revenue generation power	0.925	Graham et al. (2003) (Power)
• Village actors have power to enter into contracts	0.921	Graham et al. (2003) (Power)
• Villagers have planning power	0.912	Graham et al. (2003) (Power)
• Village actors have spending power	0.910	Graham et al. (2003) (Power)
Reliability (Cronbach's alpha)	0.978	
Percentage Variance Explained	8.84	

2.5 Conclusion

When assessing governance of PAs, both quantitative and qualitative methods can be extremely effective and useful, particularly when dealing with complex subjects in governance. This paper presents a quantitative assessment tool for PA governance evaluation developed and tested on a local population around the Serengeti ecosystem. Most of the items under each of the 10 governance indicators in this study loaded into the same groupings as suggested in previous studies, providing support (validity) for these concepts. Where loading in this study differed somewhat from previous studies (e.g. Lockwood 2010), there is opportunity to consider some revisions of governance related concepts as outlined in the discussion. Of particular interest is the factor labeled as “responsiveness” which contained a number of items previously considered as “performance” in other studies. I contend that there is a good argument for including these within the responsiveness domain.

One methodological challenge encountered was the fact that some items, those in particular under the resilience criterion, did not translate well to Swahili (the local language in the ecosystem) and therefore did not bring the intended meaning to the respondents, and thus required some adaptations for their use. This same limitation may apply when this scale is used in other languages and cultures.

This study focused on perceptions of governance rather than objective measures of governance. Perceptions rely on trust and satisfaction which measure stakeholders' evaluation of the quality of governance and of direction in which the PA is steered (Bouckaert & van de Walle, 2003). Management performance has been found to correlate well with stakeholder satisfaction, hence improving satisfaction must seek to strategically reform the bureaucracy and internal

management in a PA (Im & Lee, 2011). Trust could be necessary part of a set of indicators which are sufficient for good governance in PAs (Bouckaert and Van de Walle, 2003). However, it is difficult to measure and it is not clear that changes in level of trust is clearly a result of changes in level of governance (Bouckaert and Van de Walle, 2003).

This research contributes towards our understanding of means to evaluate social-ecological governance for PAs in complex ecosystems. It brings forward an alternative methodology for governance evaluation which employs the use of quantitative data gathering and analysis techniques. As Walpole et al. (2009) advanced, the need for developing indicators requires reliable biodiversity data and thus monitoring. This study adds to the development of indicators and monitoring and evaluation technique for PA governance. It will no doubt open more avenues for synthesis for evaluation of social-ecological governance in PAs. Its inclusion of ecosystem-based management (EBM) opens more opportunities for including other ecosystem actors and land uses in PA governance evaluations. This methodology is potentially useful for evaluating PA governance in an ecosystem such as the Serengeti in Tanzania to provide PA agencies with information on the performance of their PAs in various governance criteria. Addressing governance weaknesses has a potential to improve the support of local stakeholders and in turn helping to achieve the PA goals and objectives.

CHAPTER 3

COMMUNITY EVALUATION OF PROTECTED AREA GOVERNANCE IN THE SERENGETI ECOSYSTEM, TANZANIA

“We are very fond of blaming the poor for destroying the environment. But often it is the powerful, including governments, that are responsible”

Wangari Maathai

Abstract

Protected areas (PAs) are an important conservation strategy, but the achievement of conservation goals requires collaboration with areas outside PA borders. This necessitates a shift in focus to ecosystem-based conservation where land uses and actors outside PAs are involved in planning and management. Such a shift presents challenges in the governance of PAs to engage diverse stakeholders effectively. This study explores PA governance and reports on how these challenges have been addressed within Tanzania’s greater Serengeti ecosystem. The Serengeti is a unique ecosystem, where the sometimes divergent interests from multiple interest groups are contested within a landscape containing many different kinds of PAs and land uses. This paper explores the governance of the Serengeti ecosystem, through the evaluation of governance from the perspective of local communities, using specific governance criteria: legitimacy, transparency and accountability, responsiveness, fairness, participation, ecosystem-based management, achievements, resilience, consensus orientation and power. The study examines several different types of land management regimes within the Serengeti ecosystem, ranging from national park to community-based conservation areas. Evaluation of governance in PAs by communities will most likely increase the chance of better governance as communities are important actors and often omitted in decision-making. In turn, better governance is thought to improve PA outcomes, including improved conservation and community livelihood.

Surveys were completed with 389 households from six villages around the ecosystem and interviews completed with 24 village key informants and 12 focus groups. Overall, this governance evaluation indicates weak governance for the entire ecosystem. Distribution of power to the villages was the only factor to score positive. Furthermore community-based PAs did not reveal stronger governance approaches compared to the more traditional forms of PAs.

Efforts are needed to ensure improved communication and collaboration between PAs and community actors in the ecosystem.

Key words: Serengeti ecosystem, good governance, actors, governance factors, governance criteria

3.1 Introduction

In the past, protected areas (PAs) were seen as the primary strategy for biodiversity conservation and little attention was paid to areas outside their boundaries. However, it is now widely accepted that many PAs require areas outside their borders for the survival of species and populations (Keough & Blahna, 2006; Newmark, 1996). In order to facilitate ecological connections and buffer against increasing external threats to PAs, one recent development involves large scale, bioregional conservation landscape models that connect different PAs and other land uses throughout the landscape, rather than concentrating on a few nodes of conservation such as national parks (Dearden & Rollins, 2009). This realization has shifted the focus of conservation to landscape level and ecosystem-service conservation models where interests in biodiversity protection and human wellbeing converge within the wider framework of eco-social sustainability (Miller et al., 2011; Dudley, 2008). The ecosystem-based management approach entails the holistic management of resources; involving multiple disciplines and multiple objectives, dealing with technically challenging and complex management problems and adaptive systems. These challenges necessitate an expansion of scope from “management” to “governance” (Berkes, 2012).

In this paper governance is defined as “the interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders get their say in their management” (Graham et al., 2003:2). Good governance in PAs responds to the principles and values freely chosen by the affected peoples and enshrined in their constitution, natural resource laws, PA legislation and policies, and/or cultural practices and customary laws (Dudley, 2008). Thus, PA governance is mainly concerned with decision-making processes that are intended to improve management of natural resources in the ecosystems, and includes a number of dimensions, such as accountability, fairness, participation and many more principles (see previous chapters).

Attaining effective ecosystem-based governance of PAs is challenged by a number of factors, such as: 1) competing interests among stakeholders; 2) undeveloped or inappropriate governance structures; 3) poor science; 4) lack of political will; and, 5) EBM plans that ignore the importance of sustaining ecological services (Answani et al., 2012:1).

Diverse actor groups have different preferences, interests and values with respect to the goals and management strategies of PAs (Murray & King, 2012; Niedziałkowski et al., 2012). In complex ecosystems, interests from diverse actor groups are often contested, reflecting differences in PA governance type, history, land uses and other factors. These interests and values evolve over time through the interaction between local people with these ecosystems on a daily basis as part of their livelihood and ultimately they affect the success and failures of PAs (Schmitt, 2010). Local people may engage in hunting, harvesting fuel wood, growing crops, keeping livestock, and setting aside areas for conservation. As a result of these contested needs, well-designed systems of PA governance are required to deliver desired outcomes and meet linked socio-cultural, economic and environmental objectives (Murray and King, 2012).

In many cases, local communities living adjacent to PAs are left out in decision-making despite being important actors. Consequently, good governance is now understood to be a prerequisite for effective management of global PA systems. This is a major factor affecting the ability of PAs to achieve their goals, through securing of political and community support to value and desire their protection (Dearden et al., 2005; Lockwood, 2010). This suggests a need for PAs to contribute to the socio-economic development of neighboring communities and to include them in decision-making (Niedzialkowsks et al., 2012). The use of local communities follows growing interests in community-based inputs into PA management, due to their potential awareness of local circumstances and issues that need to be resolved compared to awareness of other PA actors (Dearden et al., 2005; Heck et al., 2011b; Heck et al., 2011). Empowerment and engagement of a wider variety of actors is known to bring more efficient and just system for PAs, accorded with wider and deeper mainstream support (Lockwood, 2010). Consequently, the empowerment of local communities in PA governance will most likely increase community support to conservation, as it might open ways to accommodate more community needs.

Accordingly, this paper adopts the Dudley (2008) categorization (see Table 21) of PAs based on management responsibilities, sources of funds, type of management institutions and ownership of resources (Borrini-Feyerabend et al., 2006; Ostrom et al., 1999)

- *Government protected areas* where a top-down government agency or body holds authority and management accountability, and owns the PA land and resources under state property regime.
- *Private governance* where resources are under a private property regime, with individuals, cooperatives, non-government organizations (NGOs) or corporate control and ownership.
- *Community conserved areas (CCAs)* are voluntarily conserved by indigenous peoples through customary laws or other effective means.
- *Collaboratively managed protected areas (CMPAs)* decision-making is shared between a combination of partners (state agencies, indigenous peoples, local communities, NGOs, and individuals or private sector institutions).

Table 21. PAs in the Serengeti ecosystem, Tanzania

Name of PA	Ownership and management responsibility	IUCN Category	Size (Km²)
Serengeti National Park	Government (TANAPA)	II (National Park) – conservation and non-consumptive tourism	14,700
Ngorongoro Conservation Area	Government – NCAA	III (Natural Monument) and V (Protected Landscape) – protection of specific natural monument (Crater), and for conservation of biodiversity, cultural and scenic values	8,200
Ikorongo-Grumeti Game Reserve	Government – WD	VI Managed Resource Protected Areas – consumptive and non consumptive tourism	3,797
Maswa Game Reserve	Government – WD	VI Managed Resource Protected Areas	2,765
Ikona Wildlife Management Area	Community-based (CBO)	VI Managed Resource Protected Areas	242.3
Makao Wildlife Management Area	Community-based (CBO)	VI Managed Resource Protected Areas	768.9
Loliondo Game Controlled Area	Government (WD & NDC)	VI Managed Resource Protected Areas	4,200
Kijereshi Game Reserve*	Government (WD)	VI Managed Resource Protected Areas	65.72
Mwiba Wildlife Ranch*	Private (Mwiba Holdings)	VI Managed Resource Protected Areas	400
Loliondo I & II Forest Reserves*	Government (FD & NDC)	V Habitat Management Area – To protect important catchment areas	Unknown

- WD = Wildlife Division, CBO = Community Based Organization, TANAPA = Tanzania National Parks, NCAA = Ngorongoro Conservation Area Authority, FD = Forest Division, NDC = Ngorongoro District Council
- *The PA form part of the ecosystem but was not used in this study

This paper presents findings from a primary research conducted in the Serengeti ecosystem in Tanzania for a period of 8 months in 2012 on the evaluation of governance by local communities. It assesses the overall perceived strength of the PA governance in the Serengeti ecosystem, and identifies and explores variability in governance among the different PAs within the ecosystem. The starting point for this research was an understanding that variability exists in PA setups, such as variability in the surrounding land uses, and variability within and between the surrounding human communities, and that such variability may impact differently on the attainment of PA outcomes. Hence, identifying and understanding such variations may contribute to improving PA governance by having better informed PA managers who are involved in setting and managing PAs.

3.2 Study area

The Serengeti ecosystem spans an area of about 30,000 km² between 1° 28' and 3° 17' S latitudes and 33° 50' and 35° 20' E longitudes, mostly in PAs of various types (Polasky et al., 2008; Sinclair et al., 2008; McCabe et al., 1992) (Table 21, Figure 5). The ecosystem includes two of the world's most renowned PAs (Serengeti National Park and Ngorongoro Conservation Area), both classified as World Heritage Sites. The area is comprised of both consumptive and non-consumptive PAs falling under different IUCN PA categories (Table 21). Consumptive PAs are designed to allow direct use of wildlife resources in the form of hunting (e.g. Game Reserves and Game Controlled Areas) whereas non-consumptive PAs are designed and managed for indirect uses such as game viewing and photographic tourism (e.g. National Parks and Ngorongoro Conservation Area) (United Republic of Tanzania, 2009a, 2009b). Of special interest to this study are the Wildlife Management Areas, established by the Tanzanian government as a form of community-based wildlife PAs to devolve ownership and management responsibilities to communities (United Republic of Tanzania, 1998).

Diverse ethnic groups practicing various land uses from hunters and gatherers, pastoralists to agro-pastoralists inhabit this ecosystem (Galvin et al., 2008). The population of Tanzania has grown rapidly from 12 million in 1967 to about 45 million by 2012 (United Republic of Tanzania, 2013). Comparative population data for the Serengeti ecosystem over this period is not available, but from 2002 to 2012 the Serengeti population grew from 2, 318,903 to 2,903, 484 (an increase of 25.2% in 10 years) (United Republic of Tanzania, 2013, 2002)² (Figure 6). Human population increase have induced spatial and temporal vegetation and landscape changes through the use of fire, grazing of domestic stock and conversion of land to agriculture with an annual conversion rate of between 1.6% and 2.0% (Anderson et al., 2008; Estes et al., 2012). This increase in human population and its associated agricultural expansion around the Serengeti ecosystem will likely take over more land around PA boundaries, thereby reducing resources for wildlife (Estes et al., 2012; Sinclair et al., 2008), and increasing vulnerability of the poor people to human-wildlife conflicts. Already this human influence around the ecosystem is felt inside the PAs as a result of increased poaching, human and livestock disease transmission, road traffic across the plains, and political interference in PA

² Population estimates based on Ngorongoro, Serengeti, Rorya, Tarime, Munda, Magu, Busega, Itilima, Bariadi and Meatu districts

management (Tanzania National Parks, 2005). The ecosystem is now an ecological island in a rising sea of humanity with increasing vulnerability for some people to human-wildlife conflicts.

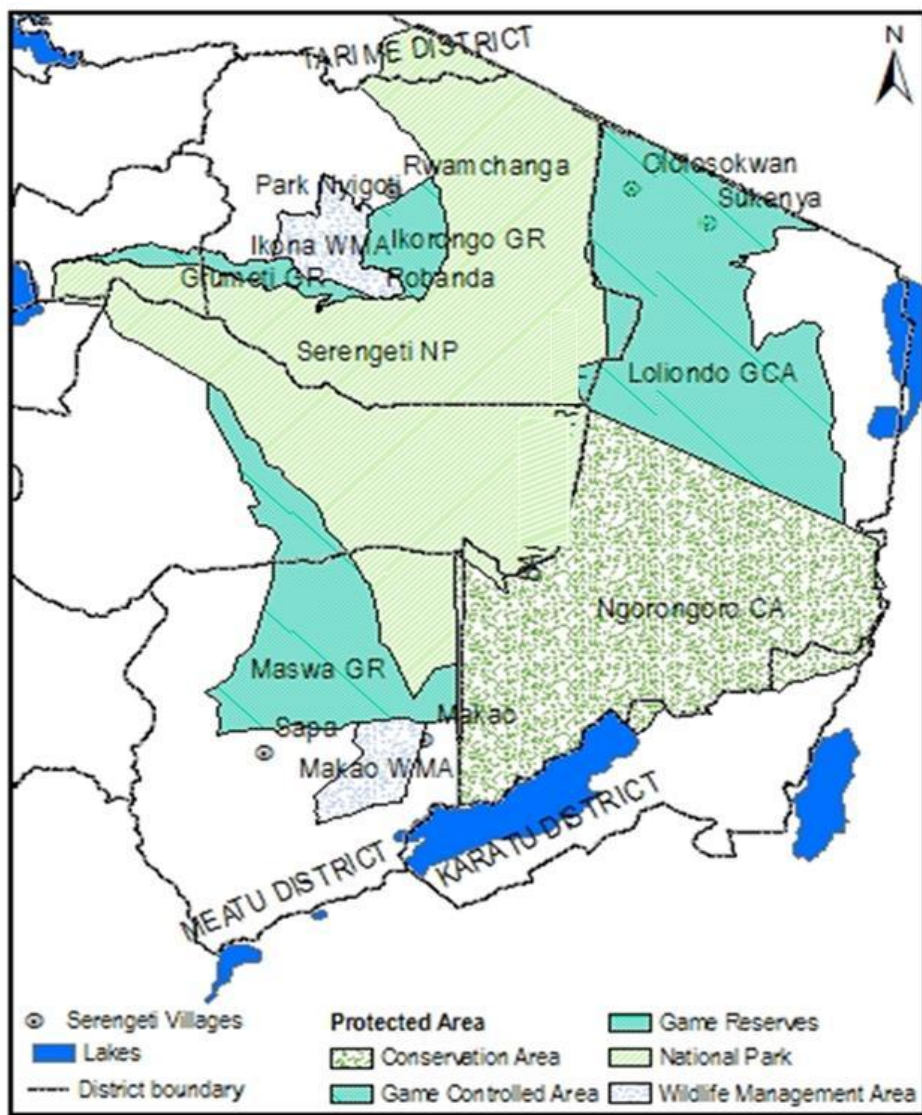


Figure 5: Location of the Serengeti ecosystem in Tanzania

3.3 Methods

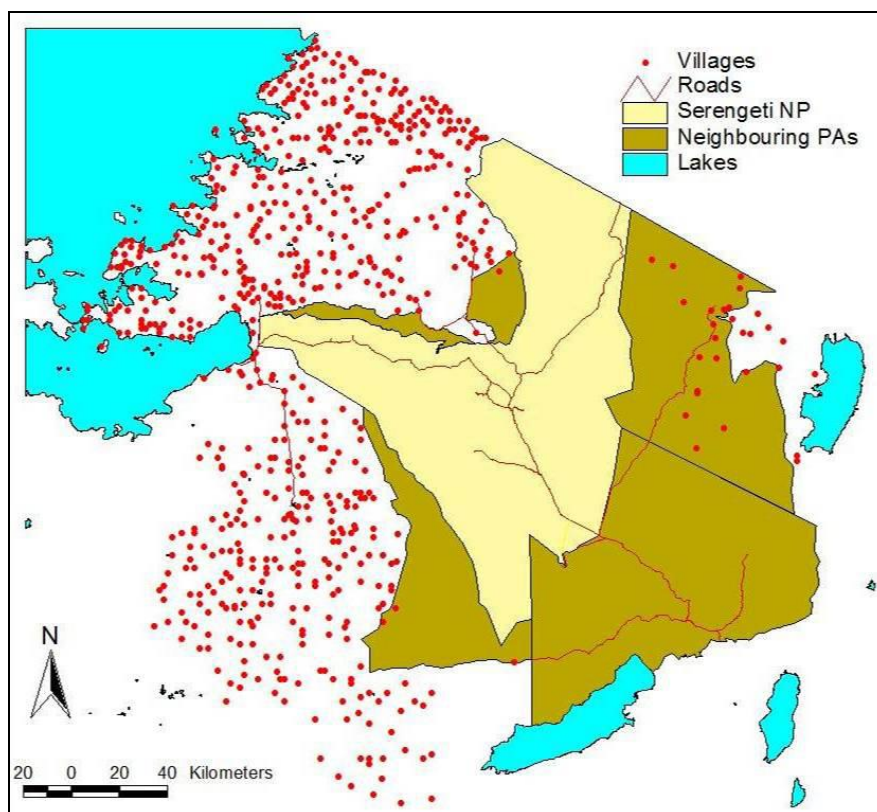


Figure 6: Settlement distribution around the Serengeti ecosystem (Source: Tanzania National Parks, 2005)

3.3.1 Household surveys

A household interview was carried out within 6 villages in the Serengeti ecosystem to measure perceptions of PA governance through the perspective of local communities. A total of 389 households participated in these interviews (Table 22). Study villages were selected through a stratified sampling from 87 villages in seven districts around the ecosystem. Selected study villages came from Serengeti, Ngorongoro and Meatu districts (see Chapter 2 for details of districts). Two villages that border PAs within each district were selected. Where there was more than one PA in a district, the order of choice included a village bordering core PA (i.e. Serengeti National Park) first. Selection of villages bordering a core PA was guided by long-term interactions with PAs and hence more knowledgeable with PA issues. Independent stratified sampling for villages for each district was done to improve the efficiency of the statistical design and to yield a greater precision and thus smaller standard errors than a simple random sample (Schmitt, 2010).

One respondent was selected from each of the randomly selected households. Respondents included men and women above the age of 18 years from any ethnic group residing in the six study villages in the Serengeti ecosystem (Table 22). Recruitment used the local residence registers available in the villages. Village resident registers are a list of names of all village members arranged by household. Selected individuals were visited or phoned to request an appointment for introducing the research to them and requesting their participation. Structured questionnaires were used to solicit responses from participants on local level PA governance issues.

Table 22. Sample proportion

Village Name	Number of households (N)	Number of respondents (n)
Robanda	603	42
Park Nyigoti	130	21
Ololosokwani	1302	130
Kakesio	1130	114
Makao	432	63
Sapa	130	20
Total	3727	389

All respondents were informed about voluntary participation, right for withdrawal at any time, benefits and risks involved, and confidentiality aspects of the project. After this introduction, they were asked for their consent to participate in the research and asked to fix a convenient time and place for the interview.

The survey was administered face to face, with the interviewer taking the interviewees through the questionnaire item after item with clarifications whenever they requested. This approach allowed for interpretation or clarification as required, and was particularly effective with respondents who could not read. A possible concern with this approach is the lack of anonymity, although the issues pursued here are frequently discussed in these communities, and therefore not viewed as private matters. However, as noted in the Introduction Chapter this approach might have contributed to the underrepresentation of women. In addition, the observed imbalance with relatively few women participating might reflect the existence of strong male dominance in decision-making in the respective societies, but also the high proportion of male headed households in rural Tanzanian communities (Gillingham & Lee, 1999). Prior to the interview, interviewees were presented with the list of seven PAs in the Serengeti ecosystem

(Table 21). Interviewees were asked to choose a PA from the list that they were most conversant with and felt happy to comment on based on their own prior experience.

The questionnaire was developed through literature review, document analysis, key informant interviews and focus group discussions. The questionnaire was prepared to represent various governance criteria identified in the literature (see Chapter 2 for full methodology). For each governance related statement, a five-point Likert scale response format was provided: Strongly disagree (1), Somewhat disagree (2), Neutral (3), Somewhat agree (4) and Strongly agree (5).

Results were factor analyzed into ten factors (see Chapter 2). The 10 common factors (governance criteria) that were extracted during factor analysis were interpreted to represent 1) legitimacy, 2) transparency and accountability, 3) responsiveness, 4) fairness, 5) participation, 6) resilience, 7) achievements, 8) ecosystem-based management and connectivity, 9) consensus orientation, and 10) power (Tables 23). The factor analysis assigned between 2- 7 statements to each of these governance dimensions. The factor analysis demonstrated high psychometric properties (explained variance and alpha reliability (Chapter 2)

Table 23. Governance criteria identified in factor analysis of governance statements

Governance criteria	Definition	Number of Items
Legitimacy	Acceptance and justification of shared rule by a community, encompassing entitlement to make rules and generation of authority itself (Lockwood, 2010).	6
Transparency and accountability	Transparency is a requirement grounded in ethics, of stakeholder's right to know about matters that affects them (Lockwood, 2010). Accountability is acceptability of responsibilities, answerability of governing bodies to both higher and lower level stakeholders, and proper allocation of responsibilities to right levels of authorities (Lockwood, 2010).	7
Responsiveness	The manner in which institutions and processes try to serve stakeholders with regard to complaints and public criticisms (Graham et al., 2003)	17
Fairness	The supportive judicial context characterized by the respect for the rule of law, and fair, impartial and effective enforcement of protected area rules which is transparent, devoid of corruption and with the right for appeal (Graham et al., 2003).	6
Participation	Men and women shall have a voice in decision making either directly or indirectly; built on the freedom of association and speech and capacity to associate constructively (UNDP, 1997).	6
Resilience	Resilience refers to the amount of change or disturbance that can be absorbed by a system before it is reconstituted into different set of processes and structures (Gunderson and Holling, 2002).	5
Achievements/outcomes	Ecological, including ecosystem services and functions, biodiversity, landscape and geological; and socio-economic and cultural, including cultural, social, economic, research and education outcomes (Hockings et al., 2006).	2
Ecosystem Based Management (EBM)	Protected area management requires connectivity across scales and geographic regions that can link formal and informal vertical and horizontal protected area institutions and processes, while allowing actors to address shared problems in concerted fashion (Lockwood, 2010).	7
Consensus Orientation	Good governance mediates differing interests to reach a broad consensus on what is in the best interest of the group and where possible on policies and procedures (UNDP, 1997).	4
Power	Planning, decision making, revenue generation, spending powers and the powers to enter into contracts (Graham et al., 2003)	5

In this paper, analysis consisted of a one way ANOVA to compare results among PAs. The results were also subjected to a *Scheffe Post Hoc* multiple comparison test to determine the areas of difference or variation between various PAs regarding perceived governance.

3.4 Results

3.4.1 Sample characteristics

Two thirds of the respondents were under the age of 50 years, with 78.1% falling between 21 and 50 years. Men accounted for 70.2% while women accounted for 29.8% of the respondents. Even though Schmitt (2010) found females around Serengeti were 16% less likely than males to know of the park and 12% less likely to know of their closest PA, the current study design might have caused women to be underrepresented. Randomization was done for households and in most cases women were less ready to offer an interview when compared to their male counterpart. This might reflect on the strong male dominance in decision-making in the respective societies. However, these results should not have a notable risk as a result of women being underrepresented in the sample. Of the 389 respondents, 33.4% were from Ololosokwan, 29.3% from Kakesio, 15.9% from Makao, 10.8% from Robanda, 5.4% from Parkinyigoti and 5.1% from Sapa villages. Twenty four ethnic groups were represented in the sample population. Four ethnic groups accounted for over 85% of all the respondents. These were the Maasai (56.6%), Ikoma (12%), Sukuma (10%) and Iraqw (7.2%). The least populous ethnic groups were Nyiramba, Hadzabe, Shashi, Nyaturu, Hehe, Arusha and Zaramo contributing 0.3% each.

3.4.2 Legitimacy

The legitimacy score for the Serengeti ecosystem was around neutral ($M=3.17$) indicating the neutral nature of the communities on the acceptability and legality of various PAs in the ecosystem (Table 24). Although legitimacy appeared to differ across the seven PAs, $F(6, 363) = 3.914, p = 0.001$ (Table 24), a *post hoc* Scheffe multiple comparisons between the PAs revealed no significant difference between them (Table 25).

Table 24. Mean score on governance criteria for protected areas in the Serengeti Ecosystem

Mean Score for each Governance Factor										
PA	Legitimacy	Transparency & accountability	Responsive	Fairness	Participation	Resilience	Achievements	EBM	Consensus Orientation	Power
MGR	3.60	3.57	3.05	3.08	3.06	3.25	2.96	3.40	3.14	3.41
NCA	3.44	3.09	2.76	2.74	2.9	3.15	3.64	2.81	2.97	2.75
IWMA	3.40	3.02	2.45	2.53	2.53	2.61	3.22	2.64	2.6	4.10
MWMA	3.01	3.17	2.77	2.33	2.79	2.69	3.16	2.62	2.86	3.21
LGCA	3.35	2.73	2.14	2.29	2.10	2.69	3.07	2.50	2.49	3.39
SENAPA	2.91	2.52	2.19	2.18	2.24	2.42	2.94	2.2	2.32	3.42
IGGR	2.47	2.07	1.76	2.13	2.28	2.30	2.93	1.78	1.73	3.75
Ecosystem mean	3.17	2.86	2.46	2.45	2.53	2.72	3.14	2.55	2.61	3.33
<i>F</i>	3.914	7.48	6.084	3.862	4.883	4.415	3.103	6.619	5.344	3.888
<i>Sig.</i>	0.001	0.00	0.00	0.001	0.00	0.00	0.006	0.00	0.00	0.001

Where: SENAPA = Serengeti National Park, NCA = Ngorongoro Conservation Area, IGGR = Ikorongo-Grumeti Game Reserves, MGR = Maswa Game Reserve, IWMA = Ikona Wildlife Management Area, MWMA = Makao Wildlife Management Area, LGCA = Loliondo Game Controlled Area, and EBM = Ecosystem-Based Management

3.4.3 Transparency and accountability

Overall transparency was weak (Table 24). An examination of individual PAs reveals the lowest scores for Serengeti National Park, Ikorongo-Grumeti Game Reserves, and Loliondo Game Controlled Area ($M = 2.52, 2.07$ and 2.73 respectively, Table 24). A detailed examination of the components for this factor shows the Ikona Wildlife Management Area to be ranked particularly low on being open to scrutiny by other actors and delivering information to other stakeholders in an understandable manner (Appendix 10). Transparency differed significantly across the seven PAs, $F(6, 371) = 7.480, p = 0.000$ (Table 24). A *post hoc* Scheffe multiple comparisons between the PAs indicated significant difference between Serengeti National Park

and Maswa Game Reserve ($p = 0.000$), and between Ikorongo-Grumeti and Maswa Game Reserves ($p = 0.001$) (Table 25).

3.4.4 Responsiveness

Responsiveness was generally low for PAs in the entire ecosystem (Table 24), with the lowest scorer being Ikorongo-Grumeti Game Reserves ($M=1.76$). Only Maswa Game Reserve scored around neutral ($M = 3.05$) (Table 24). Responsiveness differed significantly across the seven PAs, $F(6, 338) = 6.084, p=0.000$ (Table 24). A *post hoc* Scheffe multiple comparisons between the PAs revealed a significant difference between Serengeti National Park and Maswa Game Reserve ($p=0.05$), Ikorongo-Grumeti Game Reserves and Maswa Game Reserve ($p=0.011$) and between Maswa Game Reserve and Loliondo Game Controlled Area ($p=0.055$) (Table 25).

Table 25. Post Hoc comparisons (Scheffe)

Protected Area		Governance factor									
Protected Area	Protected Area	Transparency & accountability	Legitimacy	Responsiveness	Fairness	Participation	Resilience	Achievements	EBM	Consensus orientation	Power
SENAPA	NCA	0.0820	0.225	0.088	0.178	0.038*	0.019*	0.015*	0.132	0.057	0.099
	IGGR	0.859	0.890	0.886	1.000	1.000	1.000	1.000	0.920	0.709	0.988
	MGR	0.000*	0.112	0.005*	0.010*	0.024*	0.024*	1.000	0.000*	0.031*	1.000
	IWMA	0.657	0.749	0.975	0.946	0.976	0.998	0.977	0.878	0.982	0.53
	MWMA	0.189	1.000	0.289	0.999	0.503	0.971	0.987	0.813	0.528	0.995
	LGCA	0.985	0.703	1.000	1.000	0.999	0.963	0.999	0.951	0.997	1.000
NCA	IGGR	0.059*	0.133	0.084	0.739	0.672	0.281	0.458	0.119	0.022	0.254
	MGR	0.538	0.998	0.937	0.916	0.998	1.000	0.161	0.441	0.998	0.391
	IWMA	1.000	1.00	0.968	0.998	0.949	0.736	0.879	0.999	0.948	0.007
	MWMA	1.000	0.819	1.000	0.874	1.000	0.788	0.688	0.998	1.000	0.860
	LGCA	0.884	1.000	0.344	0.795	0.095	0.749	0.423	0.957	0.706	0.504
IGGR	MGR	0.001*	0.066	0.011*	0.261	0.469	0.223	1.000	0.001*	0.010*	0.992
	IWMA	0.264	0.356	0.658	0.981	0.998	0.994	0.995	0.535	0.492	0.994
	MWMA	0.075	0.864	0.139	0.999	0.903	0.970	0.998	0.466	0.119	0.929
	LGCA	0.636	0.329	0.970	1.000	1.000	0.967	1.000	0.639	0.570	0.990
MGR	IWMA	0.697	0.999	0.598	0.799	0.816	0.637	0.992	0.449	0.804	0.672
	MWMA	0.874	0.595	0.976	0.326	0.988	0.689	0.997	0.283	0.985	0.998
	LGCA	0.088	0.992	0.055*	0.233	0.049*	0.647	1.000	0.100	0.461	1.000
IWMA	MWMA	1.000	0.955	0.977	0.999	0.996	1.000	1.000	1.000	0.996	0.403
	LGCA	0.987	1.000	0.977	0.997	0.926	1.000	1.000	1.000	1.000	0.658
MWMA	LGCA	0.855	0.961	0.486	1.000	0.457	1.000	1.000	1.000	0.950	0.999

Where: SENAPA = Serengeti National Park, NCA = Ngorongoro Conservation Area, IGGR = Ikorongo-Grumeti Game Reserves, MGR = Maswa Game Reserve, IWMA = Ikona Wildlife Management Area, MWMA = Makao Wildlife Management Area, LGCA = Loliondo Game Controlled Area, and EBM = Ecosystem-Based Management

3.4.5 Fairness

Fairness achieved weak scores across the ecosystem ($M=2.45$) (Table 24). Only Maswa Game Reserve scored neutral ($M=3.08$) (Table 24). Fairness differed significantly across the seven PAs, $F(6, 376) = 3.862, p = 0.001$ (Table 24). A *post hoc Scheffe* multiple comparisons between the PAs returned a significant difference between Serengeti National Park and Maswa Game Reserve ($p = 0.01$) (Table 25).

3.4.6 Participation

The score for participation was generally low for the entire Serengeti ecosystem ($M=2.53$) (Table 24). Only Maswa Game Reserve scored neutral ($M= 3.06$) the rest of the PAs were towards the weak governance score (Table 24). Participation differed significantly across the seven PAs, $F(6, 372) = 4.883, p = 0.000$ (Table 24). A *post hoc Scheffe* multiple comparisons between the PAs revealed a significant difference between Serengeti National Park and Maswa Game Reserve ($p = 0.02$), between Serengeti National Park and Ngorongoro Conservation Area ($p=0.038$), and between Maswa Game Reserve and Loliondo Game Controlled Area ($p = 0.049$) (Table 25).

The low scoring for participation implies that those villagers who wanted to contribute to the public participation process had limited opportunities to participate, and even when they did they were not taken seriously. Furthermore, the structure of the public participation process does not result in appropriate recommendations and inputs from villagers and are not sought early in the decision-making process. Additionally, reasons for public involvement are not clearly explained, and the resolution of conflicts between the village and PAs are not satisfactory.

3.4.7 Resilience

Overall resilience had low scores ($M=2.72$) (Table 24), with the exception of Ngorongoro Conservation Area ($M=3.15$) and Maswa Game Reserve ($M=3.25$) (Table 24). Resilience differed significantly across the seven PAs, $F(6, 367) = 4.415, p = 0.000$ (Table 24). A *post hoc Scheffe* multiple comparisons between the PAs returned a significant difference between Serengeti National Park and Maswa Game Reserve ($p = 0.02$), and between Serengeti National Park and Ngorongoro Conservation Area ($p=0.019$) (Table 25).

3.4.8 Achievements/outcomes

The ecosystem ranked around neutral on achievement and outcomes ($M=3.14$) as a governance criteria (Table 24). Three PAs (Serengeti National Park, Ikorongo-Grumeti Game Reserve, and Maswa Game Reserve) scored lower than 3 (Table 24). Achievements differed significantly across the seven PAs, $F(6, 373) = 3.103, p = 0.006$ (Table 24). A *post hoc Scheffe* multiple comparisons between the PAs returned a significant difference between Serengeti National Park and Ngorongoro Conservation Area ($p = 0.015$) (Table 25). The low scoring for PAs achievements in the ecosystem indicates local communities feel that PAs in Serengeti are not meeting objectives and they lack strong support from other actors.

3.4.9 Ecosystem-Based Management (EBM)

Scoring for ecosystem-based management for the Serengeti ecosystem revealed weak governance ($M=2.55$) (Table 24). Only Maswa Game Reserve scored neutral ($M=3.40$). Ecosystem-Based Management differed significantly across the seven PAs, $F(6, 363) = 6.619, p = 0.000$ (Table 24). A *post hoc Scheffe* multiple comparisons between PAs revealed a significant difference between Serengeti National Park and Maswa Game Reserve ($p = 0.000$), and between Ikorongo-Grumeti Game Reserve and Maswa Game Reserve ($p = 0.001$) (Table 25).

3.4.10 Consensus oriented decision making

The Serengeti ecosystem had weak evaluations overall for consensus oriented decision-making ($M=2.61$) (Table 24), with only Maswa Game Reserve scoring around neutral ($M=3.14$). Consensus orientation differed significantly across the seven PAs, $F(6, 369) = 5.344, p = 0.000$ (Table 24). A *post hoc Scheffe* multiple comparisons between the PAs revealed a significant difference between Serengeti National Park and Maswa Game Reserve ($p = 0.03$), Serengeti National Park and Ngorongoro Conservation Area ($p=0.057$) and between Ikorongo-Grumeti Game Reserve and Maswa Game Reserve ($p = 0.011$) (Table 25).

3.4.11 Power

Scoring for the distribution of power to village actors was around neutral ($M=3.33$) (Table 24), with only Ngorongoro Conservation Area scoring slightly less ($M=2.75$). The distribution of powers differed significantly across the seven PAs, $F(6, 372) = 3.888, p = 0.001$

(Table 24). A *post hoc Scheffe* multiple comparisons between the PAs returned a significant difference between Ngorongoro Conservation Area and Ikona Wildlife Management Area ($p = 0.007$) (Table 25).

In summary, PAs in the Serengeti ecosystem reveals a low scoring across governance criteria which indicates a weak perception of governance by local community actors (Table 26). Only Maswa Game Reserve and Ngorongoro Conservation Area were found to score around neutral with the rest of the PAs scoring below neutral.

Table 26. Summary scores across governance criteria for PAs in the Serengeti ecosystem

Protected area	Overall mean of Governance Ratings
Maswa Game Reserve	3.25
Ngorongoro Conservation Area	3.03
Ikona Wildlife Management Area	2.91
Makao Wildlife Management Area	2.86
Loliondo Game Controlled Area	2.68
Serengeti National Park	2.53
Ikorongo-Grumeti Game Reserve	2.32

3.5 Discussion

3.5.1 Differences amongst protected areas in the Serengeti ecosystem

This paper sought evidence to determine: 1) whether PAs in Serengeti ecosystem has strong or weak governance characteristics; 2) whether there is a difference in governance among different PA governance types in the Serengeti ecosystem based on community perceptions; and 3) whether the new forms of PAs that are more community oriented have higher governance scores than the traditional PAs. Most of the governance indicators showed weak governance scores. Understanding the difference that exists in governance amongst the PA types in Serengeti will be a first step towards better ecosystem governance. In this discussion each PA will be discussed in turn.

Serengeti National Park

Governance in the Serengeti National Park involves the PA management and Tanzania National Parks management making most of the decisions that are to be implemented in and sometimes outside their boundaries. Serengeti National Park is the largest and most important PA in the ecosystem but ranked the second lowest in overall ranking for governance. Serengeti National Park was also ranked below the mean on all criteria except power. Improvement in communication and transparency between actors in decision-making and management processes will most likely improve the score for governance in Serengeti National Park. This can be done through better links to the local government authorities at village and district councils (Chapter 4). A range of factors will potentially aid their perception of governance in the park. These include working in close collaboration with village councils and environmental committees in deciding the kind of assistance needed to the villages, patrolling the PA surrounding areas, and involvement of villagers' in general environmental protection.

Ngorongoro Conservation Area

Governance for the Ngorongoro Conservation Area involves the PA management making most of the decisions with regard to the area and resources within, and in turn affecting the lives of the local residents. The communities around are involved in the governance processes through the Ngorongoro Pastoral Council, a community-based organization established to cater for the well-being of the resident pastoralists living within the borders of Ngorongoro Conservation Area. Ngorongoro Conservation Area is the second largest PA in the ecosystem and unique for allowing communities to live within the area. The PA ranked second in overall ranking of all governance criteria with all the criteria ranking higher than the ecosystem mean except for power distribution.

Involvement of other actors especially communities is done in such aspects like education, human health and veterinary services, water, road infrastructures and availability of cheap priced food stuffs (Chapter 4). In most cases communities get involved through the Ngorongoro Pastoral Council leaders who are not necessarily feeding back to the community. However, despite this involvement this PA has scored neutral which is a result of perceived lack of empowerment by communities. More efforts are needed to bring communities on board in PA

decision-making. Such efforts may include more active involvement of general communities at grassroots in prioritizing the projects they need and also in deciding on investment in their areas. There should also be improved feedback mechanisms to communities through public forums and featuring of such issues in the village level meetings.

Maswa Game Reserves

Governance in Maswa Game Reserve involves the PA management making decisions with most cases the directives from the Wildlife Division Head Quarters in Dar es Salaam, with no avenues for involvement of other actors especially community in decision making. Maswa Game Reserve is among the oldest PA in the ecosystem established in 1962 and managed for consumptive use through tourist hunting. Its highest ranking may be attributed to communities' perception on its acceptance because it has been around for decades when compared to the nearby Makao Wildlife Management Area. However efforts are needed to ensure stronger governance performance evaluation through more communication and collaboration with local communities. PA managers and staffs should find avenues to sit in public forums and village meetings to explain about various issues with regards to Maswa Game Reserve and wildlife in general, which can also be used as an opportunity to answer queries from neighboring communities and in such improving the relationship and their perception of PAs. Involvement of village game scouts from neighboring villages in conducting patrols around the PA boundaries could increase the sense of ownership of the PA resources by the communities which will improve their perceptions on governance. However care must be taken through close monitoring and in selecting the people to be involved so as not to create more opportunities for poaching by the communities themselves disguised as village game scouts.

Ikorongo-Grumeti Game Reserves

Ikorongo-Grumeti Game Reserves were ranked the lowest in overall governance score. Furthermore, it was also ranked below the ecosystem average for all individual criteria except power. This low perception of PAs by local communities may reflect on hostilities between communities and PA managers as reported in the key informants and focus group interviews (Chapter 4). When the hostilities are coupled with poor communication amongst actors can compromise their participation in EBM. Therefore the Ikorongo-Grumeti Game Reserves

management needs to reengineer their governance such as by improving communication and linkage to village councils and village environmental committees in such things as anti-poaching efforts and investment decisions.

Ikona and Makao Wildlife Management Areas and Loliondo Game Controlled Area

The community oriented PAs scored low in governance ranking. Ikona Wildlife Management Area ranked third in overall governance ranking, scoring below the ecosystem average for transparency and accountability, responsiveness and resilience criteria. On the other hand, Makao Wildlife Management Area was ranked fourth in overall governance ranking scoring below average for legitimacy, fairness and resilience. The Loliondo Game Controlled Area was ranked fifth in overall governance scoring with all governance criteria scoring below the ecosystem average except for legitimacy and power.

The low scoring in power indicates again the fact that decision-making is done by other centers of power away from the communities. These results suggest that much as governance is not done by only communities in these PAs and thus, the Wildlife Management Areas and Game Controlled Areas mostly fit the category of collaborative governance. These results reveal absence of a strong difference between the Wildlife Management Areas and other forms of PAs. This indicates that even though expected to be more community oriented, they do not have better governance than the traditional PAs. To improve governance in the three PAs efforts need to be directed at more transparency, fairness and responsiveness to local actors in PA decision making and management processes.

3.5.2 General governance score for the ecosystem

The findings in this paper expand and support findings by other researchers who have researched aspects of PA governance in the Serengeti (Kideghesho, 2006; Schmitt, 2010). In this study, power was ranked above average for the ecosystem. This relatively high ranking may be a result of efforts done in the past two decades on community conservation awareness in the ecosystem by Serengeti National Park Outreach Office, Ngorongoro Pastoral Council, the Serengeti Regional Conservation Project and the establishment of the Wildlife Management Areas as a form of community-based PA management (Chapter 4; Kideghesho, 2006). However more efforts are needed to improve the empowerment of the local communities neighboring PAs.

Legitimacy was another governance criterion to have scored around neutral in the ecosystem. This relatively low score may be a result of PAs in the ecosystem being government owned either through a parastatal or under direct management of a central government department. This governance arrangement and historical reasons such as forceful evictions without compensations experienced by communities in the establishment and management of PAs may have influenced community perception on legitimacy of these PAs. To improve legitimacy, efforts ought to be directed at bringing more village actors onboard in decision-making and management processes.

Overall rank for achievement in the ecosystem was around neutral. This low ranking is an indication of people's perception on the attainment of communities' perceptions about PA governance. It is a result of low levels of involvement of community actors in PA management which does not provide them with information on attainment of PA goals. More communication between PAs and local community authorities is imperative in order to improve the ranking for achievement.

Overall, transparency and accountability were ranked below average for the entire ecosystem. This is despite two decades of community-based conservation initiatives in PAs. Lack of communication and involvement of local communities in PA issues is probably the reason. Similarly, the overall score for resilience was low for the PAs. Making arrangements for partnering with local communities in PA management issues and resolution of both boundary and human wildlife conflicts may improve the scoring for resilience. The ecosystem also ranked low on consensus orientation. This low ranking in consensus orientation suggests a need for improving the interactions between PA and village actors through the use of ecosystem-based forums in reaching decisions.

EBM's overall rank for the ecosystem was weak. Even with the presence of Wildlife Management Areas the ranking for EBM is still low, indicating deficiency in the governance structure that fails to involve more actors in decision-making (Chapter 4). Improvement in involvement and collaboration will most likely improve the governance score for EBM through settling deficiencies.

Overall the Serengeti ecosystem ranked low in participation. This low ranking is perhaps a result of lacking a coherent public participation structure and PAs not seeking input from the community actors in PA decision making and management. This concurs with Niedzialkowsks et al. (2012) observation on participation done as a tool for PAs to reach their objectives. PAs think communities have little concern for conservation contrary to the findings by Robinson and colleagues (2012) where communities in Serengeti expressed strong values for the environment, respect and appreciation of nature. Improvement in communication between PAs and communities will most likely help to improve the score for participation in the ecosystem.

Responsiveness ranked second lowest for PAs in the Serengeti ecosystem. This might be influenced by the perception of communities on the weak involvement, effectiveness and responsiveness in PAs issues. Most often, other PA actors work with blue print plans which purport to know community needs (Robinson et al., 2012). However, such plans do not necessarily contain the governance expectations of local communities for particular PAs. Currently communities are passively involved in PA decision-making and management through participation in the preparation and review of general management plans, working as casual laborers in PAs, and to some extent employed as village game scouts to patrol community-based PAs (Chapter 4). More avenues need to be sought to make community members more involved in PA management processes, such as through improvement of collaboration and communication among the PAs and community actors.

Fairness was the lowest ranked criteria in the ecosystem. Inequitable treatment on the use of natural resources serves to increase the low score for fairness from the local communities, making them increasingly opposed to conservation efforts in the ecosystem. PA authorities should ensure communication between actors on the distribution of benefits and redressing of costs associated with PAs. Furthermore, village authorities need to be involved in decision-making for matters that affect the lives of people in their villages.

3.6 Conclusion

This paper assesses the strength of the PA governance system in the Serengeti ecosystem and explores the variability in governance among the different PAs in the ecosystem-based on the perception of local communities. It further sought to establish whether the new forms of PAs that

are more community oriented have higher governance scores than the traditional PAs. This is the first comprehensive study to involve communities' perceptions in Serengeti ecosystem to evaluate governance performance of PAs in the ecosystem. It broadens our understanding of PA governance evaluation from the point of view of local communities.

The findings reveal that PAs in the Serengeti ecosystem have weak governance based on the score of ten governance criteria. Furthermore, PAs differ in governance from each other when considering some governance factors. This research further reveals that, even the two supposedly community-based conservation areas (Wildlife Management Areas) of Ikona and Makao did not differ from PAs under government agencies in the ecosystem, suggesting a close resemblance in objectives and management styles and a more fit to collaborative management governance category (Kothari, 2006a). Thus, establishing a PA as community-based conservation (Wildlife Management Area) does not necessarily change the perception of community members if the management actions and objectives, and other governance aspects are not perceived to accommodate the needs and expectations of local communities.

The low ranking for EBM reveals fragmented decision-making in the ecosystem with PAs operating independently without a strong link to other actors. Other actors are picked during the preparation of PA plans just to fulfill the legal and procedural requirements that requires the consent of stakeholders in establishment of PAs and in their management planning (Chapter 4). This is similar to findings by Eagles et al., (2012) that the differences in perception by actors to PA governance is dependent on PA management model uses and the institutional relationship between PA systems and associated actors. It is imperative that PAs learn from each other and from other actors by adopting better governance practices where they are weak and unable to meet ecosystem-wide objectives. Furthermore, efforts should be invested in communication between PA agencies and community actors so as to facilitate EBM. This can be done by establishing an overarching ecosystem coordination, monitoring and advisory body that will bring together the various ecosystem stakeholder groups.

This study found that PA agencies in the Serengeti are relatively more successful in empowerment, legitimacy and achievements while they are less successful in other governance factors such as fairness, responsiveness, EBM and transparency and accountability.

These results provide three important contributions to PA governance at ecosystem level, similar to what was forwarded by Lockwood (2010). These are 1) they can provide a baseline for assessment of performance accountability from which the confidence of ecosystem actors (especially communities and PA agencies) can be established and sustained, 2) they have potential to stimulate reflexive and continual improvement in governance as a part of an adaptive cycle approach, and 3) they can drive governance system redesign or organizational improvement for PAs in the Serengeti ecosystem.

Overall, the results demonstrate that it is important to look at the history of the PA to understand cultural, social, political and legal changes that might have taken place and might influence the perceptions of diverse groups towards PAs and thus the score they give in their governance evaluation.

Furthermore, PA agencies in an ecosystem need to bring together community actors in the governance of PAs by including their expectation and values as core principles of the PA governance. However, care should be taken not to compromise the integrity of biodiversity conservation outcomes as a result of increased human pressure in the ecosystem. As suggested by Heck et al., (2011a) and Heck et al., (2011b), participation of diverse actor groups in selecting indicators and assessing governance performance of PAs has the potential to enhance evaluation capacity, to increase credibility and acceptance of results, while strengthening the relationships between managers and local stakeholders, and addressing locally relevant issues.

CHAPTER 4

EXAMINING PA GOVERNANCE AND OUTCOMES FOR CONSERVATION AND DEVELOPMENT IN THE SERENGETI ECOSYSTEM, TANZANIA

“I have walked that long road to freedom. I have tried not to falter; I have made missteps along the way. But I have discovered the secret that after climbing a great hill, one only finds that there are many more hills to climb”
Nelson Mandela

Abstract

Protected areas are an important strategy for conserving biodiversity, but the delivery of conservation and social outcomes depends in part on effective PA governance. This paper presents findings from a study carried out in the Serengeti ecosystem in Tanzania that aimed at examining the range of PA types in the Serengeti ecosystem and 1) describing the interactions of governance actors in the Serengeti ecosystem, 2) describing the outcomes of PAs (perceived and actual) including conservation and social outcomes, and 3) exploring possible relationships between governance and outcomes.

The findings reveal that PAs in the Serengeti ecosystem have achieved various conservation and social outcomes. However, most of the social outcomes are felt at the community level rather than at the household level. This potentially could fuel resentment towards conservation and investments in the ecosystem or at least fail to provide incentives for conservation. Furthermore, the results indicate weak governance in various PAs, which likely contribute to the unfulfilled outcomes.

The paper concludes by recommending changes to conservation legislation in the ecosystem and efforts to improve ecosystem-based management by establishing a legally mandated inclusive ecosystem advisory body and increasing linkage among various actors.

Key words: Ecosystem-based management, Governance, Governance Outcomes, Protected Areas

4.1 Introduction

The paper describes the range of PAs in the ecosystem, and seeks to 1) describe the interactions amongst governance actors in the Serengeti ecosystem, and 2) describe the perceived outcomes of PA including conservation and development processes, and 3) explores the possible relationship between governance and outcomes.

Biodiversity provides many social, economic and environmental benefits essential for human beings. A major strategy for conserving biodiversity is the creation and management of protected areas (PAs). PAs are set aside to maintain functioning natural ecosystems, to act as refuge for species and to maintain ecological processes (Dudley, 2008), and are defined as “a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Dudley, 2008:8).

In the past, the creation and management of PAs was mainly a purview of government agencies. PAs were aimed at providing perpetual preservation of the fauna and flora (Hingston, 1931), as well as appropriate nature-based tourism. This traditional, top-down approach to conservation from central governments often had negative consequences on people’s livelihoods at a local level through forced displacement and denial of access to natural resources vital to human needs (McShane et al., 2011). For instance, over 85% of PAs established in Latin America and sub-Saharan Africa were associated with state expropriation of customary tribal lands, which involved dismantling villages, exiling communities and denying access to natural resources, often with inadequate compensation (Veit et al., 2010). Although contested, this is thought to have left many communities close to PAs in poverty (Ferraro, 2002). For example, people around PAs in the Serengeti ecosystem in Tanzania have lower annual per capita income, US\$97.5, much lower than the national average of US\$473.32 (Schmitt, 2010). Furthermore, 51.3% of the people in the Serengeti ecosystem live under the basic needs poverty line (1.25US\$ per day) compared to a national average of 36% (World Bank, 2008). The failure for benefits to offset the costs associated with PAs often fuels resentment of nearby communities to conservation efforts.

A significant issue for conserving biodiversity is increasing human population, which has an effect on increasing per capital consumption of resources and adding stress to the resource base (Dietz et al., 2003). Human population increase coupled with resource-intensive lifestyle has a range of interrelated negative consequences, from large scale production of disposable products to increased use of fossil fuels, and consumption of resource-intensive protein sources such as meat and seafood (Yule et al., 2013). Furthermore, human population growth has been linked to increased conversion of rangelands and forests to residential and farming which in turn decreases the habitats available for wildlife populations (Underwood et al., 2009). For instance, the population of Tanzania has grown rapidly from 12 million in 1967 to about 45 million by 2012 (United Republic of Tanzania, 2013). Comparative population data for the Serengeti ecosystem over this period are not available, but from 2002 to 2012 the Serengeti population grew from 2, 318,903 to 2,903, 484 (an increase of 25.2% in 10 years) (United Republic of Tanzania, 2013, 2002)³ (Figure 7). Human population increase have induced spatial and temporal vegetation and landscape changes through use of fire, grazing of domestic stock and conversion of land to agriculture - with an annual conversion rate of between 1.6% to 2.0% (Anderson et al., 2008; Estes et al., 2012). This increase in human population and its associated agricultural expansion around the Serengeti ecosystem will likely take over more land around PA boundaries and thus, reducing resources for wildlife (Estes et al., 2012; Sinclair et al., 2008), and increasing vulnerability of the poor people to human-wildlife conflicts.

The problems and negative consequences associated in the past with the creation and management of PAs is further complicated by the fact that PAs currently exist as “islands” in a surrounding landscape that has an impact on the PA, and likewise the PA has an impact on the surrounding landscape. Different components of an ecosystem may flow to adjacent land uses – for example, elephants move outside the boundaries of Serengeti National Park and damage crops in nearby communities.

To manage such interactions and adequately protect ecological values requires wider landscape approaches to conservation, involving many institutional sectors of the society (Dudley, 2008; Johnson and Agee, 1988). This realization has given rise to the application of

³ Population estimates based on Ngorongoro, Serengeti, Rorya, Tarime, Munda, Magu, Busega, Itilima, Bariadi and Meatu districts

‘ecosystem-based management’ (EBM) and related strategies to the management of PAs. When EBM is applied specifically to the context of PAs, it involves managing the connection between PAs, other land uses, and human communities found in the ecosystem (Espinosa-Romero et al., 2011; Grumbine, 1994; Keough and Blahna, 2006). EBM is potentially able to reduce the costs of conservation and contribute to the delivery of conservation and social outcomes.

Similar to EBM, the social-ecological system model recognizes patterns of resource use and management by humankind as complex social-ecological systems, composed of multiple subsystems and internal variables at multiple levels (Ostrom, 2009). In complex social-ecological systems such as the Serengeti ecosystem, resource systems (PAs, land uses), resource units (wildlife, livestock), users (tourists, pastoralists), and governance systems (PA agencies, community-based organizations (CBOs), and local government administration) interact to produce outcomes through a system of feedbacks (Ostrom, 2009). The sustainability of such a system is dependent on the interplay between its various subsystems. In both of these models the underlying factors have been the complex nature of the ecosystems that require a holistic management approach.

However, for EBM to be effective, it is now apparent that the role and interaction of diverse stakeholders within the larger ecosystem, beyond the boundaries of PAs, need to be considered. People cannot be separated from nature, and their values play a dominant role in ecosystem goals (Grumbine, 1994). Furthermore, humans are fundamental influences on ecological patterns and processes and are in turn affected by them (Grumbine, 1994). Understanding the role and interactions of various actors is important especially as the impacts of their decisions flow to affect the PA resources and processes. Likewise the decisions that are made in PAs often have an impact on other land uses outside the PAs. For example, decisions to increase law enforcement within the PAs can potentially lead to increased populations of wildlife which can potentially increase human wildlife conflicts as these animals move outside the PA boundaries in search of their needs. This realization has led to the examination of governance structures related to PAs.

Governance refers to a network of institutions and organizations concerned with creating the conditions for ordered rule and collective actions through social coordination, public policies

formulation and implementation, shaping power relations and direction setting that steer human behavior to achieve strategic objectives (Jones et al., 2011; Smith, 2009; Stoker, 1998; UNDP, 1997). With respect to PAs, governance refers to the “interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders get their say in their management” (Graham et al. 2003:2). Good governance has the potential to build on the assets of the poor by promoting participation, and providing greater empowerment through increase in knowledge (Smith, 2009). Good governance in PAs responds to the principles and values of affected actors as enshrined in society and PA legislation and policies (Dudley, 2008). PA governance is mainly concerned with decision-making processes that are intended to improve management of natural resources in the ecosystems. Governance has caught the attention of both conservation scholars and practitioners in the past decade due to the challenges of multi-actor involvement in successful PA management.

Absence of effective governance institutions at appropriate scales (local, district, regional, and national), keeps natural resources and the environment at risk from increasing human population, consumption, and deployment of advanced technologies for resource use (Dietz et al., 2003). When governance systems are non-functional at local levels there is greater risk of unsustainable exploitation.

Failures to achieve desired outcomes in conservation have been attributed largely to poor-quality governance (Dearden et al., 2005). This may include weak PA governance structures, administrative incompetency, corruption, lack of accountability and openness in policy-making, and an absence of the rule of law (Smith, 2009). Governance affects the ability of PAs to achieve their goals and meet expected social objectives such as improving ecological health, facilitating greater actor participation and enhancing long-term sustainability (Dearden et al., 2005; Eagles et al., 2013).

If PAs are to achieve desired outcomes within a complex socio-economic landscape, we need a better understanding of PA governance, PA outcomes, and the connections between them. This paper presents findings from case study research carried out in the Serengeti ecosystem in Tanzania in 2012. The paper describes the range of PAs in the ecosystem, and seeks to 1)

describe the interactions amongst governance actors in the Serengeti ecosystem, and 2) describe the perceived outcomes of PA including conservation and development processes, and 3) explores the possible relationship between governance and outcomes.

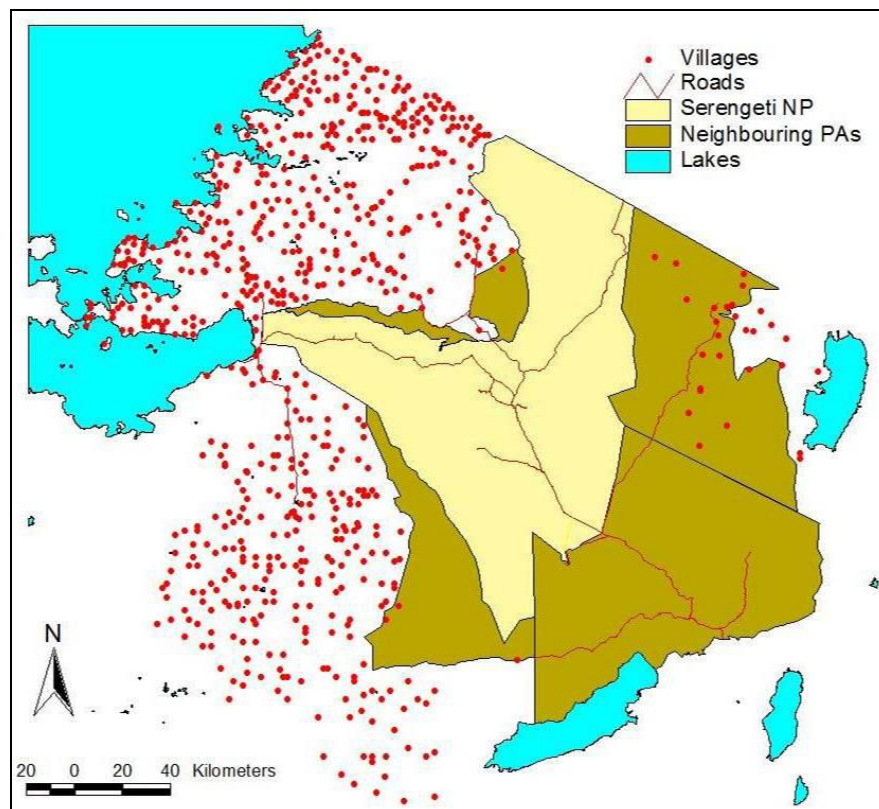


Figure 7: Settlement distribution around the Serengeti ecosystem (Source: Tanzania National Parks, 2005)

4.2 Methodology

The Serengeti ecosystem spans an area of about 30,000 km² between 1° 28' and 3° 17' S latitudes and 33° 50' and 35° 20' E longitudes, mostly in PAs of various types (Sinclair et al., 2008; McCabe et al., 1992; Polasky et al., 2008) (Figure 8, Table 27). The ecosystem includes two of the world's most renowned PAs (Serengeti National Park and Ngorongoro Conservation Area) both classified as World Heritage Sites. The area is comprised of both consumptive and non-consumptive PAs falling under different IUCN PA categories (Table 27). Consumptive PAs are designed to allow direct use of wildlife resources primarily in the form of hunting (e.g. Game Reserves and Game Controlled Areas) whereas non-consumptive PAs are designed and managed

for indirect uses such as game viewing and photographic tourism (e.g. National Parks and Ngorongoro Conservation Area) (United Republic of Tanzania, 2009a, 2009b).

In addition, Wildlife Management Areas (WMAs) are established in the ecosystem as a form of community-based natural resources management to devolve ownership and management responsibilities for wildlife to local communities (United Republic of Tanzania, 1998). The principle behind WMAs has been the inclusion of local communities in the management of wildlife resources that are found in their areas to attain the twin goal of conservation and socio-economic development to communities (Jones and Murphree, 2004). In Tanzania, WMAs have been established near the boundaries of PAs (e.g. Serengeti National Park) and function to provide more direct benefits to local communities than more traditional PAs, often through tourism, while expanding the conservation area (although conservation policies differ somewhat from those of the park). WMAs are also thought to provide a buffer to protect community livelihoods from destruction by wildlife species moving in and out of nearby PAs.

Table 27. PAs in the Serengeti ecosystem, Tanzania

Name of PA	Ownership and management responsibility	IUCN Category	Size (Km²)
Serengeti National Park	Government (TANAPA)	II (National Park) – conservation and non-consumptive tourism	14,700
Ngorongoro Conservation Area	Government – NCAA	III (Natural Monument) and V (Protected Landscape) – protection of specific natural monument (Crater), and for conservation of biodiversity, cultural and scenic values	8,200
Ikorongo-Grumeti Game Reserve	Government – WD	VI Managed Resource Protected Areas – consumptive and non consumptive tourism	3,797
Maswa Game Reserve	Government – WD	VI Managed Resource PAs	2,765
Ikona Wildlife Management Area	Collaborative (WD & CBO)	VI Managed Resource PAs	242.3
Makao Wildlife Management Area	Collaborative (WD & CBO)	VI Managed Resource PAs	768.9
Loliondo Game Controlled Area	Government (WD & NDC)	VI Managed Resource PAs	4,200
Kijereshi Game Reserve	Government (WD)	VI Managed Resource PAs	65.72
Mwiba Wildlife Ranch	Private (Mwiba Holdings)	VI Managed Resource PAs	400
Loliondo I & II Forest Reserves	Government (FD & NDC)	V Habitat Management Area – To protect important catchment areas	Unknown

WD = Wildlife Division, CBO = Community Based Organization, TANAPA = Tanzania National Parks, NCAA = Ngorongoro Conservation Area Authority, FD = Forest Division, NDC = Ngorongoro District Council

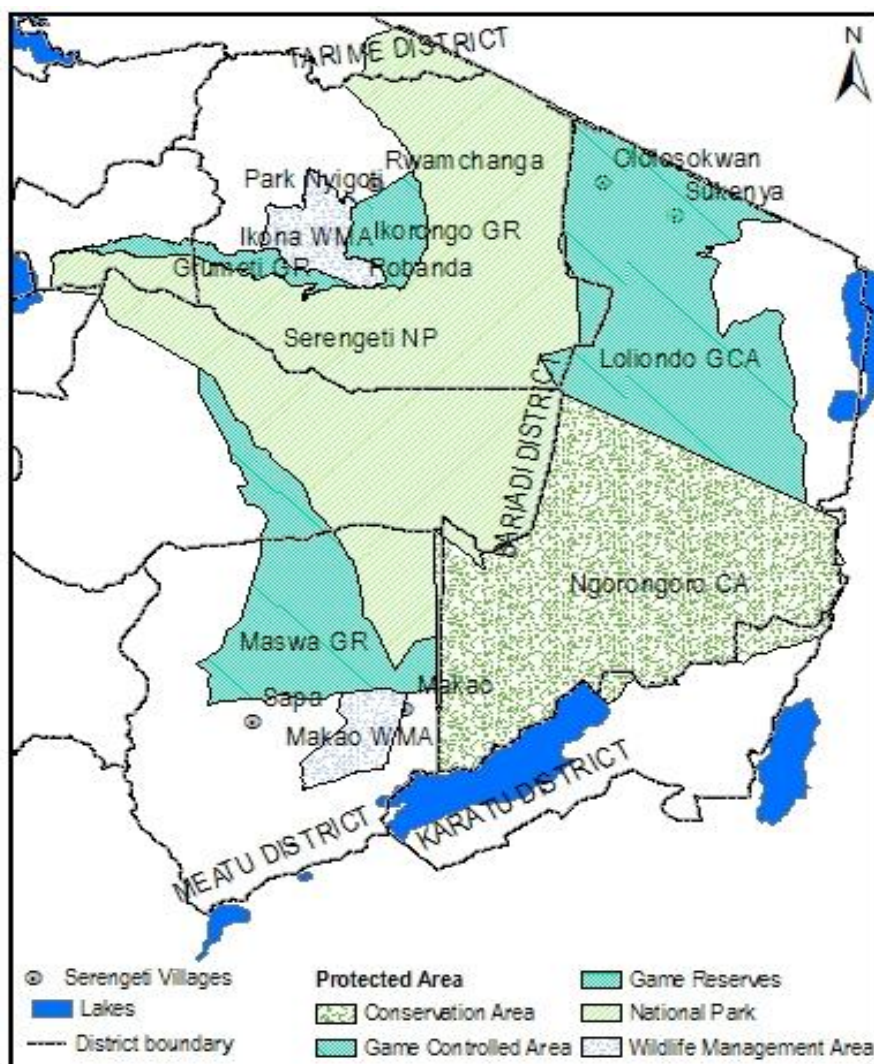


Figure 8: Location of the Serengeti ecosystem in Tanzania

Data for this study were mainly obtained through key informant interviews, focus group discussions and document analysis that addressed perceptions of governance of PAs in the Serengeti ecosystem, focusing on outcomes and structures. The selection of key informants was based on their knowledge of PAs and issues concerning the Serengeti ecosystem. Key informants included members of Village Councils and Village Environmental Committees, CBO staff, resource user group leaders, retired public servants; PA and Non-Government Organization (NGO) staff, district administrators, tourism and hunting operators, and researchers within the ecosystem. Primary key informants were identified in collaboration with the relevant leaders in a place, followed by a snowballing sampling method to obtain subsequent participants

(International Institute of Rural Reconstruction, 1998). A total of 88 key informants participated in this study.

Six villages (Robanda, Parkinyigoti, Ololosokwan, Kakesio, Makao and Sapa) were involved in this study in addition to other actors in the ecosystem. Three focus groups discussions were conducted for men, women and youths for each village except for three villages (Sapa, Kakesio and Ololosokwan) where only one focus group was held per village. The selection of focus group participants followed recommendations by International Institute of Rural Reconstruction (1998) considering background knowledge relevant to PA governance in the Serengeti. Participants were chosen from the Village Councils, Village Environmental Committees, and Village Game Scouts through assistance of Village Council leaders. For both key informants and focus groups, identified participants were consulted, briefed about the research, and requested their consent to take part in the discussions. A total of 49 people participated in focus groups. The age of participants varied between 19 and 67 years. 78 participants were males while 59 were females for combined key informants and focus group discussions.

Interviews for each key informant lasted about an hour, followed by transcription of tape-recorded interviews. Analysis for key informant interviews involved summarization of the narratives from each key informant, categorizing responses, collating and filtering of the data to extract dominant themes related to governance structures, processes and outcomes. Qualitative analysis followed procedures recommended by Robson (2011). First, the data were identified as representing a particular aspect of the study and given labels corresponding to governance attributes (e.g. transparency, accountability, etc). Later, codes with the same label were grouped together into particular themes (e.g. conflict management, governance structure, etc.) and the resultant themes formed the basis of further analysis and interpretation, where summaries of the themes was made, supplemented by tables and network maps of structures. Thematic analysis involved identification of similar phrases, patterns and themes.

The use of focus groups provided an opportunity for triangulation to improve data validity and reliability. Themes developed through analysis of key informant interviews were tested and elaborated in the follow-up focus group sessions. Groups from each village had an

opportunity to present their deliberations in a plenary session to their colleagues for clarification and consensus.

Documentary analysis of maps, newspapers, books, and minutes of meetings, letters, memoranda, speeches, magazine articles, reports and other relevant documents about PA governance in the Serengeti ecosystem was used to supplement data from other methods. Document analysis was used trace the outcomes and to triangulate information obtained from the other two methods. This information is used in discussing the governance structures and outcomes for the Serengeti ecosystem.

4.3 Results and discussion

The greater Serengeti ecosystem is a complex socio-ecological system comprised of many forms of land tenure, PA types and communities. The achievement of conservation and social outcomes within this environment is shaped to a large extent by the effectiveness of governance systems and the relationships between actors. The analysis explores these relationships by looking first at the nature of governance and how it is perceived, followed by an examination of the social and conservation outcomes. Based on the data collected for the study, we argue that these outcomes are possibly influenced by the governance system.

4.3.1 Governance structure and the social-ecological system in the Serengeti ecosystem

Analysis of the governance structure for the Serengeti ecosystem was undertaken by asking key informant a series of questions. 1) With what actors do you communicate? 2) What is the frequency of communication? 3) What is the mode of communication? (whether formal or informal and face-to face, via letters or phone), and 4) how important is the communication. For the governance structure, the researcher quantified frequency of interactions with a particular actor, and then grouped them to determine the thickness of the linkage among the actors.

From this analysis governance for PAs in the Serengeti ecosystem was found to be shared among various actors, including PA agencies, investors, district administration, CBOs, the wildlife and forest divisions, and local government authorities (Figure 9). However, the majority of the functions are carried out at the individual PA level with very weak formal communication

amongst the PAs, and between the PA and the local governments. Figure 9 below illustrates the nature of the relationships among the actors in PA governance.

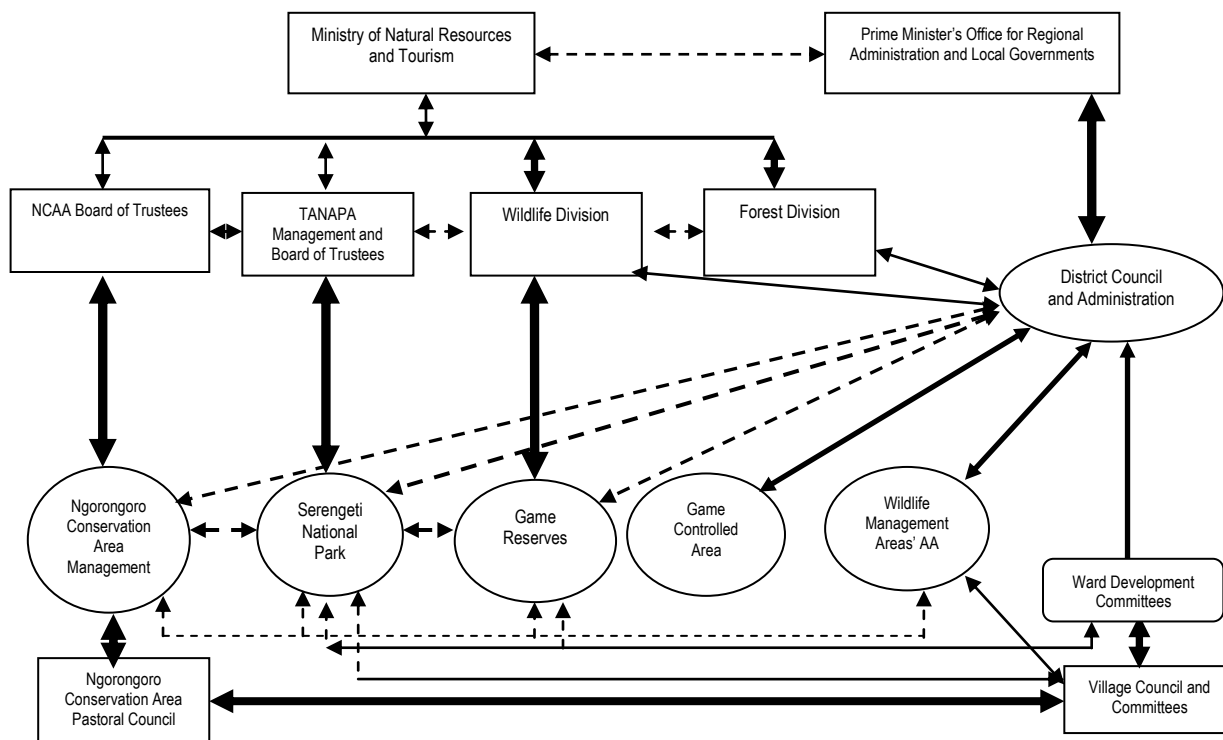


Figure 9: Governance structure for the Serengeti ecosystem (TANAPA = Tanzania National Parks, NCAA = Ngorongoro Conservation Area Authority)

From figure 9, thin solid lines represents weak formal communicative relationship; thick solid lines represents strong formal communicative relationship; thin dotted lines represents weak collaborative relationship; while thick dotted lines represents strong collaborative relationship.

Government owned PAs

The government owned PAs (Table 27) are administered through the PA agencies (Ngorongoro Conservation Area Authority, Wildlife Division and Tanzania National Parks). Decision making follows their management plans and corporate plans, communication with the Ministry of Natural Resources and Tourism (thick solid lines), and mutual communication

between the agencies (thick solid lines), with very limited communication with District Councils (thin solid lines).

For the case of Ngorongoro Conservation Area, there was strong vertical communication between the PA management and the Pastoral Council and through them to the village councils (thick solid line) particularly in matters pertaining to the wellbeing of resident communities. There were strong vertical collaborations between the Ngorongoro Conservation Area Authority and its Board of Trustees (thick solid lines) and a relatively weak vertical linkage to the Ministry of Natural Resources and Tourism particularly regarding policy issues (thin solid lines). There was weak communication between Ngorongoro Conservation Area and Ngorongoro District Council (thin dotted line) mostly around issues pertaining to resident communities and tourism investments. Furthermore, there was very weak communication with other neighboring district councils (thin dotted line). The horizontal collaboration between Ngorongoro Conservation Area and neighboring PAs was observed although relatively weak. Collaborations were in preparation of management plans, sometimes in joint patrols, endangered species management (rhino and wild dogs), sometimes in settling boundary problems and in resolving livestock encroachments to other PAs. However, there appeared to be many more actors who were not included in communication with this PA such as researches in the ecosystem, Community Based Organizations (CBOs) and NGOs in areas bordering the PA.

With regard to Serengeti National Park, there were weak vertical communications between the PA management and the village councils (thin solid line) through the PA Outreach Department particularly in matters pertaining to socio-economic assistance and creation of conservation awareness. There was strong collaboration between the Serengeti National Park and the Tanzania National Parks management and through it to the Board of Trustees (thick solid line) and a relatively weak communication to the Ministry of Natural Resources and Tourism (thin solid line) for some managerial and policy issues. The vertical communication between Serengeti National Park and District Councils was not strong (thin dotted line), with most communication focused on issues pertaining to socio-economic projects in the neighboring local communities. Furthermore, the horizontal collaboration between Serengeti National Park and neighboring PAs was present but relatively weak (thin dotted lines). For Ngorongoro Conservation Area, collaboration with other actors is present in the preparation of management

plans, joint patrols, endangered species management (rhino and wild dogs), settling boundary problems and in resolving livestock encroachments to other PAs. However, other actors (e.g. community based organizations and local NGOs) appeared to be left out of communication with Serengeti National Park.

Game Reserves are under the direct governance of the Wildlife Division. There was strong vertical communication between Game Reserves and the Wildlife Division (thick solid line), but very limited communication with other actors in the ecosystem (thin solid and dotted lines). Game Reserves lacked management plans and decision-making was based on Project Managers and directives from the Wildlife Division. Furthermore, Game Reserves had little room for external actors' collaboration apart from the powerful investors within the PAs, had insufficient opportunities for civil society involvement, and lack necessary human and financial resources for managing the PAs.

Wildlife Management Areas

Wildlife Management Areas are governed by the communities under a Community Based Organization (Authorized Association - AA). The AA is a body of representatives elected from the Wildlife Management Area member villages who work under the respective Wildlife Management Area constitution and management plans as directed by the Wildlife Conservation Act (United Republic of Tanzania, 2012). The AA reports partly to the District Council and to the Wildlife Division who decides on matters dealing with investment, allocation of the hunting block and revenue collection. This holding up of important decision-making authorities such as investment decisions, and hunting block allocation by the Wildlife Division amount to what Eagles et al., (2012) refer to a top-down approach by governments introducing important policy initiatives without adequate consultation. Wildlife Management Areas had quite good communication with the District Council through which they were linked to the Wildlife Division and the Prime Minister's Office for Regional Administration and Local Governments. Although the Wildlife Management Areas were linked to the Village Councils, the communication between them was not strong as required by their constitutions and Wildlife Conservation Act. They lacked frequent contacts with Village General Assemblies and Village Councils. This lack of governance devolution by Wildlife Management Areas concurs with Jones

and Murphree's (2004) observation that time and sustained investments are required to develop effective local-level resource management institutions. Furthermore, the Wildlife Management Areas appears to have weak collaborations with other PAs and actors in the ecosystem.

Conservation and social outcomes observed in the Serengeti ecosystem are shaped by PAs, but also by other actors as described below.

District Councils and District Administration

District Councils are responsible for overseeing local government functions including the Ward Development and Village Councils. District Councils have a Land and Natural Resources Department which is comprised of Wildlife and Forest sub-departments. They are also the point of contact for the Game Controlled Areas even though most of the decisions such as investments and hunting block allocations are done by the Wildlife Division (United Republic of Tanzania, 2009a). The District Natural Resource Advisory Board is chaired by the District Commissioner and draws members from the various technical experts in the District Council, PAs within the district and NGOs. This Board monitors enforcement of wildlife laws in the district and investment in the Wildlife Management Areas (United Republic of Tanzania, 2012). The district councils in the ecosystem appeared to have more nodes of communication with other ecosystem actors as compared to other ecosystem actors. However, the communications were not strong except the one to the Prime Minister's Office for Regional Administration and Local Government to whom they are directly legally and administratively answerable.

Village Councils and Village Environmental Committees

Village Councils are mandated *inter alia* to coordinate natural resource management at village level, formulating natural resource management by-laws and monitoring the activities of the AA (United Republic of Tanzania, 2012). Village Environmental Committees are responsible for overseeing the duties of Village Game and Forest Scouts and regulating access to natural resources by villagers through enforcement of village land use plans and village natural resources management by-laws. These village level committees, although very important, are not involved in decision-making for the nearby PAs. The only strong links for Village Councils were observed with the Ngorongoro Pastoral Council and the Ward Development Committees.

Ngorongoro Pastoral Council

The Ngorongoro Pastoral Council is a CBO established under section 24 of the Ngorongoro Conservation Area Ordinance to advise PA management on ways to safeguard the wellbeing of the native pastoral communities residing within the Ngorongoro Conservation Area. The Pastoral Council is the connection between the grassroots communities and PA management in Ngorongoro.

Ministerial level collaborations

Horizontal ministerial collaborations were observed between the Ministry of Natural Resources and Tourism which oversees the wildlife and PAs and the Prime Minister's Office for Regional Administration and Local Government which oversees the functions of Local Governments. However the communication between the two ministries even though important did not seem to be regular.

To summarize, there are strong vertical linkages in the governance of PAs in the Serengeti ecosystem from PAs to ministerial level. There are vertical linkages from the village to the ministerial level through the district councils. However, there is a disconnect between the local communities and PA governance institutions. Linkage is lacking between PAs and district and village councils. Furthermore, the horizontal linkages among PA management agencies are fragmented which results in weak relationships among PAs and also between PAs and District Councils. The strengths and weaknesses of these relationships is indicated in Figure nine.

Governance outcomes

Scholars suggests that there is a relationship between governance of PAs as described above with respect to the Serengeti ecosystem, and outcomes on the ground with respect to conservation and community livelihoods (Graham et al., 2003). The following section discusses governance outcomes and how they are perceived by various actors in the Serengeti ecosystem. These perceived outcomes are presented below using the sub-headings that emerged from the thematic coding of the key informants and focus group interviews that were done in the Serengeti ecosystem.

Evaluation of governance outcomes casts a light on the extent to which attainment of ecosystem objectives was perceived by actors. This section reviews the conservation and development related benefits apparent to key actors in the Serengeti ecosystem, and infers that these outcomes are related to the nature of governance as described above (Eagles et al., 2013). Governance outcomes are varied and include: ecological, ecosystem services and functions; biodiversity, landscape and geological, socio-economic and cultural values (Hockings et al., 2006).

Conflicts and conflict resolution strategies

The Serengeti ecosystem is burdened by diverse conflicts that have necessitated invention of diverse conflict resolution mechanisms (Table 28 and 29). However there was no “one size fits all” conflict resolution strategy employed by the ecosystem actors. There are many human-wildlife conflicts, with hotspots in the southern, eastern and western Serengeti. In Ololosokwani (eastern Serengeti) there are increased attacks from elephants and increased predation on small livestock by wild dogs. Wild dogs are endangered while elephants are threatened Red List species (IUCN, 2012). For instance, on December 2012 a lone buffalo attacked and killed 2 people in Mandorosi village around Enashiva Wildlife Sanctuary only to be tracked down and shot in January 2013. Communities were dissatisfied by the lack of compensation and by the cumbersome bureaucratic procedures that have to be followed and often stretch out indefinitely. These issues have led to tense and often negative relationships among actors in the Serengeti Ecosystem (See Table 28 below).

Table 28: Perceived evidence for tense-relationships between actors in the Serengeti ecosystem

Evidence for tense and poor relationships
Lack of trust among actors
Bureaucracy in following poachers as they cross PA boundaries
Competition between park agencies and livestock keepers for forage and water
Some politicians encourage grazing in PAs
Superiority-inferiority feelings amongst employee in different PA agencies
Inadequate security against poachers for Game Reserves and Game Controlled Area
Lack of security cooperation resulted in robbery and tourist murder in Robanda village
Lack of networking and strong communication for private concession areas
Power struggle between District Councils and AAs
PA managements do not easily accept criticism
Unethical PA employees who are poaching accomplices
Competition amongst actors (conservation vs. utilizing)
PAs are seen by district administrators as not honouring the fact that they are within districts
Deficiency in consultations among ecosystem actors with decisions often dependent on personal interests
Lack meta-population management for black rhinos
Investors are profit oriented forgetting communities and conservation issues
District Council staffs seen as lacking cooperation and demanding extra-payments for their duties
Communities outside Ngorongoro Conservation Area sidelined in assistance compared to those within
184 cattle lost in Parkinyigoti as Grumeti Reserve Game Scouts chased them by helicopters from PA

Source: Key informants and focused group discussions 2012

High profile conflicts in the ecosystem include human-wildlife conflicts, conflicts between Maasai pastoralists, investors and government in the Loliondo Game Controlled Area (MNRT, 2013a, 2013b), boundary disputes between Serengeti National Park and villages in Loliondo, and livestock grazing in Maswa and Kijereshi Game Reserves and Makao Wildlife Management Area (Tanzania Daima, 2012). Other conflicts include the eviction of community members in the Makao Wildlife Management Area (Tanzania Daima, 2011), a decision by Robanda Village to pull part of their land from Ikona Wildlife Management Area, and disputes on alleged human rights violation by investors.

Table 29. Diversity of conflict resolution strategies in the Serengeti ecosystem

Conflict resolution strategy	Used by
- Use of Joint Venture Agreements	- Investors, District Councils, WMAs
- AA Conflict resolution committees	- Investors, Village Councils, WMAs
- Use of Wildlife Management Area regulations, constitutions and courts of laws	- WMA employees
- Through District Natural Resources Advisory Board, district and regional commissioners	- WMAs, village councils and investors
- Meetings to resolve conflicts between PAs, investors and communities	- Investors, village councils, WMAs
- Mediation by culturally knowledgeable people	- Investors, WMAs
- Use of community forums to discuss issues in community	- Investors, WMAs, Village Councils
- Clearly marking PA boundaries	- PAs, village councils
- Having some PAs as buffer zones	- Game Reserves and WMAs
- Use of Serengeti Ecosystem Community Conservation Forum	- PAs, Investors, district councils and FZS
- Personal decisions	- PAs (Game Reserves)
- Implementing PA management plans (even though they may also be a source of conflicts)	- Serengeti National Park, Ngorongoro Conservation Area and WMAs
- Using benefit sharing mechanisms	- Serengeti National Park, Ngorongoro Conservation Areas, Investors and WMAs
- Looking for alternative resources to reduce competition	- Serengeti National Park, Investors (Grumet Reserves Ltd)

Source: Key informants and focused group discussions 2012

Ecosystem-based management and connectivity in the Serengeti

Generally, this study found there was strong bio-physical connectivity between PAs in Serengeti ecosystem which enabled free movement of wildlife except for some areas such as Makao, Robanda and Loliondo where villages are within the wildlife migratory routes (Figure 7). However, governance connectedness is lacking when actors worked independently, each with their own mandate, responsibility and resources. There are relatively good relationships and collaborations between PA actors and other conservation partners such as District Councils, and conservation related non-governmental organizations, but very little with neighboring communities (Table 30). Actors felt a deficiency in anti-poaching capacity in some PAs due to lack of resources while other PAs had more resources. One PA key informant said: *“things are not working well and if this continues then it will worsen. Look at the elephant poaching - although census figures show an increase their populations the reality is a decline. In 2010 MGR recorded 34 carcasses of poached elephants in 2011 and in 2012 up to June alone 40”*.

Actors in the Serengeti ecosystem have engaged in various forms of collaboration (Table 30). However, these collaborations are more evident between PAs with little or no collaboration with local communities. Failure to involve all actors in ecosystem-wide affairs, and the fact that some areas received higher conservation attention (such as Serengeti National Park, Ngorongoro Conservation Area and Ikorongo-Grumeti Game Reserves) while others received less attention (e.g. Maswa and Kijereshi Game Reserves, and Makao Wildlife Management Area) were setbacks to EBM. Collaborations with other actors existed mainly during PA management plan preparations but were weak during the implementation of the plans.

Table 30. Evidence for collaboration among actors in the Serengeti ecosystem

Category of issue	Description of activities and actors involved
Preparation of management plans	- Involvement of actors in preparation and review of management plans such as Tanzania Carnivores Master Plan, Ikona Resource Zone Management Plan, Serengeti National Park General Management Plan, Ngorongoro Conservation Area Management Plan
Joint patrols	- Joint patrols involving Ikorongo-Grumeti Game Reserves, Grumeti Reserves and Serengeti National Park for western Serengeti - Joint Patrols between Maswa Game Reserve, Friedkin Conservation Fund, Ngorongoro Conservation Area Authority, Serengeti National Park for southern Serengeti - Joint patrols between Anti-Poaching Unit (Arusha) and Ngorongoro District Council in Eastern Serengeti - Serengeti National park and Maasai Mara National Reserve (Kenya) to protect rhino in Nyamalumbwa area
Invasive species control	- Serengeti National park use casual laborers from villages to control invasive species - Ngorongoro Conservation Area Authority works with Tanzania Wildlife Research Institute and Tropical Pesticides Research Institute in invasive species management
Problem Animal Control	- Main actors have given each other area for operation in Serengeti and Tarime Districts and have evaluation meetings - A new strategy that involves key sectors such as the Tanzania National Parks, Wildlife Division, Tanzania Wildlife Research Institute and members of public living in villages prone to rampaging elephants
Law enforcement	- Serengeti National Park helps Maswa Game Reserve in prosecution - Maswa Game Reserve helps Makao Wildlife Management Area in patrols - Ikorongo-Grumeti Game Reserves and Grumeti Reserves Ltd helps to patrol Ikona Wildlife Management Area
Catchment protection	- Serengeti National Park cooperate with authorities in the catchment basins for Mbarageti, Grumeti and Mara rivers
Protection of the migration	- Serengeti National Park need a network of some PAs Ngorongoro Conservation Area Authority, Ikorongo-Grumeti Game Reserves, Ikona Wildlife Management Area, Loliondo, Maasai Mara and areas outside PAs to sustain ungulates migration - Wildlife does not recognize boundaries
Boundary disputes settlement	- Maswa Game Reserve and Ngorongoro Conservation Area resolved a conflict of hunting in Ngorongoro through consensus - Boundary problem at Ndotu resolved between Serengeti National Park and Ngorongoro Conservation Area Authority
Endangered Species conservation	- Cooperation between Tanzania Wildlife Research Institute, Serengeti National Park, Ngorongoro Conservation Area Authority, Ngorongoro District Council and Wildlife Division for the conservation of Wild dogs in Eastern Serengeti - Cooperation between Tanzania Wildlife Research Institute, Serengeti National Park, Ngorongoro Conservation Area Authority, Grumeti Reserves Ltd, Ikorongo-Grumeti Game Reserves, Anti-Poaching Unit, Serengeti District Council and Frankfurt Zoological Society for the conservation of black rhino the Serengeti ecosystem

Source: Key informants discussions 2012

This study reveals mixed results for EBM in the Serengeti ecosystem with some of Grumbine (1994) dominant requirements for EBM being strongly adhered to, and some being

less adhered to. For example the PAs in the Serengeti seems to have strong adherence to ecological boundaries for PAs thus maintaining ecological integrity. However, even though humans are part of the ecosystem, there is less evidence that their values are satisfactorily embedded in PA plans. Furthermore, the present modalities of inter-agency cooperation amongst ecosystem actors leave gaps particularly in cooperation with local communities, researchers and NGOs which decreases the preparedness of the ecosystem for adaptive management.

Conservation outcomes of governance in the Serengeti ecosystem

PAs in the Serengeti ecosystem have attained some conservation outcomes that were perceived to be a result of good governance (Table 31). This connection between governance forms and outcomes is debatable due to the difficulty in differentiating the contribution of factors other than governance such as ethnic composition, politics, general biophysical composition, location and size of the PAs (Dearden et al., 2005). Many of these factors explain why populations of key species have either increased or remained stable (Figure 10). This increasing (maintaining) wildlife population contributes to increased tourism as an attraction and hence contributes to the increase in tourism income. Although comprehensive tourism data covering the entire ecosystem are not available, those for the Serengeti National Park indicates an increase in the number of tourists (local and international) from 128,742 to 515,864 in the period from 2000/2001 to 2010/2011 (SENAPA, 2012). Likewise, visitor statistics for Ngorongoro Conservation Areas indicates an increase from 222666 to 590617 between 2001 and 2011 (NCAA, 2012).

Table 31. Perceived conservation related outcomes of PAs in the Serengeti ecosystem

Conservation outcomes
<ul style="list-style-type: none"> • Decline in poaching • Increased revenue collection for PAs • Decreased hostility between PA staffs and local community • Increased wildlife populations* • PAs having management plans • Increased community conservation awareness • Comfortable wildlife following reduced poaching • Investor's voice makes government act • More efficient problem animal control • Increased collaboration with other stakeholders on conservation matters • Increased resource protection • Relatively more collaboration to villages on conservation matters • Strong village natural resources committee • Improvement in tourism infrastructure in turn helping more money available for conservation from tourism • PA roads increased and condition improved • Improved working condition • Staff and communities motivated • Collaboration across country border

*Noted for IGGR and surrounding areas, Source: Key informants, focused group discussions 2012 and document analysis

Increased key species populations

Even though there are no census data that were readily available, interviews and document analysis suggest an increase in some species populations such as rhino and wild dogs. However the increase in poaching was threatening this outcome. Elephants were being poached and wild dogs persecuted in retaliation for livestock predation in the Loliondo. Furthermore, populations of key species of wildlife have shown a slight increase from previous years following depletion by diseases and human consumption. This increase may partly be a product of the vastness of the ecosystem but also effectiveness in law-enforcement and community awareness efforts by various actors (Figure 10). For example, wildlife populations' biomass density showed an increase from 13 kg ha⁻¹ in 2003 to 37 kg ha⁻¹ in 2011 a near 3 fold increase in Ikorongo-Grumeti Game Reserves and surrounding areas since the investment in tourism business, law enforcement and conservation education by Grumeti Reserves ltd (Goodman, 2012).

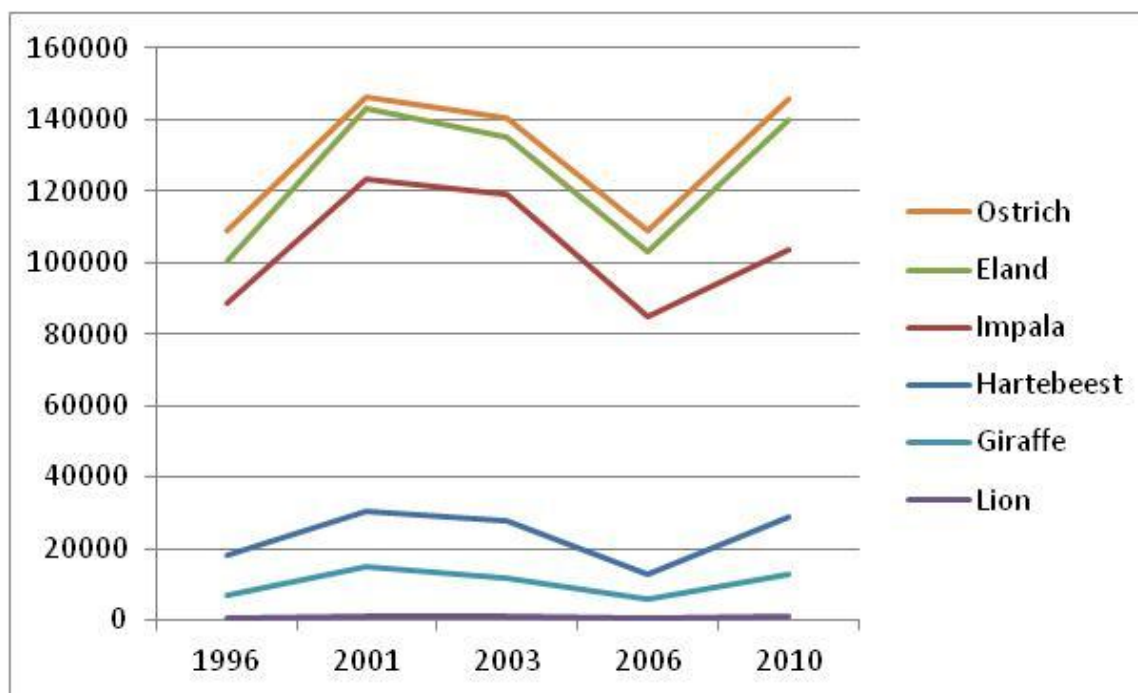


Figure 10: Population trends for some wildlife species in the Serengeti ecosystem (Source: Census Data from TAWIRI, 2010)⁴

Community development outcomes of governance

This study demonstrated that there are benefits of PAs for communities and that most of the more significant benefits are in the form of community social services infrastructure development. However, the study also suggests that there are fewer direct benefits felt at the household level (Table 32). Table 32 presents the two categories of benefits from PAs, i.e. mainly community benefits and mainly household benefits. Having benefits at community level does not necessarily satisfy the needs and expectations of individuals because decisions about interactions with the PA are made at the household level. Thus, although the benefits go to communities and therefore are enjoyed by community members, such benefits have not provided adequate incentives for conservation at the household level (Schmitt, 2010).

⁴ The decline observed in 2006 may be a result of the decrease in the size of an area covered during the counting exercise from 31,157Km² in 2003 to 27113Km² in 2006 (TAWIRI 2010).

Table 32. Community development outcomes of governance in the Serengeti ecosystem

Project	Benefiting community	Sponsor
Mainly community outcomes		
Dispensary	Robanda, Nyinchoka (mother to child health house)	Ikona Authorized Association
Teachers houses	Robanda, Nyinchoka, Nyakitono	Ikona Authorized Association
Classrooms	Parkinyigoti, Nyinchoka, Robanda	Ikona Authorized Association
Transport	Communities building public infrastructures	Ikorongo-Grumeti Game Reserves
Community development and social service projects in Ngorongoro	All villages within Ngorongoro Conservation Area	Ngorongoro Conservation Area Authority
Tourism Information center for Ikona WMA	Villages making up Ikona Wildlife Management Area	US Department of Interior
Various social projects (schools, water, dams, roads and health infrastructures)	Various villages around Serengeti National Park	Serengeti National Park for the past 21 years
Mainly household outcomes		
Scholarships	People in some parts of the Serengeti ecosystem to attend training and vocational institutions	Ngorongoro Conservation Area Authority, Grumeti Reserves Ltd.
Employment opportunities	Employment for VGS and some casual laborers	Ngorongoro Conservation Area Authority, Ikona, Makao, Grumeti Reserves Ltd., Serengeti National Park
Micro-Credit Projects - Community Conservation Banks	10 villages around Serengeti National Park	Serengeti National Park and Frankfurt Zoological Society
Small business	Various people around the ecosystem	
Livestock vaccines and zoonotic diseases control	All villages within Ngorongoro Conservation Area	Ngorongoro Conservation Area Authority
Reduced contribution from individual pockets for community projects	Villages making up Ikona Wildlife Management Area	Ikona Authorized Association
More effective problem animal control	Communities around the ecosystem	Various conservation actors

Source: Key informants and focused group discussions 2012

Serengeti National Park and Frankfurt Zoological Society established micro-credit societies for communities neighboring PAs in the ecosystem. Ten villages in the Serengeti District made up of 18 groups with 309 members were up to June 2012 advanced with credit amounting to 119,996,000 Tanzanian shillings (ca. 74,186.57US\$) an average of 371, 625.09 Tanzanian shillings (229.75662US\$) per group member for various development projects. Serengeti National Park and Frankfurt Zoological Society invested in training and other forms of income-generating skills development, while capital was generated by group members. Conservation-related income projects were credited as instrumental in some community development changes observed around the ecosystem. As one key informant said: *“people*

around Ikona WMA are shifting from grass thatched houses to metal roofing partly because of conservation related income”.

The micro-credit societies and other forms of conservation related income sources are expected to contribute to income generation in the community and therefore reduce poaching and environmental degradation in the Serengeti ecosystem, especially when such activities are linked to best practices in conservation. Such practices may include reduction in poaching incidences from a village, reduction in wild fires, reporting on incidences of environmental destruction and other unlawful activities from village members.

Equity and fairness in benefit and costs sharing in the Serengeti ecosystem

Equity and fairness refers to just treatment, with similar cases treated in similar ways (Buteau-Duitschaever, 2009). It further refers to the supportive judicial context characterized by the respect for the rule of law, and fair, impartial and effective enforcement of rules transparently and devoid of corruption (Graham et al., 2003). With respect to the distribution of costs and benefits of PAs in the Serengeti ecosystem, there appears to be a general agreement among key informants and focus group participants that investors and the government received most of the profit, followed by PAs agencies and lastly the community. At the same time, the costs were born mostly by community and PA agencies (Table 33). Private investors in the ecosystem lacked clear mechanisms for benefit distributions with no set proportion of their annual profit returned to the ecosystem. Some investors were involved actively in conservation activities, by employing community members as game scouts and casual laborers.

For game reserves, benefit sharing was based on the 25% revenue dividend given by the national treasury to districts where hunting took place (United Republic of Tanzania, 2009). This dividend was often used for development activities throughout the district regardless of closeness of a locality to wildlife or the bearers of wildlife related costs. Furthermore, some communities in the ecosystem felt they had been unfairly treated with rules propagated to control them but not other actors. For example one key informant from the Ngorongoro Pastoral Council said: *“No fairness, community projects are being put under bureaucracy but not for investors projects”* This perceived unequal treatment can potentially create controversies and conflicts between different actor groups (Heck et al., 2011).

Table 33. Distribution of PA costs and benefits in the Serengeti ecosystem

Benefits to communities	Costs to communities
- Employment in tourism and conservation	- Loss of human life from dangerous wildlife
- Business opportunities in conservation and tourism	- Restricted access to PA resources
- Financial assistance to community projects	- Crop raiding and destruction by wildlife
- Concession fees from investors in village lands	- Livestock predation
- Dividends from Central Treasury	- Insecurity from dangerous wildlife
- Problem animal control	- High costs of transportation for goods and people due to payment of fees in Pas
	- Opportunity costs for the resources

Source: Key informants and focused group discussions 2012

Benefit sharing through contributions to resident communities in Ngorongoro Conservation Area (around 1.5 million US\$ annually) and the outreach program of Serengeti National Park do not satisfy communities (NCAA-PC, 2010). Furthermore, despite getting concessions from tourism investment, villagers in Eastern Serengeti saw development in tourism as ruining their livelihoods. Some village key informants in the Ololosokwan were of the view that tourism concessions in areas within their village has decreased the amount of land available for livestock grazing which has a negative impact on livestock-centered pastoralist livelihoods. All these were seen as indirect benefits and difficult to appreciate as they were received at community level while costs were incurred at household level (Schmitt, 2010).

To summarize, the study found 1) mixed success in outcomes for conservation and development where despite the presence of some positive conservation outcomes, the ecosystem is dotted with some setbacks such as the presence of invasive species, poaching and increased human-wildlife conflicts. Furthermore the study reveals that substantial social outcomes were captured at the community level as compared to the household level. 2) Presence of complex and weakly connected governance systems where linkages between different actors was more of an upward accountability but very little of downward linkages in particular from PAs to local communities, and 3) a likely relationship between governance and outcomes where there appears to be a relationship between weak governance and weak outcomes.

4.4 Conclusion

This paper examines the range of PA types in the Serengeti ecosystem and describes 1) the interactions of governance actors in the Serengeti ecosystem, 2) the perceived outcomes of PAs including conservation and social outcomes, and 3) the relationships between governance and outcomes. This is among the first studies to explore possible causal links between PA governance and outcomes across a large ecosystem with many PAs, other land uses and human communities. The study revealed the existence of informal multi-actor engagement in governance of the Serengeti ecosystem. Although the governance structure for PAs in the Serengeti ecosystem involves many actors, the lack of sufficient involvement of local level actors in the ecosystem, including local civil society, is a problem especially because individuals and groups at a local level are the ones that bear many of the costs of living with wildlife. This loose governance arrangement has attained several conservation and development outcomes but it has also been confronted with many challenges emanating from a lack of clear focus.

Although PAs in the Serengeti ecosystem achieved some conservation and positive community development outcomes, many of the community-based outcomes are not felt at household level which potentially could fuel resentment towards conservation and related investments in the ecosystem. Furthermore, observed conservation outcomes are mixed-up with weak governance in various PAs as revealed by the evaluation of governance processes and outputs for various PAs (Chapter 3). This could be attributed to the complex nature of governance across the ecosystem where different actors work independent of one another.

Furthermore, the results suggest a perceived imbalance of costs and benefits of PAs in the ecosystem with more costs borne at the community and household level. This perceived imbalance in benefits and costs necessitates devising other mechanisms that will ensure fair distribution. The new mechanisms should push for communities to actively play their part such as establishing micro-finance and small and medium scale entrepreneurial projects rather than waiting for assistance from PA actors.

The findings of this study confirm the need for alternative means of multi-stakeholders involvement in the governance of PAs in the Serengeti ecosystem. New forms of involvement

can take the form of governance networks as explained by Hahn (2011) that involve government agencies, business, and civil society actors in public policy making and decision-making. Moreover, the study recommends finding more avenues for involving local communities in decision-making and management of the PAs. Changes in conservation legislation in the ecosystem may be required, such as allowing law enforcement personnel from different PAs to exercise their duties beyond their PA boundaries, and involving other actors (e.g. local communities, NGOs and CBOs) in PA decision making and management actions as legal requirements.

This study suggests a possible causal link between governance structure and the achievement of PA governance outcomes. Although many conservation and social outcomes in the ecosystem is influenced by other factors (e.g. location, biophysical composition, ethnic composition and political environment), the perceptions of the actors are that governance has had a significant impact on outcomes and achievement of objectives for PAs. This is supported by the different achievements that were identified for different PA governance types. For example Ngorongoro Conservation Area achieved more community development outcomes as compared to other PAs. Furthermore, despite the fact that Serengeti National Park invests more in community development across the ecosystem, it was not rated high in the accomplishment of community development outcomes (Chapter 3). This low ranking for Serengeti National Park is possibly an indication of the lack of involvement of other actors in decision-making. Strong linkages between various actors in the ecosystem are imperative for the success of social-ecological initiatives and outcomes as explained in PA and EBM governance literature (Galaz et al., 2008). Thus the design and management of PAs should take into consideration governance structures that strengthen vertical and horizontal linkages amongst various actors in an ecosystem if they are to achieve the conservation outcomes. This is due to the interconnections of ecosystem challenges as well as the increasing number of actors operating to address such challenges (Schroeder et al., 2008)

The Serengeti is a complex social-ecological system, but yet there is weak formal interaction amongst its various actors who represent /reflect different aspects of that complexity. This is a barrier to effective ecosystem-based management as some actors' such as local communities, NGOs, researchers and CBOs are left out of decision-making. There is a need for

reforms in the PA governance system for the ecosystem to take cognizance of the three governance typologies as forwarded by Eagles et al. (2013), i.e. economic, political and administrative governance. This study further suggests that governance need to be considered in an ecosystem setting rather than focusing on a single PA. The different PAs and actor groups in an ecosystem have much in common particularly the fact that the ecosystem processes and functions cross PA boundaries. Thus, considering PA decision-making and management holistically in an EBM approach gives more opportunity for other actors to provide their support to the attainment of both conservation and social development outcomes.

Grumbine (1994) asserts that organizational change such as changes in the structure of land management agencies and their mode of operation including formation of inter-agency committee are required to implement EBM. Examples of such models include West Coast Aquatic (WCA), a forum that brings together coastal communities and those affected by marine management decisions (federal, provincial, local and first nations governments, fishermen, aquaculture and tourism industries, and conservation organizations) in the West Coast of Vancouver Island in British Columbia, Canada to participate in decision-making process for managing the area (Espinosa-Romero et al., 2011).

This study suggests a need for further research to better understand some aspects of governance in the Serengeti ecosystem. Specifically research is required to:

1. Identify causal relationships between PA governance and PA outcomes (social and conservation). This will help identify the best PA governance approaches for different aspects of the ecosystem and for EBM.
2. Better understand linkages at the landscape/ecosystem level specifically between different actor groups and land uses.
3. Better understand how to manage flows of benefits between PAs and communities. This research should include investigating attributes of local communities, local authorities and CBOs that are effective in ensuring benefits reach the intended people to effectively produce the desired outcomes.

This research makes several recommendations aimed at improving governance and outcomes in both conservation and development in the Serengeti ecosystem as discussed below.

An ecosystem coordination, monitoring and advisory body should be established to involve all relevant stakeholders in the ecosystem from PAs agencies, government agencies, local governments (with representation from districts and villages), NGOs, CBOs, user groups (i.e. farmers, pastoralists and tour guides), researchers, and investors. The body should be mandated to oversee the attainment of ecosystem objectives rather than objectives of individual PAs. PAs should be encouraged to sit on joint planning bodies that will formulate ecosystem management strategies such as those for ecological monitoring and management, law-enforcement, tourism management, community socio-economic development and conservation awareness and education. This will potentially reduce duplication of effort and also streamline ecosystem functions while improving the impact of various actors on attainment of ecosystem objectives.

District Councils in the ecosystem should be more involved in decision-making for matters in PAs, for instance, issues such as problem animals' control, socio-economic assistance and law enforcement issues. This will be a useful way of making use of district personnel and resources to aid PA management. Mechanisms to stop hijacking PA plans and resources by politicians may include greater accountability to the lower authorities, increased transparency by responsible bodies to the stakeholders and following the rules and procedures laid down in the management plans and relevant policies.

Local actors should be empowered to collect revenue in village lands and Wildlife Management Areas as they are closer to these areas and are better suited to understand the local situations. The current arrangement that involves the Wildlife Division collecting the revenue while lacking people to track the number of tourists using the areas, creates an environment for a substantial loss of revenues through under-reporting of visitor numbers by investors. However, empowerment in technical/managerial skills is important as in some areas due to absence of clear operating environment, handling of such mandates to communities proved a failure due to problems of transparency (Sachedina, 2008). Sachedina (2008) found that unethical tour operators profited by manipulating communities for access to their land, including cases where village officials had misappropriated tourism revenues to the detriment of individual villagers.

CHAPTER 5: CONCLUSION

“If we kill off the wild, then we are killing a part of our souls.”

— **Jane Goodall**

5.1 Introduction

The dissertation focuses on the role of Protected Area (PA) governance as a factor influencing the attainment of conservation and social goals in the Serengeti ecosystem in Tanzania. To contribute to this overall purpose, this study set three objectives.

1. To evaluate the effectiveness of PA governance as perceived by respondents (stakeholders) using a quantitative approach.
2. To explore different approaches to PA governance on the Serengeti ecosystem, and to examine the effectiveness of each form of governance, as perceived by communities (households).
3. To examine perceived conservation and social outcomes of PAs in the greater Serengeti ecosystem, and to relate these findings to PA governance structures, particularly relationships between different actors (linkages).

This chapter reviews the key findings and points to areas for further research that are crucial to clarify the role of PA governance in attainment of PA conservation and social outcomes. Finally, the chapter highlights the study limitations and weaknesses, and its contribution to PA and governance literature.

5.2 Summary of Key Findings.

Objective 1: To evaluate the effectiveness of PA governance as perceived by respondents (stakeholders) using a quantitative approach.

Key findings

- Factor analysis resulted in 10 governance factors that in total explained 85% of the variance in responses. These factors are outlined below including their reliability coefficients in brackets.
 - *Legitimacy* – referring to acceptance and justification of shared rule by a community (6 statements, $\alpha = 0.94$).
 - *Accountability and transparency* - referring to stakeholders rights to know matters about PAs and the answerability of managers to lower and higher authorities (7 statements, $\alpha = 0.94$).
 - *Responsiveness* - referring to the manner in which PA managers serve communities with regard to complaints and criticisms (17 statements, $\alpha = 0.97$).
 - *Fairness* - referring to the use of rule of law, fair and impartiality by the PA managers when interacting with the communities (6 statements, $\alpha = 0.96$).
 - *Participation* – referring to the direct and indirect exercising of voice by the community in PA decision-making (6 statements, $\alpha = 0.96$).
 - *Resilience* - referring to the amount of change or disturbance that can be absorbed by the system without being forced into a different set of processes and structures (5 statements, $\alpha = 0.95$).
 - *Achievements* - referring to conservation and social outcomes of PAs including ecological integrity and contribution in poverty reduction efforts (2 statements, $\alpha = 0.91$).
 - *EBM* - referring to both biophysical and governance connectedness between various PAs and lands uses in an ecosystem which allow actors to address shared problems and continued flow of ecosystem processes and functions (7 statements, $\alpha = 0.97$).
 - *Consensus Orientation* – referring to the mediation of different interests to reach broad consensus on the best need for the group and the ecosystem (4 statements, $\alpha = 0.96$).

- *Power* - referring to the distribution of a range of authorities from planning, revenue generation, spending, entering into contracts and decision-making in the ecosystem (5 statements, $\alpha = 0.98$).

The findings indicate that perceptions of governance can be measured quantitatively. This is an effective approach for measuring the perceptions of many actors in a reliable way. It can save time when conducting interviews involving many respondents as it can reduce the time used for administering the survey and also analysis of the data when compared to qualitative techniques.

This study suggests that the use of a quantitative methodology for evaluating PA governance by local communities is an important step towards the involvement of other actors in governance of PAs. The study contributes towards the PA governance literature through the development of quantitative governance evaluation methods. The set of statements tested in this study could be used in other areas to draw lessons for refinement of such tools. It adds to the Canadian study by Eagles et al. (2013) which assessed PA governance by involving a wide variety of actors. This study goes further to involve local communities from different economic backgrounds in the Serengeti. It further adds to the study by Buteau-Duitschaever (2009) comparing stakeholders' perception of governance in Ontario Parks which informed some aspects of this study.

This questionnaire can also be used in other areas to compare governance performance across time or a range of PAs. However, cultural and language barriers may call for a need to adapt the questionnaire to the specific region where it is to be applied.

This study is centered on the involvement of local communities. The use of local communities is particularly pertinent owing to their potential awareness of local circumstances and issues that need to be resolved. For example in the study by Buteau-Duitschaever (2009) local residents scored Ontario parks governance as weak whereas PA staff had higher evaluations. Thus, it is imperative to use local communities as part of governance performance evaluations to ensure a balanced opinion between different actor groups.

The questionnaire used in this study was tested in the field using local communities in areas with different PA governance models and poverty settings. This represents an expansion from other studies such as that of Hannah (2006) which relied on expert key informants and looked only at private governance models. It also differs from the study by Lockwood, (2010), which relied on key informant interviews to conduct governance assessments for PAs.

Borrini-Feyarabend, (2006) proposed the use of criteria, principles and values to guide actions in governance evaluations. This study further supports an inclusion of jointly established performance indicators as an important ingredient in governance performance evaluation similar to the proposal by Heck and Dearden (2011). Establishment of joint performance indicators may facilitate carrying out of participatory governance evaluation by a wider group of actors in an ecosystem. A participatory approach in governance performance evaluation has the potential to enhance evaluation capacity, to increase credibility and acceptance of results, to strengthen relationships between managers and local stakeholders, and to address more locally relevant information (Heck et al., 2011b).

Some departures from previous studies were seen with regards to responsiveness which combined statements used for inclusiveness, responsiveness, legitimacy and performance in previous studies (Buteau-Duitschaever, 2009; Graham et al., 2003; Hannah, 2006; Lockwood, 2010). Furthermore in this study transparency and accountability factors loaded together. This is different from the suggestion by Lockwood (2010) but in support of proposals by Graham et al., (2003).

Objective 2: To explore different approaches to PA governance on the Serengeti ecosystem, and to examine the effectiveness of each form of governance, as perceived by communities (households).

Key findings

- Most of the PAs in the Serengeti ecosystem scored weakly on governance for all the ten governance factors except for legitimacy, achievement and power. Only the Maswa Game Reserve and Ngorongoro Conservation Area scored around neutral overall.
- Surprisingly, community-based PAs did not perform any better on governance than more traditional PAs.
- Ecosystem based management had low evaluations indicating independent decision-making for each PA without strong links to other actors.
- PA agencies in the Serengeti place relatively more emphasis on empowerment, legitimacy and achievements while neglecting other governance factors such as fairness, inclusiveness, EBM, transparency and accountability.

Governance of PAs in the Serengeti ecosystem has many models. These models include government management, collaborative management, private management, and community management, similar to those proposed by IUCN (Borrini-Feyerabend et al., 2006). However, for the majority of PAs in the ecosystem much power is held by the government, and this is thought to have impacted the perception of local communities on governance in the ecosystem. Although Wildlife Management Areas are a form of community management, this study suggests that WMAs seem to have more characteristics of collaborative management as some management responsibilities and decision-making are still owned by the government through the Wildlife Division. This is similar to what is advanced by Kothari (2006a) that collaboratively managed PAs involves arrangements where decision-making authority are under a government agency and other partners such as local communities and NGOs. In Tanzania the rules and structures of partnership mainly are initiated by the government through the Wildlife Division and must be accepted by the communities.

With regard to empowerment, much of the powers are still held by government or government PA management agencies. This results in less power available to civil societies and

the local communities. For instance, revenue collection for tourism investment in village lands is carried out by a central government agency. Lack of local community empowerment results in perceptions of weak governance that reduces the effectiveness of ecosystem efforts to attain both conservation and poverty alleviation outcomes (Ngoitiko et al., 2010; Sachedina & Nelson, 2010).

The findings suggest that governance in community-based PA is not always or necessarily effective. Thus establishment of PAs as “community-based” does not necessarily improve governance effectiveness. This research suggests the presence of weak governance at PA and ecosystem levels in the Serengeti ecosystem. Furthermore, perceived governance effectiveness in community-based PAs (Wildlife Management Areas) of Ikona and Makao did not differ from PAs under government agencies in the ecosystem, suggesting a close resemblance in objectives and management styles which reduce decentralization efforts. Community perceptions on governance of a PA depend to a greater extent on their view on how their values and aspirations are realized and not just the governance model used. This is contrary to the assertions by some of the social conservation scholars and practitioners such as Baldus (2009), and West and Brockington (2006) that PAs would be more effective and sustainable if local users were able to manage or at least are involved in management. This study found no real difference in governance perceptions for WMAs which are supposedly more community centered (Chapter 3). Furthermore, PAs where communities were seen to substantially benefit from economically (such as the WMAs and the Ngorongoro Conservation Area) had a number of conservation setbacks such as the spread of invasive plant species and decline in the population of some wildlife species. These setbacks put in doubt the concept of provision of social benefits to communities from PAs as necessary for the sustainability and integrity of natural resources as advanced by social conservation scholars (Chapter 4). This supports the findings by Wilfred (2010) that WMAs are often unsustainable. Wilfred (2010) claims this is due to the attraction of more people who occupy areas that are dispersal routes for the wildlife. There is also a lack of sustainable resource use mechanisms to deal with these problems. This dissertation argues that the perceived success of any PA is a function of place specific conditions and requires place specific assessments and mechanisms to address deficiencies.

Objective 3: To examine perceived conservation and social outcomes of PAs in the greater Serengeti ecosystem, and to relate these findings to governance structures, particularly relationships between different actors (linkages).

Key findings

- Social outcomes of PAs in the Serengeti ecosystem are mixed. The strongest social outcomes include the community social services infrastructure; the weakest include the contribution to the wellbeing at household level.
- Most of the significant social outcomes were felt at the community level rather than at the household level.
- Conservation outcomes of PAs in the Serengeti ecosystem are mixed. The strongest conservation outcomes include the bio-physical connectivity between PAs in the ecosystem, and the population growth of some species. However some weak outcomes include the continued spread of invasive alien plants in various parts of the ecosystem, and the prevalence of human-wildlife conflicts and conflicts between communities and conservation.
- The study found that although there are conflicts between PAs and other ecosystem actors and in particular local communities, there were also a variety of conflict resolution strategies in use and varied collaborative relationships between PAs and other ecosystem actors.
- Regarding EBM, the study suggests a strong presence of bio-physical connectivity between PAs in the ecosystem except for around Robanda and Makao villages where human settlement interrupts this connectivity. However, the study noted weak governance connectedness amongst ecosystem actors although bio-physical connectivity is high as noted above.
- Governance linkages are mixed. The study suggests the presence of strong vertical linkages between PAs and institutions and organizations superior to them. However, there are weak horizontal linkages between PAs and other ecosystem actors, and very weak linkages between PAs and lower level actors such as village councils. This lack of linkages to the local communities was observed for Game Reserves, Game Controlled Areas and Wildlife Management Areas.
- The study suggests a possible (likely) cause-effect relationship between weak (mixed) governance linkages and mixed outcomes.

The Serengeti ecosystem has attained a number of conservation and social outcomes. The conservation outcomes include increase in PA sizes, increased population of some species (TAWIRI, 2010), and increased number of tourists. Although increased in number of tourists can be associated with negative impacts to conservation, tourists provide fees that support conservation and also provided a justification for maintaining the government's commitment to conservation. However, there are also some setbacks in conservation outcomes such as persistent spread of invasive plant species in the ecosystem, poaching for wildlife particularly for elephants and ungulates for trophy and meat, declining population of some species such as black rhinos, and increased human-wildlife conflicts.

Regarding social outcomes, the study shows a perception that the protected areas in the Serengeti ecosystem are not doing enough with regard to poverty alleviation. Weak efforts are evident at the local level, as supported by the low ranking of fairness and equity dimensions of governance in Chapter 3. These results can be used as a proxy link between poverty reduction and PA governance. However, there has also been increased support given to communities in terms of infrastructure and other social services, and the employment of local community members in conservation related industries such as campsites and hotels but less direct support to household level. This supports the findings by Wittemyer et al. (2008) that PAs can support local people socially and economically. However, this study does not support the assertion by Stolton (2010) that effective PA networks will work only if other benefits are recognized. This study suggests that meeting local demands might be necessary but may not necessarily be sufficient to ensure sustainability of PA networks. Evidence from this study include degradation (e.g. invasive plant species) within the WMAs and other areas where communities are benefiting from PAs e.g. within the Ngorongoro Conservation Area.

This study suggests the existence of a possible cause-effect link/connection between governance and outcomes. The findings suggest that weak outcomes (social and conservation) appear to be linked to weak governance. It is however difficult to rule out the influence of other causal factors apart from governance, such as ethnic composition, politics, size of the area, location and general biophysical composition, that might have contributed to the observed conservation and development outcomes.

The interactions amongst various actors in the Serengeti ecosystem were found to be weak, with more of an upward accountability. Very weak formal linkages were observed between PAs and the village governments. The weak linkages likely reduce the effectiveness of various arrangements for conservation and poverty alleviation efforts in the ecosystem.

Furthermore, this study suggests the presence of fragmented efforts to empower local communities economically in the Serengeti ecosystem. These actors include the Serengeti National Park, Ngorongoro Conservation Area, some conservation and development NGOs, private investors and CBOs. Although debatable, the economic empowerment of local communities may influence the support of communities for PAs and other conservation efforts in the ecosystem. Borrin-Feyarabend et al. (2004) recommends assessing PAs on the basis of their capacity to simultaneously deliver conservation and social benefits.

However, as most of these benefits are received at community level, there remains a gap to ensure improved individual perception of governance at the household level. Failure by PA benefits to be realized at the households might be a result of poor distribution mechanisms but also a result of poor governance at the community level. This supports the findings by Mwakaje et al. (2013) in their research in some parts of the Serengeti ecosystem which found financial governance including corruption as a challenge at the village level. This included a lack of capacity to handle large amounts of money and little or no planning, transparency, and accountability mechanisms. In this study, villages were found to be unaware of the amount of assistance they can get from PAs. This makes it difficult for village governments to budget and also to ensure proper accountability and transparency for the assistance they get.

Specific to the Wildlife Management Areas, the Authorized Associations are elected bodies which should carry out regulatory and monitoring tasks rather than day to day management of the PA affairs. The Authorized Association should be encouraged to change the current structure so as to employ able technical personnel who would be overseen by the Authorized Association representatives. This will most likely increase accountability and effectiveness of these community-based PAs to the wider community members.

It is imperative to provide direct assistance to the Wildlife Management Areas Authorised Association to be able to manage the PAs well. This empowerment should involve revenue

collection and a greater say in planning and management of investments in the Wildlife Management Areas. However, empowerment in technical/managerial skills is important to reduce the likelihood of problems of transparency and probity, exploitation of the community by unethical tour operators, and misappropriation of revenue by local leaders (Sachedina, 2008). This study supports findings by Agrawal et al. (2008) that effective PA governance involves a lot including better management of outcomes and investment in institutional capacity at local, regional and national levels. It further supports the findings by Baird and Dearden (2003) on the need for mixed management for resources (particularly with endangered species management and problem animals' control) as the local communities may not likely manage them effectively.

Sachedina et al. (2010) see barriers in decentralization as limiting local rights and economic benefits. However, in this study, decentralized PAs such as WMAs have not performed better than other forms of governance. This is most likely a result of more important powers being with held by the central government authorities which is not necessarily a bad thing if done with proper planning and objectives. With this case the WMAs are better classified as collaboratively managed PAs rather than community-based PAs. Although Ngoitiko et al. (2010) see a lot of community disempowerment in natural resources management in the eastern Serengeti, this study suggests that success in community empowerment needs time and investment to ensure that communities can best serve the ecosystems to expect long-term ecological benefits and possible social benefits.

The weak governance results for the Serengeti ecosystem should act as wake-up call for responsible actors to put in place mechanisms for facilitating holistic management at the ecosystem level. The weak involvement of other actors as seen in PA management issues adds more resentment to conservation efforts and increases costs through a need for more law enforcement. There needs to be adaptations to conservation legislation in the ecosystem and efforts to increase ecosystem-based management by establishing a legally mandated inclusive ecosystem coordination, monitoring and advisory body as shown in figure 5.1. PA management agencies in the ecosystem should explore ways of bringing in place an ecosystem forum that has a wider membership and mandate which will act as a monitoring body for efforts throughout the ecosystem. This can be done through the modification of the present Serengeti Ecosystem Community Conservation Forum or constituting a new legally mandated ecosystem-based body.

The proposed structure emphasises horizontal linkages between actors at the same levels and also links with lower levels. It also provides an entry point for NGOs, CBOs and researchers in the governance of an ecosystem. This body should be mandated to ensure the preparation and monitor implementation of an integrated ecosystem management plan. This body should include members from PA agencies, NGOs, CBOs and district administrators and should preferably be chaired by a person from ministerial level to give it more strength. The body should provide advisory services to the responsible ministries, PAs and district governance levels on matters pertaining to cross-cutting conservation and development plans.

The study supports a need to examine PA governance and outcomes within an ecosystem perspective, not just one PA as both outcomes and governance effectiveness vary across PAs. The findings show PAs and other ecosystem actors in the Serengeti work independently and have weak linkages between them. This weak linkage between actors is one important barrier to effective governance in the ecosystem and also an important barrier for the achievement of EBM. The study suggests the need to improve the current ecosystem governance structure to ensure participation of more actors - particularly at the community level - in PA decision-making and management. More links should be made between PA management, Village Councils and Village Environmental Committees in the ecosystem. It is imperative to hold joint meetings at district or PA zonal levels to share information between the parties and strategize for the conservation and community development objectives.

This study contributes to the understanding of EBM, because it has a focus on PAs, and examines governance and outcomes, linkages between actors, and includes an ecosystem where poverty is acute. Furthermore, this study suggests an additional emphasis on governance in the EBM literature so as to capture the aspects of decision-making that appears to be missing in the Espinosa-Romero et al. (2011) and Grumbine (1994) view of EBM. The sustainable flow of goods and services from ecosystems depends on the decision-making for both PAs and surrounding land uses (Forbes et al., 2003; Newmark, 1996). However, ecosystem actors should refrain from dwelling much on sustaining social needs as advocated by Berkes (2012) at the expense of ecological integrity as posited by Answani et al. (2012).

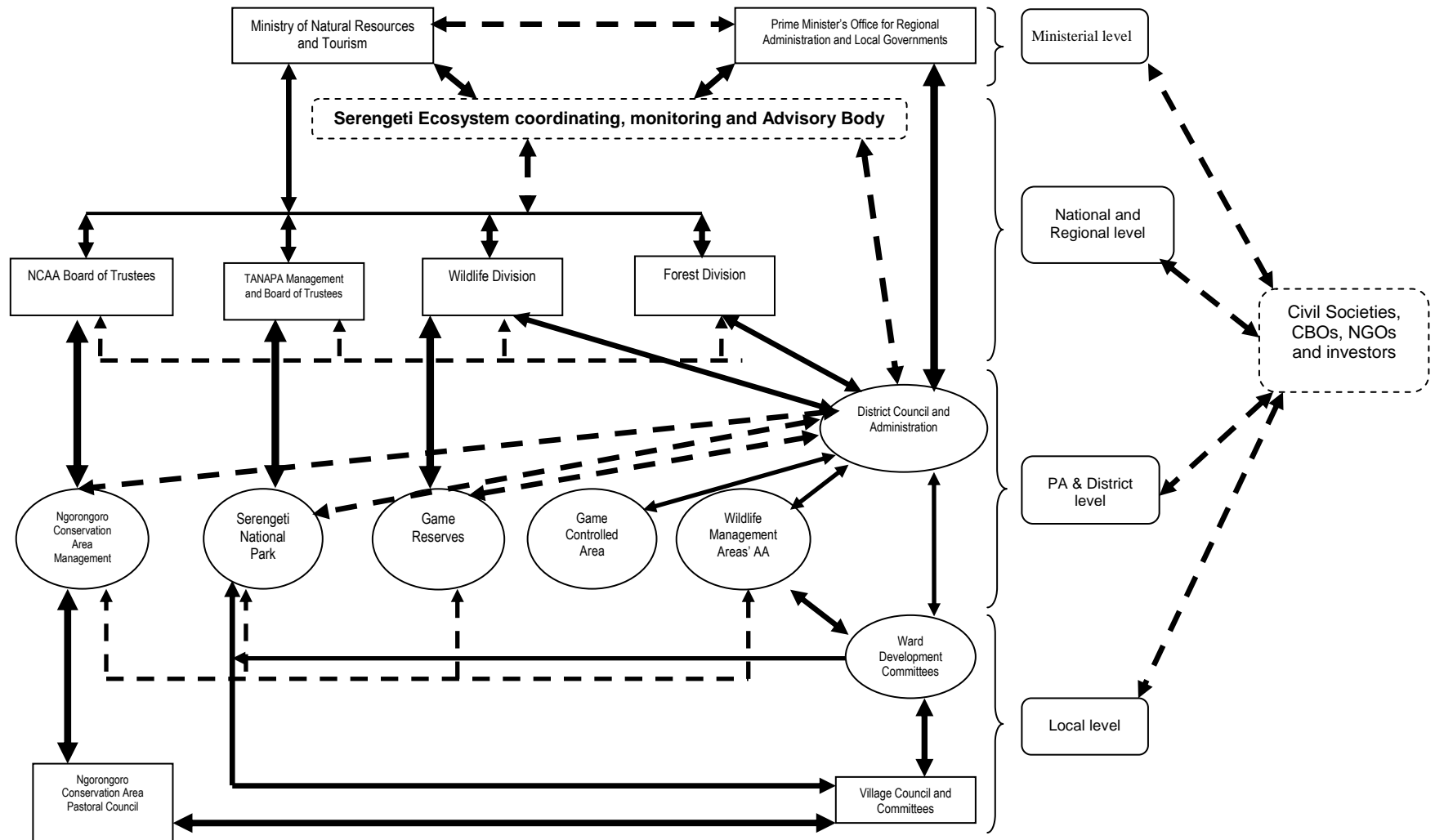


Figure 10: Proposed governance structure for the Serengeti ecosystem in Tanzania

5.3 Recommendations derived from this study

- More efforts are needed to ensure the support given to communities is tailored to providing positive effects at the household level, through such mechanisms as supporting micro-finance projects for smaller entrepreneurial groups, and supporting of economic small and medium scale projects at micro levels.
- Furthermore, to provide a positive effect to conservation, the economic support provided to the community and household should be linked to best conservation practices such as reduced wild fires, reduced poaching, reduced livestock encroachment, and other forms of environmental protection.
- Capacity building is needed to empower local authorities to improve governance of various means of income and other non-financial opportunities made available to them from ecosystem partners to achieve the intended social outcomes at both community and household levels. This is particularly true for the Wildlife Management Areas and their participating villages, the villages benefiting from the Ngorongoro Pastoral Council and those villages with tourism investments on their lands.
- Ecosystem actors should work together in the umbrella of an ecosystem coordination, monitoring and advisory body that will work on streamlining the efforts done by different actors to attain ecosystem conservation and social outcomes.
- PA actors should strengthen their working with other ecosystem actors to solve some of the pressing and potential threats to the ecosystem that include the rapid increase in human population within the ecosystem, spread of invasive plant species, human-wildlife conflicts and poaching for both subsistence and commercial purposes.

5.4 Study weaknesses and limitations

Language in some cases was a weakness in the study as particularly where translations needed to be done for three different languages (English, Swahili and Maasai). The main challenge in this case was the fact that some words do not translate well between these languages which can potentially distort the meaning. Furthermore, translation to Maasai language gave the researcher a hard time in understanding what transpired between the interpreter and the respondents before the message was conveyed back to the researcher.

Furthermore, this study employed a relatively small sample size that came from only six villages in three districts compared to over 80 villages in the entire Serengeti ecosystem. The use of few villages for the part of household surveys reduces the representativeness of this study. However this was addressed with the use of key informants and by working with a wide range of people from more diverse background. Future studies should involve villages from all the districts making up the ecosystem.

5.5 Future research

The following are suggested as critical areas for future research to feed into the ecosystem-based governance in the Serengeti ecosystem.

- Study the history of PAs in the Serengeti and understand how cultural, social, political and legal changes in the ecosystem might have influenced the perception of actors on conservation governance.
- Evaluation of governance performance within the Ngorongoro Conservation Area Authority in light of its multiple-land use status. This research should also focus on the aspects of governance within the resident local communities to understand the reasons for the observed low levels of development that is witnessed for resident human communities.
- More research needs to be conducted in the Ikona and Makao Wildlife Management Areas to reveal better ways for community involvement that will ensure improved conservation outcomes and economic development to the household level.

- Clarify causal relationships between PA governance and PA outcomes (social and conservation). This will help single out the best PA governance approaches for the different aspects in the ecosystem.
- Better understand linkages at the landscape/ecosystem level specifically between different actor groups and land uses.
- Better understand how to manage flows of benefits between PAs and communities. This research should include researching on the attributes of local communities; local authorities and CBOs that are effective in ensuring benefits reach the intended people to effectively produce the required outcomes.
- This questionnaire and the study were informed by a wide array of studies where concepts used were derived from. Such studies include Lockwood (2010); Buteau-Duitschaever,(2009); Hannah (2006) and Graham et al. (2003). However, it still needs more attention to refine the way in which achievement and resilience are assessed.
- Need to test the questionnaire in other places particularly in international comparative studies like PAPR.

5.6 Knowledge mobilization and community action plan

The generated knowledge of the Serengeti ecosystem from this study will be disseminated to the wider stakeholders in and outside the ecosystem. Already some findings in paper two were presented at the 2013 Congress of the Humanities and Social Sciences held at the University of Victoria between 2nd and 8th June 2013. Some findings were shared at a Protected Area and Poverty Reduction (PAPR) International Conference held in Tofino, Canada between 6th and 10th June 2013. Furthermore, findings from this study will be communicated through national and international avenues including but not limited to Mweka Wildlife College 50 years Anniversary Conference October 2013, Tanzania Wildlife Research Institute conference in December 2013, Green Economy in the South conference to be held at the University of Dodoma in July 2014, and the World Parks Congress to be held in Sydney Australia in November 2014. The findings will be interpreted into Swahili and summarized to be distributed as printed material (reports and posters) to the villages in the Serengeti ecosystem. The findings will be presented at the Serengeti Ecosystem Community Conservation Forum meetings so as to reach the wider

stakeholders. Further efforts will be done to publish these findings into national and international journals and in books.

Bibliography

- Agrawal, A., Chhatre, A., & Hardin, R. (2008). Changing governance of the world's forests. *Science*, *320*(5882), 1460–2.
- Andam, K. S., Ferraro, P. J., Sims, K. R. E., Healy, A., & Holland, M. B. (2010). Protected areas reduced poverty in Costa Rica. *PNAS*, *107*(22), 9996–10001.
- Anderson, T. M., Dempewolf, J., Metzger, K. L., Reed, D. N., & Serneels, S. (2008). Generation and maintenance of heterogeneity in the Serengeti ecosystem. In A. R. E. Sinclair, C. Packer, S. A. R. Mduma, & J. M. Fryxell (Eds.), *Serengeti III Human Impacts on Ecosystem Dynamics* (pp. 135–182). Chicago: University of Chicago Press.
- Anríquez, G., & Stamoulis, K. (2007). Rural Development and Poverty Reduction : Is Agriculture Still the Key. Retrieved from www.fao.org/es/esa
- Aswani, S., Christie, P., Muthiga, N. A., Mahon, R., Primavera, J. H., Cramer, L. A., ... Hacker, S. (2012). The way forward with ecosystem-based management in tropical contexts: Reconciling with existing management systems. *Marine Policy*, *36*(1), 1–10.
- Baird, I. G., & Dearden, P. (2003). Biodiversity conservation and resource tenure regimes: A Case Study from Northeast Cambodia. *Environmental Management*, *32*(5), 541–550.
- Baldus, R. D. (2009). *A Practical Summary of Experiences after Three Decades of Community-based Wildlife Conservation in Africa: What are the Lessons Learnt?* (p. 121). Budapest.
- Balmford, A., Bruner, A., Cooper, P., Costanza, R., Farber, S., Green, R. E., ... Turner, R. K. (2002). Economic reasons for conserving wild nature. *Science*, *297*(5583), 950–3.
- Berkes, F. (2012). Implementing ecosystem-based management: evolution or revolution? *Fish and Fisheries*, *13*(4), 465–476.
- Blomley, T., Pfliegner, K., Isango, J., Zahabu, E., Ahrends, A., & Burgess, N. (2008). Seeing the wood for the trees: an assessment of the impact of participatory forest management on forest condition in Tanzania. *Oryx*, *42*(03), 380–391.

- Borrini-Feyerabend, G., Koothari, A., & Oviedo, G. (2004). *Indigenous and local communities and protected areas: Towards equity and enhanced conservation*. Gland, Switzerland and Cambridge, UK: IUCN.
- Borrini-feyerabend, G. (2003). Governance of Protected Areas — Innovation in the Air ... *. *Policy Matters*, (12), 1–16.
- Borrini-Feyerabend, G., Johnston, J., & Pansky, D. (2006). Governance of protected areas. In M Lockwood, G. L. Worboys, & A. Kothari (Eds.), *Managing protected areas: A global guide* (pp. 116–145). London, UK: Earthscan.
- Bouckaert, G., & van de Walle, S. (2003). Comparing Measures of Citizen Trust and User Satisfaction as Indicators of “Good Governance”: Difficulties in Linking Trust and Satisfaction Indicators. *International Review of Administrative Sciences*, 69(3), 329–343.
- Brinkerhoff, D. W., & Brinkerhoff, J. M. (2002). Governance Reforms and Failed States: Challenges and Implications. *International Review of Administrative Sciences*, 68(4), 511–531.
- Brockington, D. (2003). Injustice and conservation—is “local support” necessary for sustainable protected areas? *Policy Matters*, 12, 22–30.
- Butchart, S. H. M., Walpole, M., Collen, B., van Strien, A., Scharlemann, J. P. W., Almond, R. E. a, ... Watson, R. (2010). Global biodiversity: indicators of recent declines. *Science*, 328(5982), 1164–8.
- Buteau-duitschaever, W. C. (2009). *A Comparison of Five Stakeholders ’ Perceptions of Governance under Ontario Provincial Parks ’ Management Model*. University of Waterloo.
- CBD. (1992). *The Convention on Biological Diversity* (p. 30). Retrieved from <http://www.cbd.int/doc/legal/cbd-en.pdf>
- CBD. (2010). Strategic plan including Aichi Biodiversity Targets (2011-2020). Retrieved May 13, 2013, from www.cbd.int/sp/sp2010p/
- Chape, S., Harrison, J., Spalding, M., & Lysenko, I. (2005). Measuring the extent and effectiveness of protected areas as an indicator for meeting global biodiversity targets. *Philosophical Transactions of the Royal Society of London. Series B, Biological sciences*, 360(1454), 443–55.
- Costello, C., Burger, N., Galvin, K. A., Hilborn, R., & Polasky, S. (2008). Dynamic consequences of human behaviour in the Serengeti ecosystem. In A. R. E. Sinclair, C. Packer, S. A. R. Mduma, & J. M. Fryxell (Eds.), *Serengeti III Human Impacts on Ecosystem Dynamics* (pp. 301–324). Chicago.

- Dasmann, R. F. (1984). The relationship between protected areas and indigenous peoples. In J. A. McNeely & K. R. Miller (Eds.), *National parks, conservation and development* (pp. 667–671). Washington D.C: Smithsonian Institution Press.
- Dearden, P. (1996). Development, the environment and social differentiation in Northern Thailand. In J. Rigg (Ed.), *Counting the costs: Environmental Growth and Economic Change* (pp. 111–130). Singapore: ISEAS.
- Dearden, P., & Rollins, R. (2009). Parks and protected areas in Canada. In P Dearden & R. Rollins (Eds.), *Protected areas in Canada Planning and Management* (3rd ed., pp. 3–23). Ontario: Oxford University Press.
- Dearden, Phil. (2002). “Dern Sai Klang”: Walking the Middle Path to biodiversity conservation in Thailand. In Phil Dearden (Ed.), *Environmental Protection and Rural Development in Thailand* (pp. 377–400). Bangkok: White Lotus Press.
- Dearden, Philip, Bennett, M., & Johnston, J. (2005). Trends in global protected area governance, 1992-2002. *Environmental management*, 36(1), 89–100.
- Detraz, N. (2010). The genders of environmental security. In L. Sjoberg (Ed.), *Gender and international security: Feminist perspective* (pp. 103–125). New York: Routledge.
- Dietz, T., Ostrom, E., & Stern, P. C. (2003). The struggle to govern the commons. *Science*, 302, 1907–12.
- Dobson, A. P., Borner, M., Sinclair, A. R. E., Hudson, P. J., Anderson, T. M., Bigurube, G., ... Wolanski, E. (2010). Road will ruin Serengeti. *Nature*, 467(7313), 272–3.
- Dudley, N. (2008). *Guidelines for applying protected area management categories*. Gland, Switzerland: IUCN.
- Eagles, P F J, & Wade, D. (2006). Tourism in Tanzania : Serengeti National Park. *BOIS ET FORÊTS DES TROPIQUES*, 290(4), 73–80.
- Eagles, Paul F J, Buteau-duitschaever, W. C., Rattan, J., Havitz, M., Glover, T. D., Romagosa, F., & McCutcheon, B. (2012). Non-government organization members’ perceptions of governance : a comparison between Ontario and British Columbia provincial parks management models. *Leisure*, 36(2012), 269–287.
- Eagles, Paul F J, Romagosa, F., Buteau-, W. C., Havitz, M., & Glover, T. D. (2013). Good governance in protected areas : an evaluation of stakeholders’ perceptions in British Columbia and Ontario Provincial Parks. *Journal of Sustainable Tourism*, 21(1), 60–79.

- Eagles, Paul F.J. (2002). Trends in park tourism : Economics , Finance and Management. *Journal of Sustainable Tourism*, 10(2), 132–153.
- Ehler, C. N. (2003). Indicators to measure governance performance in integrated coastal management. *Ocean & Coastal Management*, 46(3-4), 335–345.
- Espinosa-Romero, M. J., Chan, K. M. a., McDaniels, T., & Dalmer, D. M. (2011). Structuring decision-making for ecosystem-based management. *Marine Policy*, 35(5), 575–583.
- Estes, A. B., Kuemmerle, T., Kushnir, H., Radeloff, V. C., & Shugart, H. H. (2012). Land-cover change and human population trends in the greater Serengeti ecosystem from 1984–2003. *Biological Conservation*, 147(1), 255–263.
- Ferraro, P. J. (2002). The local costs of establishing protected areas in low-income nations: Ranomafana National Park, Madagascar. *Ecological Economics*, 43(2-3), 261–275.
- Ferraro, P. J., Hanauer, M. M., & Sims, K. R. E. (2011). Conditions associated with protected area success in conservation and poverty reduction. *Proceedings of the National Academy of Sciences of the United States of America*, 108(34), 13913–8.
- Fisher, B., Polasky, S., & Sterner, T. (2011). Conservation and human welfare: Economic Analysis of Ecosystem Services. *Environmental and Resource Economics*, 48(2), 151–159.
- Forbes, G., Woodley, S., & Freedman, B. (2003). Making ecosystem-based science into guidelines for ecosystem-based management: The Greater Fundy Ecosystem experience. In G. J. Nelson, J. C. Day, L. M. Sportza, J. Louky, & C. Vasquez (Eds.), *Protected areas and the regional planning imperative in North America* (pp. 103–112). Calgary, AB: Calgary University Press.
- Galaz, V., Olsson, P., Hahn, T., Folke, C., & Svedin, U. (2008). The problem of fit among biophysical systems, environmental and resource regimes, and broader governance systems: Insights and emerging challenges. In O. R. Young, L. A. King, & H. Schroeder (Eds.), *Institutions and environmental change: Principal findings, adaptations, and research frontiers* (pp. 145–186). London, UK: The MIT Press.
- Galvin, K. A., Polasky, S., Costello, C., & Loibooki, M. (2008). Human responses to change: Modeling household decision-making in Western Serengeti. In A. R. E. Sinclair, C. Packer, S. A. R. Mduma, & J. M. Fryxell (Eds.), *Serengeti III Human Impacts on Ecosystem Dynamics* (pp. 325–346). Chicago: University of Chicago Press.

- Gereta, E. J., Wolanski, E., & Chiombola, E. A. T. (2003). *Assessment of the environmental, social and economic impacts on the Serengeti ecosystem of the development in the Mara River catchment in Kenya* (p. 51). Arusha.
- Gillespie, A. (2009). Defining Internationally Protected Areas. *Journal of International Wildlife Law & Policy*, 11(4), 240–258.
- Gillingham, S., & Lee, P. C. (1999). The impact of wildlife-related benefits on the conservation attitudes of local people around the Selous Game Reserve, Tanzania. *Environmental Conservation*, 26(3), 218–228.
- Goodman, P. S. (2012). *Large herbivore population estimates for the Grumeti Reserves – August 2011*. Arusha.
- Graham, J., Amos, B., & Plumptre, T. (2003). Governance principles for protected areas in the 21st Century. *Policy Brief*, 15.
- Green, J. M. H., Burgess, N. D., Green, R. E., Madoffe, S. S., Munishi, P. K. T., Nashanda, E., ... Balmford, A. (2012). Estimating management costs of protected areas: A novel approach from the Eastern Arc Mountains, Tanzania. *Biological Conservation*, 150(1), 5–14.
- Grumbine, R. E. (1994). What Is Ecosystem Management? *Conservation Biology*, 8(1), 27–38.
- Gunderson, L. H., & Holling, C. s. (2002). *Panarchy: Understanding Transformations in Human and Natural Systems*. Washington D.C: Island Press.
- Gurung, H. B. (2010). *Trends in protected areas* (p. 28). CRC for Sustainable Tourism.
- Hahn, T. (2011). Self-Organized Governance Networks for Ecosystem Management : Who Is Accountable? *Ecology and Society*, 16(2).
- Hannah, L. (2006). *Governance of private protected areas in Canada: Advancing the public interest*. University of Victoria.
- Hauzer, M., Dearden, P., & Murray, G. (2013). The effectiveness of community-based governance of small-scale fisheries, Ngazidja island, Comoros. *Marine Policy*, 38, 346–354.
- Heck, N., Dearden, P., & McDonald, A. (2011). Stakeholders' expectations towards a proposed marine protected area: A multi-criteria analysis of MPA performance criteria. *Ocean & Coastal Management*, 54(9), 687–695.

- Heck, N., Dearden, P., McDonald, A., & Carver, S. (2011a). Developing MPA performance indicators with local stakeholders' input in the Pacific Rim National Park Reserve, Canada. *Biodiversity and Conservation*, 20(4), 895–911.
- Heck, N., Dearden, P., McDonald, A., & Carver, S. (2011b). Stakeholder opinions on the assessment of MPA effectiveness and their interests to participate at Pacific Rim National Park Reserve, Canada. *Environmental management*, 47(4), 603–16.
- Hess, K. (2001). Parks are for people – but which people? In A. T. L & A. James (Eds.), *The politics and economics of park management* (pp. 159–181). Lanham: Rowman and Littlefield.
- Hingston, A. R. W. G. (1931). Proposed British National Parks for Africa. *The Geographical Journal*, 77(5), 401–422.
- Hirsch, P. D., Adams, W. M., Brosius, J. P., Zia, A., Bariola, N., & Dammert, J. L. (2011). Acknowledging conservation trade-offs and embracing complexity. *Conservation Biology*, 25(2), 259–64.
- Hockings, M., Stolton, S., Leverington, F., Dudley, N., Courrau, J., Valentine, P., & Editor, S. (2006). *Evaluating Effectiveness: A framework for assessing management effectiveness of protected areas* (2nd ed., p. 105). Gland, Switzerland and Cambridge, UK: IUCN.
- Homewood, K., Brockington, D., & Sullivan, S. (2010). Alternative view of Serengeti road. *Nature*, 467(7317), 788–9.
- IFAD. (n.d.). Statistics. Retrieved July 08, 2013, from <http://www.ruralpovertyportal.org/country/statistics/tags/tanzania>
- Igoe, J., & Croucher, B. (2007). Conservation, Commerce, and Communities: The Story of Community-Based Wildlife Management Areas in Tanzania's Northern Tourist Circuit. *Conservation Biology*, 5(4), 534–561.
- IKONA. (2011). *Resource Management Zone Plan (RMZP) for IKONA WMA 2011 – 2015* (p. 102).
- Im, T., & Lee, S. J. (2011). Does Management Performance Impact Citizen Satisfaction? *The American Review of Public Administration*, 42(4), 419–436.
- International Institute of Rural Reconstruction. (1998). *Participatory methods in community-based coastal resource management (Volume 2)*. Sinland, Philipins: International Institute of Rural Reconstruction.
- IUCN. (2012). IUCN Red List of Threatened Species. Version 2012.2. Retrieved April 21, 2013, from www.iucnredlist.org

- Johnson, D. R., & Agee, J. K. (1988). Introduction to ecosystem management. In J. K. Agee & D. R. Johnson (Eds.), *Ecosystem management for parks and wilderness*. Seattle, Washington: University of Washington Press.
- Jones, B. T., & Murphree, M. W. (2004). Community-based resources management as a conservation mechanism: lessons and directions. In B. Childs (Ed.), *Parks in transition: Biodiversity, rural development and the bottom line* (pp. 63–103). London: Earthscan.
- Jones, P., Qiu, W., & De Santo, E. M. (2011). *Governing marine protected areas: Getting the Balance Right* (p. 126). Nairobi, Kenya.
- Kaltenborn, B. P., Nyahongo, J. W., Kideghesho, J. R., & Haaland, H. (2008). Serengeti National Park and its neighbours – Do they interact? *Journal for Nature Conservation*, 16(2), 96–108.
- Keough, H. L., & Blahna, D. J. (2006). Achieving integrative, collaborative ecosystem management. *Conservation Biology*, 20(5), 1373–82.
- Kideghesho, J., & Mtoni, P. (2010). Who compensates for wildlife conservation in Serengeti? Who compensates for wildlife conservation in Serengeti? *International Journal of Biodiversity Science and Management*, 4(2), 112–125.
- Kideghesho, J. R. (2006). *Wildlife conservation and local land use conflicts in Western Serengeti Corridor, Tanzania*. Norwegian University of Science and Technology.
- Kiely, R. (2007). *The new political economy of development: Globalization, imperialism, hegemony*. New York: Palgrave MacMillan.
- Kitamura, K., & Clapp, A. R. (2013). Land Use Policy Common property protected areas : Community control in forest conservation. *Land Use Policy*, 34, 204–212.
- Kothari, A. (2006a). Collaboratively managed protected areas. In M Lockwood, G. L. Worboys, & A. Kothari (Eds.), *Managing protected areas: A global guide* (pp. 528–548). London, UK: Earthscan.
- Kothari, A. (2006b). Community conserved areas. In M Lockwood, G. L. Worboys, & A. Kothari (Eds.), *Managing protected areas: A global guide* (pp. 549–573). London, UK.
- Krippendorff, K. (2004). *Content analysis: An introduction to its methodology*. Thousands Oaks, CA: Sage.
- Leader-Williams, N., Baldus, R. D., & Smith, R. J. (2009). The influence of corruption on the conduct of recreational hunting. In *Recreational hunting, conservation and rural livelihoods* (pp. 296–316). Oxford: Wiley-Blackwell.

- Leverington, F., Hockings, M., & Pavese, H. (2008). *Management effectiveness evaluation in protected areas – a global study Overview of approaches and methodologies* (p. 188). Australia.
- Locke, H., & Dearden, P. (2005). Rethinking protected area categories and the new paradigm. *Environmental Conservation*, 32(1), 1–10.
- Lockwood, Michael. (2010). Good governance for terrestrial protected areas: A framework, principles and performance outcomes. *Journal of Environmental Management*, 91(3), 754–66.
- McCabe, J. T., Perkin, S., & Schofield, C. (1992). Can conservation and development be coupled among pastoral people ? An examination of the Maasai of the Ngorongoro Conservation Area , Tanzania. *Human Organization*, 51(4), 353–366.
- McShane, T. O., Hirsch, P. D., Trung, T. C., Songorwa, A. N., Kinzig, A., Monteferri, B., ... O'Connor, S. (2011). Hard choices: Making trade-offs between biodiversity conservation and human well-being. *Biological Conservation*, 144(3), 966–972.
- Millenium Ecosystem Assessment. (2005). *Ecosystems and human well-being: Synthesis* (p. 155). Washington, DC.
- Miller, T. R., Minter, B. a., & Malan, L.-C. (2011). The new conservation debate: The view from practical ethics. *Biological Conservation*, 144(3), 948–957.
- MNRT. (2013a). Ministry of Natural Resources and Tourism, Press Release on decision to amend the boundaries of the Loliondo Game Controlled Area from 4000Km2 to 1500km2: Signed by the Minister for Natural Resources and Tourism on 19th March 2013. Dar es Salaam: Ministry of Natural Resources and Tourism.
- MNRT. (2013b). Ministry of Natural Resources and Tourism, Press Release on clarification on decision to amend the boundaries of the Loliondo Game Controlled Area from 4000Km2 to 1500km2: Signed by the Minister for Natural Resources and Tourism, Hon. Khamis Kagaesheki on. Ministry of Natural Resources and Tourism. Retrieved from <http://community.co.tz/2013/04/08/tanzania-government-proclaim-about-loliondo-epic/>
- Murray, G., & King, L. (2012). First Nations Values in Protected Area Governance: Tla-o-qui-aht Tribal Parks and Pacific Rim National Park Reserve. *Human Ecology*, 40(3), 385–395.
- Mwakaje, a. G., Manyasa, E., Wawire, N., Muchai, M., Ongare, D., Mugoya, C., ... Nikundiwe, a. (2013). Community-Based Conservation, Income Governance, and Poverty Alleviation in Tanzania: The Case of Serengeti Ecosystem. *The Journal of Environment & Development*, 22(1), 51–73.

- Naughton-Treves, L., Holland, M. B., & Brandon, K. (2005). the Role of Protected Areas in Conserving Biodiversity and Sustaining Local Livelihoods. *Annual Review of Environment and Resources*, 30(1), 219–252.
- NCAA. (2010). *Ngorongoro Conservation Area general management plan*.
- NCAA. (2012). *Ngorongoro Conservation Area Authority visitors Statistics 2012*.
- NCAA-PC. (2010). *Orodha ya Wanafunzi Waliofadhiliwa na Baraza la wafugaji 1995 – 2010*. Arusha.
- Nelson, F. (2007). Emergent or illusory? Community wildlife management in Tanzania. London. Retrieved from www.iiied.org/NR/drylands/projects/Supportingpastoralcivilsociety-EAfrica.htm
- Nelson, F. (2010). Introduction: The politics of natural resources governance in Africa. In F. Nelson (Ed.), *Community rights, conservation and contested land: The politics of natural resource governance in Africa* (pp. 3–31). London, UK: Earthscan.
- Nelson, F., Foley, C., Foley, L. S., Leposo, A., Loure, E., Peterson, D., ... Williams, A. (2010). Payments for ecosystem services as a framework for community-based conservation in northern Tanzania. *Conservation Biology*, 24(1), 78–85.
- Nelson, F., Nshala, R., & Rodgers, W. A. (2007). The Evolution and Reform of Tanzanian Wildlife Management. *Conservation and Society*, 5(2), 232–261.
- Neumann, R. (1995). Local challenges to global agendas: Conservation, economic liberalization and the pastoralists' rights movement in Tanzania. *Anyipode*, 27(4), 363–382.
- Newman, J., Barnes, M., Sullivan, H., & Knops, A. (2004). Public participation and collaborative governance. *Journal of Social Policy*, 33(2), 03–22.
- Newmark, D. (1996). Insularization of Tanzanian Parks and the Local Extinction of Large Mammals. *Conservation Biology*, 10(6), 1549–1556.
- Ngoitiko, M., Sinandei, M., Meitaya, P., & Nelson, F. (2010). Pastoral activists: Negotiating power imbalances in the Tanzanian Serengeti. In F. Nelson (Ed.), *Community rights, conservation and contested land: The politics of natural resource governance in Africa*. London, UK: Earthscan.
- Niedziałkowski, K., Paavola, J., & Jędrzejewska, B. (2012). Participation and protected areas governance : the impact of changing influence of local authorities on the conservation of the Białowieża Primeval Forest, Poland. *Ecology and Society*, 17(1), 2.

- Ostrom, E. (1999). Coping with tragedies of the commons, (1968), 493–535.
- Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. *Science*, 325(5939), 419–22.
- Ostrom, E., Janssen, M. a, & Anderies, J. M. (2007). Going beyond panaceas. *Proceedings of the National Academy of Sciences of the United States of America*, 104(39), 15176–8.
- Outwater, A. (2011, December). Sacred ibis extinct where it was once honoured. *DailyNews*. Retrieved from <http://www.dailynews.co.tz/home/?n=26063>
- Paavola, J. (2007). Institutions and environmental governance: A reconceptualization. *Ecological economics*, 63, 93–103.
- Persha, L., & Blomley, T. (2009). Management decentralization and montane forest conditions in Tanzania. *Conservation Biology*, 23(6), 1485–96.
- Philips, A. (2003). Turning ideas on their head: The new paradigm for protected areas. The George Wright Forum.
- Polasky, S., Schimit, J., Costello, C., & Tajibaeva, L. (2008). Larger-scale influence on the Serengeti Ecosystem: National and international policy, economics, and human demography. In A. R. E. Sinclair, C. Packer, S. A. R. Mduma, & J. M. Fryxell (Eds.), *Serengeti III Human Impacts on Ecosystem Dynamics* (pp. 347–377). Chicago: University of Chicago Press.
- Pomeroy, R., Parks, J., & Watson, L. (2002). “‘How is Your MPA Doing?’” *Draft Guidebook for Evaluating Effectiveness of Marine Protected Areas*. Washington D.C.
- Pomeroy, R. S., Watson, L. M., Parks, J. E., & Cid, G. a. (2005). How is your MPA doing? A methodology for evaluating the management effectiveness of marine protected areas. *Ocean & Coastal Management*, 48(7-8), 485–502.
- Punyaratabandhu, S. (2004). Commitment to good governance, development and poverty reduction: Methodological issues in the evaluation of progress at national and local levels. Bangkok: National Institute of Development Administration.
- Rands, M. R. W., Adams, W. M., Bennun, L., Butchart, S. H. M., Clements, A., Coomes, D., ... Vira, B. (2010). Biodiversity conservation: challenges beyond 2010. *Science*, 329(5997), 1298–303.
- Reeve, I. (1998). Commons and coordination : Towards a theory of resource governance. In R. Epps (Ed.), *Sustaining rural systems in the context of global change* (pp. 54–65). Armidale: University of New England.

- Resilience Alliance. (2002). Resilience. Retrieved May 21, 2013, from <http://www.resalliance.org/index.php/resilience>
- Ribot, J. C. (1999). Decentralization and participation in Sahelian forestry: Legal instruments of central political-administrative control. *Africa*, *69*, 24–64.
- Ribot, J. C., Agrawal, A., & Larson, A. M. (2006). Recentralizing While Decentralizing: How National Governments Reappropriate Forest Resources. *World Development*, *34*(11), 1864–1886.
- Richardson, R. B., Fernandez, A., Tschirley, D., & Tembo, G. (2012). Wildlife Conservation in Zambia: Impacts on Rural Household Welfare. *World Development*, *40*(5), 1068–1081.
- Robinson, J. G. (2011). Ethical pluralism, pragmatism, and sustainability in conservation practice. *Biological Conservation*, *144*(3), 958–965.
- Robinson, L. W. (2011). Environmental governance as if values matter : Communities and conservation in Africa. Retrieved from http://www.papr.co.ca/index.php?p=1_25_Working-Papers
- Robinson, L. W., Bennett, N., King, L., & Murray, G. (2012a). “We Want Our Children to Grow Up to See These Animals:” Values and Protected Areas Governance in Canada, Ghana and Tanzania. *Human Ecology*, *40*(4), 571–581.
- Robinson, L. W., Dearden, P., & Orozco, A. (2012b). Framework for Assessing Governance for Landscape-Level Ecosystem-Based Management Draft 2 . 1 Lance W . Robinson , Philip Dearden and June 2012, (June).
- Robson, C. (2011). *Real world research* (3rd ed.). West Wessex, UK: Wiley.
- Rockstrom, J. (2009). A safe operating space for humanity. *Nature*, *461*(September), 472–475.
- Sachedina, Hassan, & Nelson, F. (2010). Protected areas and community incentives in savannah ecosystems: a case study of Tanzania’s Maasai Steppe. *Oryx*, *44*(03), 390–398.
- Sachedina, Hassanali. (2008). *Wildlife is our oil : Conservation , livelihoods and NGOs in the Tarangire ecosystem , Tanzania*. University of Oxford.
- Santos, J. A. R. (1999). Cronbach’s Alpha: A tool for assessing the reliability of scales. *Journal of Extension*, *37*(2), Tools of the Trade // 2TOT3.
- Schafer, J., Haslam, P. A., & Beaudet, P. (2009). Meaning, measurement, and morality in international development. In P. A. Halam, J. Schafer, & P. Beaudet (Eds.),

Introduction to international development: Approaches, actors and issues (pp. 3–27). Oxford: Oxford University Press.

- Schmitt, J. A. (2010). *Improving conservation efforts in the Serengeti ecosystem, Tanzania: An examination of knowledge, benefits, costs, and attitudes*. University of Minnesota.
- Scholte, P., & de Groot, W. T. (2010). From debate to insight: Three models of immigration to protected areas. *Conservation Biology*, 24(2), 630–632.
- Schroeder, H., King, L. A., & Tay, S. (2008). Contributing to the science-policy interface: Policy relevance of findings on the institutional dimensions of global environmental change. In O. R. Young, L. King, & H. Schroeder (Eds.), *Institutions and environmental change: Principal findings, adaptations, and research frontiers* (pp. 261–275). London, UK: The MIT Press.
- Sen, A. (1999). *Development as freedom*. New York: Knopf.
- SENAPA. (2012). *Serengeti National Park visitors statistics*.
- Sharma, S. D. (2007). Democracy , Good Governance , and Economic Development. *Taiwan Journal of Democracy*, 3(1), 29–62.
- Sinclair, A. R. E., Grant, J., Hopcraft, C., Oloff, H., & Mduma, S. A. R. (2008). Historical and future changes to the Serengeti ecosystem. In A. R. E. Sinclair, C. Packer, S. A. R. Mduma, & J. M. Fryxell (Eds.), *Serengeti III Human Impacts on Ecosystem Dynamics* (pp. 7–46). Chicago: University of Chicago Press.
- Smith, B. C. (2009). *Good governance and development* (p. 320). New York: Palgrave MacMillan.
- Songorwa, A. N. (1999). Is community-based wildlife management gender sensitive? experiences from Selous conservation programme in Tanzania. *Uongozi Journal of Management Development*, 11(2), 145–166.
- Songorwa, A. N., & du Toit, M. (2007). Hunting in Tanzania: has science played its role? *Tanzania Journal of Agricultural Sciences*, 8(1), 31–37.
- Stoker, G. (1998). Governance as theory: five propositions. *International Social Science Journal*, 50(155), 17–28.
- Stolton, S. (2010). Protected areas: Linking environment and wellbeing. In S. Stolton & N. Dudley (Eds.), *Arguments for protected areas: Multiple benefits for conservation and use* (pp. 1–12). London, UK: Earthscan.

- Strickland-Munro, J. K., Allison, H. E., & Moore, S. a. (2010). Using resilience concepts to investigate the impacts of protected area tourism on communities. *Annals of Tourism Research*, 37(2), 499–519.
- Tabachnick, B. G., & Fidell, L. S. (1983). *Using multivariate statistics*. New York: Harper and Row Publishers.
- Talbot, L. M. (1984). The role of protected areas in the implementation of the world conservation strategy. In J. A. McNeely & K. R. Miller (Eds.), *National parks, conservation and development* (pp. 15–16). Washington D.C: Smithsonian Institution Press.
- Tanzania Daima. (2011, November). Opolukwa ampinga RC kuondoa wananchi. *Tanzania Daima*. Dar es Salaam. Retrieved from <http://www.freemedia.co.tz/daima/habari.php?id=30169>.
- Tanzania Daima. (2012, March). Askari auawa, kunyofolewa sehemu za siri (A ranger killed and body mutilated). *Tanzania Daima*. Dar es Salaam. Retrieved from <http://www.freemedia.co.tz/daima/habari.php?id=34347>
- Tanzania National Parks. (2005). *Serengeti National Park general management plan 2006-2016* (p. 168). Arusha.
- Tanzania National Parks. (2010). *Tanzania National Parks Coorporate Strategic Plan*. Arusha.
- Tanzania National Parks. (2013). Serengeti and Kilimanjaro National Parks win natural wonders awards 2012. Retrieved April 15, 2013, from <http://www.tanzaniaparks.com/news/Senapa-KinapaAwards.html>
- TAWIRI. (2010). *Aerial census in the Serengeti ecosystem: Wet season 2010* (p. 60).
- Underwood, E. C., Viers, J. H., Klausmeyer, K. R., Cox, R. L., & Shaw, M. R. (2009). Threats and biodiversity in the mediterranean biome. *Diversity and Distributions*, 15(2), 188–197.
- UNDP. (1997). *Governance for Sustainable Human Development*. Retrieved from <http://mirror.undp.org/magnet/policy/>
- UNEP-WCMC. (2012). The World Database on Protected Areas (WDPA): February 2012. Retrieved July 04, 2013, from http://www.unep-wcmc.org/world-database-on-protected-areas-wdpa_76.html
- UNESCAP. (2013). What is good governance? Retrieved June 14, 2013, from <http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp>

- UNESCO. (n.d.). Serengeti National Park. Retrieved March 15, 2013, from <http://whc.unesco.org/en/list/156>
- UNESCO. (1972). *World Heritage Convention* (p. 16). Retrieved from <http://whc.unesco.org/en/conventiontext/>
- United Republic of Tanzania. (1998). *The wildlife policy of Tanzania* (1st ed.). Dar es Salaam: Government Printers.
- United Republic of Tanzania. (2002). *2002 population and housing census: Population Distribution by Administrative Areas* (p. 52). Dar es Salaam.
- United Republic of Tanzania. (2007). *The wildlife policy of Tanzania* (2nd ed.). Dar es Salaam: Government Printers.
- United Republic of Tanzania. The wildlife conservation act. , Pub. L. No. 5 (2009). Tanzania.
- United Republic of Tanzania. Wildlife Conservation Act (Non-consumptive use regulations) (2009).
- United Republic of Tanzania. (2010). *National strategy for growth and reduction of poverty II*. Dar es Salaam. Retrieved from www.povertymonitoring.go.tz
- United Republic of Tanzania. Wildlife Conservation Act: Wildlife Management Areas Regulations (2012).
- United Republic of Tanzania. (2013). *2012 population and housing census: Population Distribution by Administrative Areas* (p. 244). Dar es Salaam.
- Veit, P. G., Nshala, R., Odhiambo, M. O., & Manyindo, J. (2008). *Protected areas and property rights: Democratizing eminent domain in East Africa*. Washington D.C.
- Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A. (2004). Resilience , Adaptability and Transformability in Social – ecological Systems. *Ecology and Society*, 9(2), 5.
- Walpole, M., Almond, R. E. a, Besançon, C., Butchart, S. H. M., Campbell-Lendrum, D., Carr, G. M., ... Zimsky, M. (2009). Ecology. Tracking progress toward the 2010 biodiversity target and beyond. *Science*, 325(5947), 1503–4.
- Wasserman, J. D., & Bracken, B. A. (2003). Psychometric characteristics of assessment procedures. In *Handbook of Psychology* (pp. 43–66).

- West, P., & Brockington, D. (2006). An Anthropological Perspective on Some Unexpected Consequences of Protected Areas. *Conservation Biology*, 20(3), 609–616.
- West, P., Igoe, J., & Brockington, D. (2006). Parks and Peoples: The Social Impact of Protected Areas. *Annual Review of Anthropology*, 35(1), 251–277.
- Wilfred, P. (2010). Towards sustainable Wildlife Management Areas in Tanzania. *Tropical Conservation Science*, 3(1), 103–116.
- Wittemyer, G., Elsen, P., Bean, W. T., Burton, a C. O., & Brashares, J. S. (2008). Accelerated human population growth at protected area edges. *Science*, 321(5885), 123–6.
- World Bank. (1989). *Sub-Saharan Africa: From Crisis to Sustainable Growth*. Washington D.C: World Bank.
- World Bank. (2008). Tanzania at a glance. Retrieved April 12, 2013, from http://devdata.worldbank.org/AAG/tza_aag.pdf
- World Bank. (2011). Data and statistics: Tanzania quick facts. Retrieved August 26, 2011, from <http://www.iucn.org/themes/wcpa/wpc2003/english/outputs/recommendations.htm>
- World Commission on Environment and Development. (1987). *Our common future*. Oxford: Oxford University Press.
- World Park Congress. (2003). Recommendations. Retrieved April 02, 2013, from <http://www.iucn.org/themes/wcpa/wpc2003/english/outputs/recommendations.htm>
- Wunsch, J. S. (2001). Decentralization, local governance and ?recentralization? in Africa. *Public Administration and Development*, 21(4), 277–288.
- Yule, J., Fournier, R., & Hindmarsh, P. (2013). Biodiversity, Extinction, and Humanity's Future: The Ecological and Evolutionary Consequences of Human Population and Resource Use. *Humanities*, 2(2), 147–159.

Appendix 1: Key informants (ecosystem actors) interview questions

Invitation to interview

Dear participant,

My name is Alex Wilbard Kisingo. I am a lecturer at the College of African Wildlife Management, Mweka and currently I am a PhD student at the University of Victoria in Canada. This research is a sub-project of a larger project being led by the Institute for Coastal Research at Vancouver Island University (Canada) and the College of African Wildlife Management, Mweka (Tanzania) : Protected Areas and Poverty Reduction: A Canada-Africa Research and Learning Alliance (PAPR). In the PAPR project, I'm working together with researchers from Vancouver Island University and the University of Victoria, as well as community partners and agencies in Tanzania, to understand how the interactions between various protected areas governance actors shape attainment of both conservation and community development objectives in particular poverty reduction in the Serengeti ecosystem, Tanzania. My overall aim in this research is to contribute into more effective ecosystem-level governance to Serengeti. Participation to this study is entirely voluntary and by no means should it put your wellbeing at risk. Thank you for participating in this important research by sharing your experiences, knowledge and time. We estimate that it will take about 90 minutes to complete this interview.

Sincerely,

Alex Wilbard Kisingo – Principal Researcher

Name:

Position in the ecosystem:

Gender: **Male** ___ Female ___ Age

Organization/Office/Village

Years around the ecosystem

Objective 1: To analyze existing PA governance models in Serengeti ecosystem in order to understand the roles and responsibilities of various actors, accountability and resource tenure arrangements.

1. How are you involved with conservation issues in the Serengeti ecosystem
2. Describe the objectives of conservation in the Serengeti ecosystem?
3. How can you best describe various PAs in the ecosystem? [Private, community managed, government owned or collaboratively managed]
4. I would like to ask you a number of questions related to the approach to management of this protected area. The first questions refer to the "legitimacy" of park management in the Serengeti ecosystem. How would you describe the legitimacy of PAs and their management in the ecosystem? [Prod for legality and acceptability of PA management and its operations to stakeholders]
5. As I read each question, please indicate if you strongly agree, somewhat agree, somewhat disagree, strongly disagree or not sure.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The PA governing bodies has legal authority					
B. The PA governing bodies acts in accordance within its legal authority					
C. The PA governing bodies acts with integrity and commitment					
D. Stakeholders freely accept the governing body's authority					
E. The PA governing bodies has a long standing cultural attachment to the area					

6. Describe powers and responsibilities of various actors in the ecosystem. [Prod for planning, decision-making, spending, revenue generation and power to enter into contracts]
7. How do you link/interact with people in other PAs and other organisations in the ecosystem? [Prod for who are the actors, and how are they involved]

8. How do PA management in the ecosystem ensure access and participation by stakeholders in the PA management processes and actions? [Prod for: public participation process, who are the actors, how are they selected, participatory mechanisms used to seek views from other actors, effectiveness of participatory mechanisms, and addressing complaints]
9. What mechanisms are used by PA managements to reach decisions when other organisations/actors are/should be involved
10. How would you describe the relationship between PAs and other actors in the ecosystem? [Prod for relationship with district councils, ecosystem based forums etc.]
11. In what ways would you like to be involved in conservation of the Serengeti ecosystem?
12. How would you describe management transparency for PAs in the ecosystem? [Prod for openness of governance and decision making to scrutiny]
13. How transparent are decisions making for PAs in the ecosystem
14. The next few statements refer to PA management “transparency” in the ecosystem. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. Governance and decision making is open to scrutiny by stakeholders					
B. The reasoning behind decisions is evident					
C. Achievements and failures are evident					
D. Information is presented to stakeholders in ways they can understand					

15. How would you describe public participation in the management of PA(s) in the ecosystem? [Prod for: public participation process, fairness, seriousness and adequacy of the participation process]
16. How would you describe **effectiveness** for PAs in the ecosystem?
How would you rate effectiveness in a scale of 1-5; where 1=not effective, 2=slightly effective, 3=neutral, 4=effective, and 5= very effective?
17. Describe **responsiveness** for PAs in the ecosystem to complaints and public criticism from other actors.
How would you rate responsiveness in a scale of 1-5; where 1=not responsive, 2=slightly responsive, 3=neutral, 4= responsive, and 5= very responsive?
18. How would you describe **accountability** of the PA managements in the ecosystem to other actors? [Prod for downward (constituency) Vs. Upward accountability]
19. The next few statements refer to PA management “accountability” in the ecosystem. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The governing bodies and staff have clearly defined roles & responsibilities					
B. The governing bodies has demonstrated acceptance of its responsibilities					
C. The governing bodies is answerable to its constituents (stakeholders)					
D. The governing bodies is subject to “upward accountability” (e.g. government)					
E. Powers are exercised appropriately					

20. How inclusive are PA management in this ecosystem?

21. The next few statements refer to “inclusiveness”. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. All stakeholders have appropriate opportunities to participate in decisions					
B. The governing body actively seeks to engage marginalized stakeholders					

22. **Equity** is just treatment, requiring that similar cases are treated in similar ways. How would you describe benefit and costs sharing between the PAs and other actors in the Serengeti ecosystem? [Prod for mechanisms for costs distribution]

23. The next few statements refer to “**fairness**” of PA management in the Serengeti ecosystem. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. Stakeholders and park staff are heard and treated with respect					
B. There is respect for governors from higher or lower authorities					
C. Decisions are made consistently and without bias					
D. Human rights and local values are respected					
E. Intrinsic value of nature is respected					
F. Benefits and costs of decisions are shared fairly					

24. How do you describe governance **strategic vision** for PAs in the Serengeti ecosystem? [Prod for kinds of partnerships and collaborative relations entered between this PA and other actors, and effectiveness of mechanisms for conflict resolution]

25. Next I would like you to consider the various other agencies that are involved in the Serengeti ecosystem, and how you interact with each (e.g. for conflict resolution, decision making, activities and initiatives, resource sharing, etc.), by completing the following table.

Ecosystem partner	Who at each institution is your main contact (you may provide more than one)	Frequency of communication (face to face; email; formal/informal presentations; telephone; stakeholder workshops; conferences; other)	What resources are exchanged (type of knowledge or information or other type of resources)	How important is this relationship to you 1 = not at all important, 2=low importance 3=medium importance 4=high importance 5=very high importance
TANAPA				
SENAPA				
NCAA				

WD- IKORONG O- GRUMETI				
WD-MASWA				
IKONA WMA				
MAKAO WMA				
WD-APU				
District councils				
Pastoral Council				
FZS				
SingtaGrumeti				
Investors (specify)				
Village Councils				
Other partners				

26. Which of the above linkages has most benefited the EBM in Serengeti ecosystem? Please describe how?

Every one has an important contribution. NCA and SENAPA are key components of these areas and they have most of the resources. Its important for them to recognise that and demonstrate that role to others

27. Which of the above linkages has least benefitted the Serengeti ecosystem. Please describe why?

28. What are some of the obstacles to more effective linkages?

No body has come to link them. They have not seen the need to linkup. They however do link and communicate its important they do it and formalize

29. What ideas do you have about how knowledge sharing/linkages could be improved?

Objective 3: To establish the perceived outcomes of PA governance models including conservation, development processes and movement towards ecosystem-based management.

30. How would you describe ecosystem management and connectivity in the Serengeti ecosystem?

[Prod for connectedness and coordination of PA management with those of other PAs and actors in the ecosystem]

31. What do you see are the outcomes of governance in the Serengeti ecosystem

32. Do you see any outcomes related to community development/benefits?
33. The next few statements refer to “connectivity” of PAs in the Serengeti ecosystem. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The PA governing bodies are effectively connected with other nearby PA governing bodies in the Serengeti region					
B. The PA governing bodies direction and actions are consistent with other nearby PA governing bodies in the Serengeti region					

34. Can you describe some of the important achievements for PAs in the Serengeti ecosystem? [Prod for: main achievements, main challenges, critical decisions and opportunities, support by other actors, weaknesses and limitations]
35. To what extent do you feel these achievements are a result of the approach to governance in this PA? Please explain.

Objective 4: To establish barriers to effective PA governance in the Serengeti ecosystem

36. What are some of the governance challenges encountered in managing PAs in the Serengeti ecosystem?

There are more actors with different interests and this brings a problem in meeting their interests from the same ecosystem at per. Some of the interests are competing. NGOs, workers, communities, conservationists, researchers. all these has challenges to deal with

37. Is legislation adequate to manage and protect PAs in the Serengeti ecosystem? (referring to content including how current it is?)

Need them to work together so the laws should help to bring them together

38. Thinking now about the entire Serengeti ecosystem (provide respondent with a map), including PAs, and other land management agencies, please provide your opinion about each of the following, by indicating one of the following opinions: very bad, somewhat bad, not sure, somewhat good, or very good.

	Very Bad	Somewhat Bad	Not Sure	Somewhat Good	Very Good
A. Representation of the diverse wildlife in PA's	1	2	3	4	5
B. Representation of diverse plant life in PA's	1	2	3	4	5
C. Representation of diverse water bodies in PA's	1	2	3	4	5
D. Representation of diverse geological features in PA's	1	2	3	4	5
E. Representation of diverse human cultures and history in PA's	1	2	3	4	5
F. Total amount of land protected in PA's	1	2	3	4	5
G. Configuration of PA's (make it one PA, but there is a good for diversity as it contribute to strength, only make a way for management to cooperate)	1	2	3	4	5
H. Connectivity between PA's	1	2	3	4	5
I. Collaboration between PA agencies	1	2	3	4	5
J. Level of funding for PA agencies	1	2	3	4	5

K. Number of staff working in PA's	1	2	3	4	5
L. Level of training of staff working in PA's (conflict resolution, climate change etc)	1	2	3	4	5

39. The next few statements refer to "resilience" of management in the Serengeti ecosystem. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The governing bodies likes to use lessons learned from experience.					
B. The governing bodies likes to use new knowledge (depends who is there. Some see the values of the knowledge some don't see. Management need to see this be used)					
C. The governing bodies has some flexibility to respond to changing conditions (management plans are adaptive and can be amended)					
D. The governing bodies has procedures for assessing and managing for risk					
E. The governing bodies has long term security for managing PAs in the ecosystem					

40. Is there adequate staff capacity in the PA management agencies in the ecosystem?

41. How adequate is funding for the protected area system?

42. How reliable and sustainable is this funding?

As long as tourism is there it is reasonable but need are more than what is there

43. Do you have any other comments you would like to make?

Thank you. This concludes our interview.

Appendix 2: Key informant interview questions for village actors

Invitation to interview

Dear participant,

My name is Alex Wilbard Kisingo. I am a lecturer at the College of African Wildlife Management, Mweka and currently I am a PhD student at the University of Victoria in Canada. This research is a sub-project of a larger project being led by the Institute for Coastal Research at Vancouver Island University (Canada) and the College of African Wildlife Management, Mweka (Tanzania) : Protected Areas and Poverty Reduction: A Canada-Africa Research and Learning Alliance (PAPR). In the PAPR project, I'm working together with researchers from Vancouver Island University and the University of Victoria, as well as community partners and agencies in Tanzania, to understand how the interactions between various protected areas governance actors shape attainment of both conservation and community development objectives in particular poverty reduction in the Serengeti ecosystem, Tanzania. My overall aim in this research is to contribute into more effective ecosystem-level governance to Serengeti. Participation to this study is entirely voluntary and by no means should it put your wellbeing at risk. Thank you for participating in this important research by sharing your experiences, knowledge and time. We estimate that it will take about 90 minutes to complete this interview.

Sincerely,

Alex Wilbard Kisingo – Principal Researcher

Name: _____

Village _____

Gender: Male ___ Female ___ Age ____

Position in the village _____

Years around the ecosystem _____

Objective 1: To analyze existing PA governance models in Serengeti ecosystem in order to understand the roles and responsibilities of various actors, accountability and resource tenure arrangements.

1. How are you involved with conservation issues in the Serengeti ecosystem
2. How can you best describe various PAs in the ecosystem? [Private, community managed, government owned or collaboratively managed]
3. Describe the objectives of conservation in the Serengeti ecosystem?
4. How would you describe the legitimacy of PAs and their management in the ecosystem? [Prod for legality and acceptability of PA management and its operations to stakeholders]
5. As I read each question, please indicate if you strongly agree, somewhat agree, somewhat disagree, strongly disagree or not sure.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The PA governing bodies has legal authority					
B. The PA governing bodies acts in accordance within its legal authority					
C. The PA governing bodies acts with integrity and commitment					
D. Stakeholders freely accept the governing body's authority					
E. The PA governing bodies has a long standing cultural attachment to the area					

6. Describe powers and responsibilities of various actors in the ecosystem. [Prod for planning, decision-making, spending, revenue generation and power to enter into contracts]

Objective 2: To describe interactions for each PA model with governance actors in the Serengeti ecosystem, in order to understand the nature of interactions, participation, and powers exercised by various actors.

7. How do you the involvement of village actors in neighbouring PA? [Prod for who are the actors, and effectiveness of participatory mechanisms]
8. What would you say about the relationship between neighbouring PA and the village?
9. How do PA management in the ecosystem ensure access and participation by stakeholders in the PA management processes and actions? [Prod for: public participation process]
10. What mechanisms are used by PA managements to reach decisions when other organisations/actors are/should be involved ?
11. How would you like to be involved in the conservation of neighbouring PA?
12. How transparent are decisions making in the neighbouring PA?
13. The next few statements refer to PA management “transparency” in the ecosystem. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. Governance and decision making is open to scrutiny by stakeholders					
B. The reasoning behind decisions is evident					
C. Achievements and failures are evident					
D. Information is presented to stakeholders in ways they can understand					

14. How would you describe **effectiveness** for the neighboring PA?
How would you rate effectiveness in a scale of 1-5; where 1=not effective, 2=slightly effective, 3=neutral, 4=effective, and 5= very effective?
15. Describe **responsiveness** for the neighboring PA to complaints and public criticism from other actors.
How would you rate responsiveness in a scale of 1-5; where 1=not responsive, 2=slightly responsive, 3=neutral, 4= responsive, and 5= very responsive?
16. How would you describe **accountability** of the PA managements in the neighboring PA to other actors? [Prod for downward (constituency) Vs. Upward accountability]
17. The next few statements refer to PA management “accountability” in the neighboring PA. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The governing bodies and staff have clearly defined roles & responsibilities					
B. The governing bodies has demonstrated acceptance of its responsibilities					
C. The governing bodies is answerable to its constituents (stakeholders)					
D. The governing bodies is subject to “upward accountability” (e.g. government)					
E. Powers are exercised appropriately					

18. How inclusive are PA management in the neighbouring PA?

19. The next few statements refer to “inclusiveness”. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. All stakeholders have appropriate opportunities to participate in decisions					
B. The governing body actively seeks to engage marginalized stakeholders					

20. **Equity** is just treatment, requiring that similar cases are treated in similar ways. How would you describe benefit and costs sharing between the neighboring PA and other actors? [Prod for mechanisms for costs distribution]

21. The next few statements refer to “**fairness**” of PA management in the neighboring PA. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. Stakeholders and park staff are heard and treated with respect					
B. There is respect for governors from higher or lower authorities					
C. Decisions are made consistently and without bias					
D. Human rights and local values are respected					
E. Intrinsic value of nature is respected					
F. Benefits and costs of decisions are shared fairly					

22. Next I would like you to consider the various other agencies that are involved in the Serengeti ecosystem, and how you interact with each (e.g. for conflict resolution, decision making, activities and initiatives, resource sharing, etc.), by completing the following table.

Ecosystem partner	Who at each institution is your main contact (you may provide more than one)	Frequency of communication (face to face; email; formal/informal presentations; telephone; stakeholder workshops; conferences; other)	What resources are exchanged (type of knowledge or information or other type of resources)	How important is this relationship to you 1 = not at all important, 2=low importance 3=medium importance 4=high importance 5=very high importance
TANAPA				
SENAPA				
NCAA				

WD- IKORONGO- GRUMETI				
WD-MASWA				
IKONA WMA				
MAKAO WMA				
WD-APU				
District councils				
Pastoral Council				
FZS				
SingtaGrumeti				
Investors (specify)				
Village Councils				
Other partners				

23. Which of the above linkages has most benefited the EBM in Serengeti ecosystem? Please describe how?
 24. Which of the above linkages has least benefitted the Serengeti ecosystem. Please describe why?
 25. What are some of the obstacles to more effective linkages?
 26. What ideas do you have about how knowledge sharing/linkages could be improved?
- Objective 3: To establish the perceived outcomes of PA governance models including conservation, development processes and movement towards ecosystem-based management.**
27. How would you describe ecosystem management and connectivity in the Serengeti ecosystem?
[Prod for connectedness and coordination of PA management with those of other PAs and actors in the ecosystem]
 28. Describe achievements for various PAs in the Serengeti ecosystem.
 29. What do you see are the outcomes of governance in the neighboring PA
 30. Do you see any outcomes related to community development/benefits?

31. The next few statements refer to “connectivity” of PAs in the Serengeti ecosystem. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The PA governing bodies are effectively connected with other nearby PA governing bodies in the Serengeti region					
B. The PA governing bodies direction and actions are consistent with other nearby PA governing bodies in the Serengeti region					

32. Can you describe some of the important achievements for neighboring PA? [Prod for: main achievements, main challenges, critical decisions and opportunities, support by other actors, weaknesses and limitations]
33. To what extent do you feel these achievements are a result of the approach to governance in this neighboring PA? Please explain.

Objective 4: To establish barriers to effective PA governance in the Serengeti ecosystem

34. What are some of the governance challenges encountered in managing the neighboring PA?
35. Is legislation adequate to manage and protect the neighboring PA? (Referring to content including how current it is?)
36. Thinking now about the entire Serengeti ecosystem (provide respondent with a map), including PAs, and other land management agencies, please provide your opinion about each of the following, by indicating one of the following opinions: very bad, somewhat bad, not sure, somewhat good, or very good.

	Very Bad	Somewhat Bad	Not Sure	Somewhat Good	Very Good
A. Representation of the diverse wildlife in PA's					
B. Representation of diverse plant life in PA's					
C. Representation of diverse water bodies in PA's					
D. Representation of diverse geological features in PA's					
E. Representation of diverse human cultures and history in PA's					
F. Total amount of land protected in PA's					
G. Configuration of PA's					
H. Connectivity between PA's					
I. Collaboration between PA agencies					

37. Do you have any other comments you would like to make?

Thank you. This concludes our interview.

Appendix 3: Key informant interview questions for PA management

Invitation to interview

Dear participant,

My name is Alex Wilbard Kisingo. I am a lecturer at the College of African Wildlife Management, Mweka and currently I am a PhD student at the University of Victoria in Canada. This research is a sub-project of a larger project being led by the Institute for Coastal Research at Vancouver Island University (Canada) and the College of African Wildlife Management, Mweka (Tanzania) : Protected Areas and Poverty Reduction: A Canada-Africa Research and Learning Alliance (PAPR). In the PAPR project, I'm working together with researchers from Vancouver Island University and the University of Victoria, as well as community partners and agencies in Tanzania, to understand how the interactions between various protected areas governance actors shape attainment of both conservation and community development objectives in particular poverty reduction in the Serengeti ecosystem, Tanzania. My overall aim in this research is to contribute into more effective ecosystem-level governance to Serengeti. Participation to this study is entirely voluntary and by no means should it put your wellbeing at risk. Thank you for participating in this important research by sharing your experiences, knowledge and time. We estimate that it will take about 90 minutes to complete this interview.

Sincerely,

Alex Wilbard Kisingo – Principal Researcher

Name: _____

Name of PA: _____

Position in the PA: _____

Gender: Male ___ Female ___ Age _____

Years around within the PA _____

Objective 1: To analyze existing PA governance models in Serengeti ecosystem in order to understand the roles and responsibilities of various actors, accountability and resource tenure arrangements.

1. How can you best describe this PA? and its governance [Private, community managed, government owned or collaboratively managed]
2. I would like to ask you a number of questions related to the approach to management of this protected area. The first questions refer to the “legitimacy” of park management in this protected area. How would you describe the legitimacy of this PA and its management?
[Prod for legality and acceptability of PA management and its operations to stakeholders]
3. As I read each question, please indicate if you strongly agree, somewhat agree, somewhat disagree, strongly disagree or not sure.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The governing body has legal authority					
B. The governing body acts in accordance within its legal authority					
C. The governing body acts with integrity and commitment					
D. Stakeholders freely accept the governing body's authority					
E. The governing body has					

a long standing cultural attachment to the area					
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4. Describe powers and responsibilities of various actors in the ecosystem. [Prod for planning, decision-making, spending, revenue generation and power to enter into contracts]

Objective 2: To describe interactions for each PA model with governance actors in the Serengeti ecosystem, in order to understand the nature of interactions, participation, and powers exercised by various actors.

5. How do people in your PA link/interact with people in other PAs and other organisations?

[Prod for who are the actors, and how are they involved]

6. How would you describe the relationship between your PA and other PAs in the ecosystem?
 7. How do PA management ensure access and participation by stakeholders in the PA management processes and actions? [Prod for: public participation process]
 8. What mechanisms are used by PA management to reach decisions when other organisations/actors are/should be involved
 9. How transparent is decision making for this PA?
 10. The next few statements refer to “transparency”. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. Governance and decision making is open to scrutiny by stakeholders					
B. The reasoning behind decisions is evident					
C. Achievements and failures are evident					
D. Information is presented to stakeholders in ways they can understand					

11. How would you describe **effectiveness** for this PA?
 How would you rate effectiveness in a scale of 1-5; where 1=not effective, 2=slightly effective, 3=neutral, 4=effective, and 5= very effective?
 12. Describe **responsiveness** of this PA to complaints and public criticism from other actors.
 How would you rate responsiveness in a scale of 1-5; where 1=not responsive, 2=slightly responsive, 3=neutral, 4= responsive, and 5= very responsive?
 13. How would you describe **accountability** of the PA management to other actors? [Prod for downward (constituency) Vs. Upward accountability]
 14. The next few statements refer to “accountability”. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The governing body and staff have clearly defined roles & responsibilities					
B. The governing body has demonstrated acceptance of its responsibilities					
C. The governing body is answerable to its constituents (stakeholders)					
D. The governing body is subject to “upward					

accountability” (e.g. government)					
E. Power is exercised appropriately					

15. How **inclusive** is PA management in this PA?

16. The next few statements refer to “inclusiveness”. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. All stakeholders have appropriate opportunities to participate in decisions					
B. The governing body actively seeks to engage marginalized stakeholders					

17. **Equity** is just treatment, requiring that similar cases are treated in similar ways. How would you describe benefit and costs sharing between the PA and other actors? [Prod for mechanisms for costs distribution]

18. The next few statements refer to “**fairness**”. Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. Stakeholders and park staff are heard and treated with respect					
B. There is respect for governors from higher or lower authorities					
C. Decisions are made consistently and without bias					
D. Human rights and local values are respected					
E. Intrinsic value of nature is respected					
F. Benefits and costs of decisions are shared fairly					

19. How do you describe governance **strategic vision** for this PA.?

[Prod for kinds of partnerships and collaborative relations entered between this PA and other actors, and effectiveness of mechanisms for conflict resolution]

20. Next I would like you to consider the various other agencies that are involved in the Serengeti ecosystem, and how you interact with each (e.g. for conflict resolution, decision making, activities and initiatives, resource sharing, etc.), by completing the following table.

Ecosystem partner	Who at each institution is your main contact (you may provide more than one)	Frequency of communication (face to face; email; formal/informal presentations; telephone; stakeholder workshops; conferences; other)	What resources are exchanged (type of knowledge or information or other type of resources)	How important is this relationship to you 1 = not at all important, 2=low importance 3=medium importance 4=high importance 5=very high importance

TANAPA				
SENAPA				
NCAA				
WD- IKORONGO- GRUMETI				
WD- MASWA				
IKONA WMA				
MAKAO WMA				
WD-APU				
District councils				
Pastoral Council				

FZS				
Singta Grumeti				
Investors (specify)				
Village Councils				
Other partners				

21. Which of the above linkages has most benefited the EBM in Serengeti ecosystem? Please describe how?
22. Which of the above linkages has least benefitted the Serengeti ecosystem. Please describe why?
23. What are some of the obstacles to more effective linkages?
24. What ideas do you have about how knowledge sharing/linkages could be improved?
- Objective 3: To establish the perceived outcomes of PA governance models including conservation, development processes and movement towards ecosystem-based management.**
25. How would you describe ecosystem management and connectivity?
[Prod for connectedness and coordination of PA management with those of other PAs and actors in the ecosystem]
26. What do you see are the outcomes of governance in your PA/Serengeti ecosystem
27. Do you see any outcomes related to community development/benefits?
28. The next few statements refer to "connectivity". Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The governing body is effectively connected with other nearby PA governing bodies in the Serengeti region					
B. The governing body's direction and actions are consistent with other nearby PA governing bodies in the					

Serengeti region					
------------------	--	--	--	--	--

29. Can you describe some of the important achievements for this PA. [Prod for: main achievements, main challenges, critical decisions and opportunities, support by other actors, weaknesses and limitations]

30. To what extent do you feel these achievements are a result of the approach to governance in this PA? Please explain.

Objective 4: To establish barriers to effective PA governance in the Serengeti ecosystem

31. What are some of the governance challenges encountered in managing this PA

32. Is legislation adequate to manage and protect this PA? (referring to content including how current it is?)

33. Thinking now about the entire Serengeti ecosystem (provide respondent with a map), including this PA, other PA's, and other land management agencies, please provide your opinion about each of the following, by indicating one of the following opinions: very bad, somewhat bad, not sure, somewhat good, or very good.

	Very Bad	Somewhat Bad	Not Sure	Somewhat Good	Very Good
A. Representation of the diverse wildlife in PA's					
B. Representation of diverse plant life in PA's					
C. Representation of diverse water bodies in PA's					
D. Representation of diverse geological features in PA's					
E. Representation of diverse human cultures and history in PA's					
F. Total amount of land protected in PA's					
G. Configuration of PA's					
H. Connectivity between PA's					
I. Collaboration between PA agencies					
J. Level of funding for PA agencies					
K. Number of staff working in PA's					
L. Level of training of staff working in PA's					

34. The next few statements refer to "resilience". Please indicate the extent to which you agree or disagree with the following.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The governing body likes to use lessons learned from experience					
B. The governing body likes to use new knowledge					
C. The governing body has some flexibility to respond to changing conditions					
D. The governing body has procedures for assessing and managing for risk					
E. The governing body has long					

term security for managing this PA					
---------------------------------------	--	--	--	--	--

35. Is there adequate staff capacity in the PA management agencies in the ecosystem?

36. How adequate is funding for the protected area system?

37. How reliable and sustainable is this funding?

38. Do you have any other comments you would like to make?

Thank you. This concludes our interview.

Appendix 4: Focused group questions for village actors

Dear participants,

Welcome to the social-ecological governance survey for protected areas. This discussion, administered by a researcher from the University of Victoria, Canada, aims to gather your perceptions on the social-ecological governance of protected areas in the Serengeti ecosystem, Tanzania. This survey will thus, ask about your perceptions of protected area governance in the ecosystem. Participation to this discussion is entirely voluntary and by no means should it put your wellbeing at risk. Thank you for participating in this important research by sharing your experiences, knowledge and time. We estimate that it will take about 120 minutes to complete this discussion.

Yours'

Alex Wilbard Kisingo – Researcher

Village name: _____

Total number of respondents : Women ___ Men ____

1. What are the objectives of conservation in the neighbouring PAs?
2. What do you say about legitimacy of PAs and their management in the Serengeti ecosystem
3. Who has power over the neighbouring PAs? What are the roles and powers owned by the village over these PAs?
4. What is the relationship between the village and neighboring PAs?
5. How are you as villagers involved in decision making and management in the nearby PAs?
6. How would you like to be involved in the conservation of the nearby PAs?
7. How do you see transparency, effectiveness, responsiveness in the neighbouring PA?
8. How do you see fairness and equity with regard to distribution of costs and benefits from the nearby PAs?
9. What actors in the do you communicate with in the Serengeti ecosystem? What is the importance of that communication?
10. Which actor do you see as the most important in communication with your village amongst the conservation actors?
11. Which actor do you see as the least important in communication with your village amongst the conservation actors?
12. What are the barriers to effective communication?
13. What should be done to improve communication?
14. What are the achievements attained in the Serengeti PAs?
15. How much do you see the achievements are linked to the governance?
16. Are there any social achievements from the neighboring PAs?
17. What are the critical challenges to the neighbouring PAs?
18. What are governance challenges in the nearby PAs?
19. Are the present legislations sufficient to conserve the nearby PAs?
20. What do you say about sufficiency in size of the areas conserved in the Serengeti ecosystem enough?
21. Any other comments with regard to this research?

Thanks

Appendix 5. Questionnaire for household survey

Social-ecological governance of protected areas in the Serengeti ecosystem, Tanzania

Household Questionnaire



**conservation
knowledge**

Protected Areas and Poverty Reduction
Canada-Africa Research and Learning Alliance

2012

Invitation to survey

Dear participant,

Welcome to the social-ecological governance survey for protected areas. This survey, administered by a researcher from the University of Victoria, Canada, aims to gather the perceptions of various actors about the social-ecological governance of protected areas in the Serengeti ecosystem, Tanzania. This survey will thus, ask about your perceptions of protected area governance in the ecosystem. Participation to this study is entirely voluntary and by no means should it put your wellbeing at risk. Thank you for participating in this important research by sharing your experiences, knowledge and time. We estimate that it will take about 40 minutes to complete this survey.

Sincerely,

Alex Wilbard Kisingo – Principal Researcher

Name: _____

Gender: M _____ F _____ Age _____

Village _____

Ethnicity _____

Closest PA _____

- Please answer the following statements about your view of the legitimacy of neighboring PA and its management by indicating if you strongly agree, somewhat agree, somewhat disagree, strongly disagree or not sure.

	Strongly Disagree	Somewhat Disagree	Not Sure	Somewhat Agree	Strongly Agree
A. The governing body has legal authority	1	2	3	4	5
B. The governing body acts in accordance within its legal authority	1	2	3	4	5
C. The governing body acts with integrity and commitment	1	2	3	4	5
D. Stakeholders freely accept the	1	2	3	4	5

governing body's authority					
E. The governing body has a long standing cultural attachment to the area	1	2	3	4	5

2. Please respond to the following **questions about transparency** in the neighbouring PA

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. Governance and decision-making are open to scrutiny by stakeholders	1	2	3	4	5
B. Reasoning behind PA decisions are evident to all actors	1	2	3	4	5
C. PA achievements and failures are evident to all actors	1	2	3	4	5
D. PA presents its information in a customised manner to stakeholders' needs	1	2	3	4	5

3. Please respond to the following **questions about accountability** in the neighbouring PA.

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. PA management accountable	1	2	3	4	5
B. PA management id downwardly accountable	1	2	3	4	5
C. There are checks and balances for ensuring accountability in PA management	1	2	3	4	5
D. Decision making is guided by laid down procedures	1	2	3	4	5

4. How do you hold PA management accountable for the decisions and actions in the PA and ecosystem?

5. What kinds of disputes arise as a result of enforcement of PA decisions?

6. How do you go about resolving such disputes?

7. How do you respond to the following questions about **inclusiveness** and **fairness** in the neighbouring PA(s)?

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. The PA management actively engage marginalised and disadvantaged stakeholders	1	2	3	4	5
B. Actors in our village are involved in PA management (Planning, decision making, execution of activities)	1	2	3	4	5
C. I am informed about my roles in PA management	1	2	3	4	5
D. PA management has participatory mechanisms for seeking views from actors in	1	2	3	4	5

our village					
E. Participatory mechanisms for seeking views from village actors are effective	1	2	3	4	5
F. PA management recognise grievances and solve internal and external disputes	1	2	3	4	5

8. In what ways would you like to be **involved** in the management of neighbouring PA(s)?

9. Please respond to the following statements about equity in the neighbouring PA

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. Stakeholders are heard and treated with respect	1	2	3	4	5
B. There is respect for governors from higher or lower authorities	1	2	3	4	5
C. Decisions are made consistently and without bias	1	2	3	4	5
D. Human rights and local values are respected	1	2	3	4	5
E. Intrinsic value of nature is respected	1	2	3	4	5
F. Benefits and costs of decisions are shared fairly	1	2	3	4	5

10. How would you respond to the following statements about public **participation** in the management of neighbouring PA(s)?

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. Those who wanted to contribute to the public participation process had the opportunity to do so	1	2	3	4	5
B. Those who contributed to the public participation process were taken seriously	1	2	3	4	5
C. The structure of the public participation process results in appropriate recommendations	1	2	3	4	5
D. Input is sought early in the decision-making process	1	2	3	4	5
E. The purpose of engaging stakeholders in any decision-making process is clearly stated	1	2	3	4	5
F. The public participation decision-making process is adequate	1	2	3	4	5

11. **Mission of the wildlife sub-sector.** To conserve, manage and develop wildlife resources, and sustainable utilization that will contribute toward poverty reduction. Please, respond to the following **question about PA governance strategic vision.**

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. The neighbouring PA has a strategic vision	1	2	3	4	5
B. Our village is in partnerships and collaborative relations with the PA	1	2	3	4	5
C. Risks are foreseen by both the PA and village management	1	2	3	4	5
D. Risks are managed effectively	1	2	3	4	5
E. Conflicts between our village and PA are satisfactorily resolved	1	2	3	4	5

12. What are the sources of conflicts with PA/conservation in your village e.g. animal involved?
 a.
 b.
13. How are these conflicts resolved?
 a.
 b.
14. What are your main roles and responsibilities to PA management?
 a.
 b.
15. What can you say about achievement of protected area objectives for the neighbouring PA?

16. Please respond to the following statements about achievements in the neighbouring PA.

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. Neighbouring PA achieves its objectives	1	2	3	4	5
B. Other actors are in support of the PA	1	2	3	4	5

17. What do you see as the main challenges to the nearby PA(s)?
18. Respond to the following questions about **ecosystem-based management and connectivity?**

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. PA management coordinate with other PAs and villages in planning	1	2	3	4	5
B. PA and other PAs and villages conducts joint patrols	1	2	3	4	5
C. PA management sits in ecosystem based forum meetings	1	2	3	4	5
D. PA management include village land use plans in their PA management plan	1	2	3	4	5

E. Village socio-economy is linked to conservation in the Serengeti ecosystem	1	2	3	4	5
F. PA management plans are consistent with ecosystem and national conservation agendas	1	2	3	4	5
G. PA management has good relationship with other actors such as NGOs, investors, district and regional authorities, communities	1	2	3	4	5

19. Please respond to the following questions about **effectiveness and efficiency** in nearby PA(s)

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. PA management is cost effective and efficient	1	2	3	4	5
B. PA management have sufficient capacity to carry out their required roles	1	2	3	4	5
C. PA management is effectively coordinated	1	2	3	4	5
D. PA management provide information to allow assessments of their performance	1	2	3	4	5

20. How would you respond to the following questions about **responsiveness** in the nearby PA(S)?

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. PA management respond to criticism	1	2	3	4	5
B. PA management respond to complaints	1	2	3	4	5
C. PA management act on suggestions from village actors	1	2	3	4	5
D. PA management responds readily to requests from village actors	1	2	3	4	5
E. PA management is easy to reach by village actors	1	2	3	4	5
F. PA management make efforts to reach villagers for inputs	1	2	3	4	5
G. PA management identify threats and address them	1	2	3	4	5

21. Please respond to the following questions about **consensus orientation** for the neighbouring PA.

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. PA have mechanisms for reaching consensus decisions	1	2	3	4	5
B. PA decision making allows interactions with actors in your village	1	2	3	4	5
C. Enough time is allocated for decision making	1	2	3	4	5
D. Ecosystem based forums are used in reaching decisions	1	2	3	4	5

22. Respond to the following questions about **powers** held by village actors on resources in the ecosystem particularly those falling within village boundaries.

	Strongly disagree	Somewhat disagree	Neither	Somewhat agree	Strongly agree
A. Villagers have planning powers	1	2	3	4	5
B. Village actors have revenue generation powers	1	2	3	4	5
C. Village actors have decision-making powers	1	2	3	4	5
D. Village actors have powers to enter into contracts	1	2	3	4	5
E. Village actors have spending powers	1	2	3	4	5

23. Are there any other comments you would like to make about your experience?

Appendix 6: Letter of consent for participants

1. Recruitment – Email/Phone Scripts

Group 1, 2, 3 and 4 – Key informant interviews

Dear _____

I am **Alex Wilbard Kisingo**, a PhD student at the Geography Department, University of Victoria, Canada. I am in the process of carrying out research on the protected area governance in an ecosystem set-up.

The study is entitled **Social-ecological governance of protected areas in the Serengeti ecosystem, Tanzania**.

The purpose of the research is **to understand the patterns of interactions among protected area social-ecological governance actors in the Serengeti ecosystem, Tanzania**.

This research is being funded by the Protected Areas and Poverty Reduction Project (PAPR). More information can be found at: <http://www.viu.ca/icura/>, <http://www.papr.org>

This communication serves to invite you to participate in the research I am conducting on social-ecological governance of protected areas in the Serengeti ecosystem in Tanzania. I have decided to contact you and request your participation in this study as a key informant because you have been identified as among the knowledgeable people about protected areas and the link between protected areas and other actors in the Serengeti ecosystem. Your participation in this research is totally voluntary and feel free to decide to participate or not by following your inner decision.

Your selection to participate in this research has been done through snowballing mechanism where other people have given you my contacts for you to participate. Your participation will involve take part in an interview between you and Mr. Alex Wilbard Kisingo (researcher) on various issues pertaining to protected area governance in the Serengeti ecosystem in Tanzania. This interview will be audio recorded for subsequent transcription by the researcher. This interview will take a maximum of two hours. Participation in this research is voluntary and there is no penalty if you do not participate.

More information on the research project, including the research questions and methods can be found in the attached Participant Consent and Data Collection Methods Forms. I would truly appreciate if you could consider being a participant in this research and if you could inform me of your decision by April 30, 2012. In the meantime, I would be pleased to answer - in person, by phone or email - any questions you might have.

I thank you in advance for your positive consideration.

Respectfully,

Alex Wilbard Kisingo

PhD Student, Geography Department

University of Victoria, Canada

akisingo@mwekawildlife.org

Phone: +255 784 328469

Appendix 7. Recruitment –Email/Phone Scripts

Group 4 – Focused group discussion

Dear _____

I am **Alex Wilbard Kisingo**, a PhD student at the Geography Department, University of Victoria, Canada. I am in the process of carrying out research on the protected area governance in an ecosystem set-up.

The study is entitled **Social-ecological governance of protected areas in the Serengeti ecosystem, Tanzania**.

The purpose of the research is **to understand the patterns of interactions among protected area social-ecological governance actors in the Serengeti ecosystem, Tanzania**.

This research is being funded by the Protected Areas and Poverty Reduction Project (PAPR). More information can be found at: <http://www.viu.ca/icura/>, <http://www.papr.org>

This communication serves to invite you to participate in the research I am conducting on social-ecological governance of protected areas in the Serengeti ecosystem in Tanzania. I have decided to contact you and request your participation in this study as a member of a focus group discussion because you have been identified as among the knowledgeable people about protected areas and the link between protected areas and your village. This is through your experience with both neighboring protected areas and this village. Your participation in this research is totally voluntary and feel free to decide to participate or not by following your inner decision for this case.

Your selection to participate in this research has been done through survey of the village resident register. Your participation will involve being a part of a small group of people (3-10) discussing some issues concerning protected area governance in the ecosystem. This discussion will be moderated by Mr. Alex Wilbard Kisingo (researcher) and will be audio recorded for subsequent transcription by the researcher himself. This interview will take a maximum of two hours. Participation in this research is voluntary and there is no penalty if you do not participate.

More information on the research project, including the research questions and methods can be found in the attached Participant Consent and Data Collection Methods Forms. I would truly appreciate if you could consider being a participant in this research and if you could inform me of your decision by April 30, 2012. In the meantime, I would be pleased to answer - in person, by phone or email - any questions you might have.

I thank you in advance for your positive consideration.

Respectfully,

Alex Wilbard Kisingo

PhD Student, Geography Department

University of Victoria, Canada

akisingo@mwekawildlife.org

Phone: +255 784 328469

Appendix 8. Recruitment – Household Interviews

Dear _____

I am **Alex Wilbard Kisingo**, a PhD student at the Geography Department, University of Victoria, Canada. I am in the process of carrying out research on the protected area governance in an ecosystem set-up.

The study is entitled **Social-ecological governance of protected areas in the Serengeti ecosystem, Tanzania**.

The purpose of the research is **to understand the patterns of interactions among protected area social-ecological governance actors in the Serengeti ecosystem, Tanzania**.

This research is being funded by the Protected Areas and Poverty Reduction Project (PAPR). More information can be found at: <http://www.viu.ca/icura/>, <http://www.papr.org>

This communication serves to invite you to participate in the research I am conducting on social-ecological governance of protected areas in the Serengeti ecosystem in Tanzania. I have decided to contact you and request your participation in this study as an individual household interview respondent. Your selection has been randomly done from the village household register as you are a resident in this village. By residing in this village imply some knowledge on social-ecological issues on the governance of the neighbouring protected area(s) and the link between protected areas and your village. This is through your experience with both neighboring protected areas and this village. Your participation in this research is totally voluntary and feel free to decide to participate or not by following your inner decision for this case.

Your selection to participate to this research has been done randomly from the village resident register. Your participation will involve being part of a face to face interview with a research assistant which is expected to last up to 45 minutes on issues concerning protected area governance in the ecosystem in particular the local level participation in decision making.

More information on the research project, including the research questions and methods can be found in the attached Participant Consent and Data Collection Methods Forms. I would truly appreciate if you could consider being a participant in this research and if you could inform me of your decision by May 30, 2012. In the meantime, I would be pleased to answer - in person, by phone or email - any questions you might have. Participation in this research is voluntary and there is no penalty if you do not participate.

I thank you in advance for your positive consideration.

Respectfully,

Alex Wilbard Kisingo

PhD Student, Geography Department

University of Victoria, Canada

akisingo@mwekawildlife.org

Phone: +255 784 328469

Appendix 9: Descriptive data analysis tables

Table 1: Mean responses for PA governance factors

	Ecosystem	SENAPA	NCAA	MGR	IGGR	LGCA	Ikona WMA	Makao WMA
Governance Factor	Mean responses for each factor							
Q1. Legitimacy								
PA management has legal authority	3.31	3.16	3.41	3.58	2.67	3.60	3.93	2.89
Stakeholders freely accept the governing body's authority	3.16	2.90	3.53	3.56	2.52	3.24	3.33	2.95
The governing body acts in accordance with its legal authority	3.26	2.99	3.52	3.67	2.67	3.48	3.67	3.00
PA management has long standing cultural attachment to the area	3.09	2.82	3.53	3.58	2.14	3.08	3.11	3.03
The governing body acts with integrity and commitment	3.01	2.80	3.37	3.52	2.10	3.15	2.78	2.92
Average	3.17	2.93	3.47	3.58	2.42	3.31	3.36	2.96
LEGITIMACY SCORE	15.8	14.5736	17.4167	17.9167	12.0952	16.5385	16.8148	14.7838
CRONBAH'S ALPHA = .955								

Q2. Transparency								
Governance and decision making is open to scrutiny by stakeholders	2.80	2.50	3.24	3.60	2.00	2.36	2.67	3.06
The reasoning behind decisions is evident	2.92	2.50	3.24	3.63	2.14	2.76	3.44	3.16
Achievements and failures are evident	2.85	2.48	3.08	3.56	2.10	2.56	3.30	3.24
Information is presented to stakeholders in	2.80	2.50	3.12	3.50	1.90	2.51	2.63	3.27

ways they can understand								
	2.84	2.49	3.17	3.57	2.04	2.55	3.01	3.18
TRANSPARENCY SCORE	11.40	9.9627	12.6711	14.2917	8.1429	10.1000	12.0370	12.5833
CRONBAH'S ALPHA = .946								

Q3. Accountability								
The governing body is answerable to its constituents (stakeholders)	2.84	2.53	2.88	3.65	1.95	2.71	3.22	3.19
PA management is upwardly accountable	3.22	2.98	3.11	3.70	2.71	3.61	3.59	3.27
There are checks and balances for ensuring accountability in PA management	2.94	2.67	2.97	3.56	2.33	3.07	2.89	3.24
Power is exercised appropriately	2.94	2.60	3.12	3.52	2.10	3.20	3.00	3.24
	2.98	2.69	3.02	3.61	2.27	3.15	3.18	3.24
ACCOUNTSCORE	11.95	10.7761	12.1644	14.4681	9.0952	12.6250	12.7037	12.9459
CRONBAH'S ALPHA = .922								

Q7. Involvement								
The PA management actively engage marginalised and disadvantaged stakeholders	2.22	2.76	2.76	3.04	1.71	1.57	1.67	2.59
Actors in our village are involved in PA management (Planning, decision making, execution of activities)	2.36	2.72	2.72	3.13	1.86	2.02	2.26	2.68
I am informed about my roles in PA management	2.32	2.74	2.74	3.04	1.67	1.86	2.44	2.70
PA management has participatory mechanisms for seeking views from actors in our village	2.41	2.93	2.93	3.19	1.52	2.10	2.11	2.70
Participatory mechanisms for seeking views from village actors are effective	2.42	2.89	2.89	3.17	2.05	2.07	2.19	2.78

PA management recognise grievances and solve internal and external disputes	2.33	2.80	2.80	3.19	1.67	1.98	1.96	2.70
	2.34	2.81	2.81	3.13	1.75	1.93	2.10	2.69
INVOLVESCORE	14.00	16.753 4	16.7534	18.638 3	10.476 2	11.6341	12.629 6	16.1622
CRONBAH'S ALPHA = .964								

Q. 9. Equity								
Stakeholders are heard and treated with respect	2.49	2.04	2.79	3.17	2.52	2.36	3.19	2.32
There is respect for governors from higher or lower authorities	2.72	2.55	2.87	3.21	2.33	2.81	2.89	2.41
Decisions are made consistently and without bias	2.40	2.16	2.89	3.02	2.00	2.00	2.33	2.24
Human rights and local values are respected	2.44	2.08	2.63	3.17	2.10	2.19	2.15	2.35
Intrinsic value of nature is respected	2.49	2.25	2.81	3.00	1.90	2.63	2.41	2.32
Benefits and costs of decisions are shared fairly	2.24	1.97	2.58	2.90	1.95	1.81	2.22	2.32
	2.46	2.18	2.76	3.08	2.13	2.30	2.53	2.33
EQUITYSCORE	14.69	13.059 7	16.5541	18.458 3	12.809 5	13.7561	15.185 2	13.9730
CRONBAH'S ALPHA = .955								

Q. 10. Participation								
Those who wanted to contribute to the public participation process had the opportunity to do so	2.59	2.42	2.79	3.04	2.19	2.17	2.85	2.73
Those who contributed to the public participation process were taken seriously	2.52	2.26	2.78	3.04	2.14	2.24	2.44	2.81
The structure of the public participation process results in appropriate recommendations	2.64	2.27	2.87	3.00	2.71	2.38	3.23	2.81
Input is sought early in the decision-making	2.46	2.16	3.01	3.04	2.14	1.81	2.12	2.78

process								
Reasons for public involvement are clearly explained	2.53	2.23	2.89	3.04	2.33	2.14	2.50	2.80
Conflict resolution between the village and PA is satisfactory	2.46	2.15	2.96	3.11	2.14	1.83	2.12	2.81
Average	2.53	2.25	2.88	3.05	2.28	2.09	2.54	2.79
PARTICIPSCORE	15.16	13.425 4	17.2933	18.347 8	13.666 7	12.5854	15.192 3	16.7143
CRONBAH'S ALPHA = .962								

Q. 11. Resilience								
The neighbouring PA has a strategic vision	3.02	2.91	3.16	3.30	2.62	3.12	3.30	2.70
Our village is in partnerships and collaborative relations with the PA	2.80	2.46	3.27	3.32	2.19	2.83	2.93	2.68
Risks are foreseen by both the PA and village management	2.65	2.29	3.26	3.21	2.33	2.56	2.11	2.65
Risks are managed effectively	2.60	2.27	3.11	3.17	2.14	2.48	2.30	2.68
Conflicts are satisfactorily resolved	2.60	2.22	3.08	3.23	2.19	2.48	2.42	2.69
Average	2.73	2.43	3.18	3.25	2.30	2.69	2.61	2.68
VISIONSCORE	13.62	12.112 8	15.7826	16.234 0	11.476 2	13.4634	13.038 5	13.4722
CRONBAH'S ALPHA = .954								

Q. 16. Achievements/outcomes								
Neighbouring PA achieves its objectives	3.13	2.97	3.62	2.98	2.81	2.98	3.19	3.19
Other actors are in support of the PA	3.15	2.92	3.66	2.94	3.05	3.17	3.26	3.14
Average	3.14	2.95	3.64	2.96	2.93	3.07	3.22	3.16
ACHIEVSCORE	6.28	5.8837	7.2763	5.9149	5.8571	6.1429	6.4444	6.3243
CRONBAH'S ALPHA = .914								

Q. 20. Responsiveness								
PA management respond to criticism	2.58	2.43	2.88	3.04	2.05	2.61	2.00	2.56
PA management respond to complaints	2.64	2.50	2.82	3.10	2.05	2.58	2.70	2.57
PA management act on suggestions from village actors	2.44	2.11	2.85	3.06	1.81	2.45	2.15	2.54
PA management responds readily to requests from village actors	2.55	2.32	2.73	3.17	1.90	2.49	2.70	2.57
PA management is easy to reach by village actors	2.52	2.24	2.75	3.10	1.67	2.56	2.78	2.54
PA management make efforts to reach villagers for inputs	2.41	2.18	2.74	3.08	1.70	2.17	2.11	2.57
PA management identify threats and address them	2.44	2.10	2.71	3.15	1.80	2.08	2.85	2.65
Average	2.51	2.27	2.78	3.10	1.85	2.42	2.47	2.57
RESPVSCORE	17.44	15.897 6	19.1571	21.869 6	11.736 8	16.0000	17.307 7	18.2500
CRONBAH'S ALPHA = .968								

Q. 21. Consensus Orientation								
PA have mechanisms for reaching consensus decisions	2.66	2.35	2.96	3.27	1.95	2.66	2.56	2.89
PA decision making allows interactions with actors in your village	2.61	2.31	2.96	3.19	1.75	2.56	2.59	2.84
Decision making allows flow of ideas	2.60	2.28	3.01	3.15	1.45	2.49	2.70	2.89
Ecosystem based forums are used in reaching decisions	2.58	2.30	3.04	3.11	1.75	2.24	2.56	2.81
Average	2.61	2.31	2.99	3.18	1.73	2.49	2.60	2.86
CONSESCORE	10.44	9.2769	11.9865	12.565 2	6.9000	9.9512	10.407 4	11.4324
CRONBAH'S ALPHA = .957								

Q. 22. Powers								
Villagers have planning powers	3.23	3.33	2.80	3.40	3.75	2.98	3.88	3.22
Village actors have revenue generation powers	3.32	3.44	2.81	3.33	3.75	3.27	4.04	3.22
Village actors have decision-making powers	3.34	3.45	2.67	3.42	3.75	3.49	4.20	3.22
Village actors have powers to enter into contracts	3.38	3.46	2.77	3.50	3.75	3.54	4.20	3.19
Village actors have spending powers	3.37	3.42	2.82	3.45	3.75	3.66	4.08	3.19
Average	3.33	3.42	2.78	3.42	3.75	3.39	4.08	3.21
POWERSCORE	16.64	17.113 6	13.8514	17.063 8	18.750 0	16.9268	20.400 0	16.0270
CRONBAH'S ALPHA = .978								

Table 2: Detailed analysis for Transparency**Descriptives**

Transparency

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	132	2.5173	1.02660	.08935	2.3406	2.6941	1.00	5.00
Ngorongoro Conservation Area	75	3.0876	1.22100	.14099	2.8067	3.3685	1.00	5.00
Ikorongo/Grumeti game Reserve	21	2.0748	1.28700	.28085	1.4890	2.6607	1.00	5.00
Maswa Game Reserve	48	3.5744	1.34739	.19448	3.1832	3.9656	1.00	5.00
Ikona WMA	27	3.0212	.89715	.17266	2.6663	3.3761	1.43	5.00
Makao WMA	36	3.1706	1.47351	.24558	2.6721	3.6692	1.00	5.00
Loliondo Game Controlled Area	39	2.7326	1.09739	.17572	2.3769	3.0883	1.00	4.86
Total	378	2.8605	1.23086	.06331	2.7361	2.9850	1.00	5.00

ANOVA

Transparency

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	61.639	6	10.273	7.480	.000
Within Groups	509.520	371	1.373		
Total	571.159	377			

Post Hoc

Multiple Comparisons

Transparency

Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.57030	.16946	.082	-1.1751	.0345
	Ikorongo/Grumeti game Reserve	.44249	.27532	.859	-.5402	1.4251
	Maswa Game Reserve	-1.05709	.19753	.000	-1.7621	-.3521
	Ikona WMA	-.50385	.24753	.657	-1.3873	.3796
	Makao WMA	-.65332	.22035	.189	-1.4398	.1331
	Loliondo Game Controlled Area	-.21528	.21359	.985	-.9776	.5470
Ngorongoro Conservation Area	Serengeti National Park	.57030	.16946	.082	-.0345	1.1751
	Ikorongo/Grumeti game Reserve	1.01279	.28933	.059	-.0198	2.0454
	Maswa Game Reserve	-.48679	.21662	.538	-1.2599	.2863
	Ikona WMA	.06646	.26302	1.000	-.8723	1.0052
	Makao WMA	-.08302	.23761	1.000	-.9311	.7650
	Loliondo Game Controlled Area	.35502	.23136	.884	-.4707	1.1807
Ikorongo/Grumeti game Reserve	Serengeti National Park	-.44249	.27532	.859	-1.4251	.5402
	Ngorongoro Conservation Area	-1.01279	.28933	.059	-2.0454	.0198
	Maswa Game Reserve	-1.49957	.30661	.001	-2.5939	-.4053
	Ikona WMA	-.94633	.34098	.264	-2.1633	.2706
	Makao WMA	-1.09580	.32179	.075	-2.2443	.0527
	Loliondo Game Controlled Area	-.65777	.31720	.636	-1.7899	.4743

	Area					
Maswa Game Reserve	Serengeti National Park	1.05709	.19753	.000	.3521	1.7621
	Ngorongoro Conservation Area	.48679	.21662	.538	-.2863	1.2599
	Ikorongo/Grumeti game Reserve	1.49957	.30661	.001	.4053	2.5939
	Ikona WMA	.55324	.28192	.697	-.4529	1.5594
	Makao WMA	.40377	.25838	.874	-.5184	1.3259
	Loliondo Game Controlled Area	.84180	.25264	.088	-.0599	1.7435
Ikona WMA	Serengeti National Park	.50385	.24753	.657	-.3796	1.3873
	Ngorongoro Conservation Area	-.06646	.26302	1.000	-1.0052	.8723
	Ikorongo/Grumeti game Reserve	.94633	.34098	.264	-.2706	2.1633
	Maswa Game Reserve	-.55324	.28192	.697	-1.5594	.4529
	Makao WMA	-.14947	.29835	1.000	-1.2143	.9154
	Loliondo Game Controlled Area	.28856	.29339	.987	-.7586	1.3357
Makao WMA	Serengeti National Park	.65332	.22035	.189	-.1331	1.4398
	Ngorongoro Conservation Area	.08302	.23761	1.000	-.7650	.9311
	Ikorongo/Grumeti game Reserve	1.09580	.32179	.075	-.0527	2.2443
	Maswa Game Reserve	-.40377	.25838	.874	-1.3259	.5184
	Ikona WMA	.14947	.29835	1.000	-.9154	1.2143
	Loliondo Game Controlled Area	.43803	.27086	.855	-.5287	1.4047
Loliondo Game Controlled Area	Serengeti National Park	.21528	.21359	.985	-.5470	.9776
	Ngorongoro Conservation Area	-.35502	.23136	.884	-1.1807	.4707
	Ikorongo/Grumeti game Reserve	.65777	.31720	.636	-.4743	1.7899

Maswa Game Reserve	-.84180	.25264	.088	-1.7435	.0599
Ikona WMA	-.28856	.29339	.987	-1.3357	.7586
Makao WMA	-.43803	.27086	.855	-1.4047	.5287

Transparency

Scheffea,b

Name of PA	N	Subset for alpha = 0.05		
		1	2	3
Ikorongo/Grumeti game Reserve	21	2.0748		
Serengeti National Park	132	2.5173	2.5173	
Loliondo Game Controlled Area	39	2.7326	2.7326	2.7326
Ikona WMA	27	3.0212	3.0212	3.0212
Ngorongoro Conservation Area	75		3.0876	3.0876
Makao WMA	36		3.1706	3.1706
Maswa Game Reserve	48			3.5744
Sig.		.051	.420	.126

Table 3: Detailed analysis for Legitimacy**Descriptives**

Legitimacy

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	128	2.9115	1.23168	.10887	2.6960	3.1269	1.00	5.00
Ngorongoro Conservation Area	71	3.4390	1.19464	.14178	3.1562	3.7217	1.00	5.00
Ikorongo/Grumeti game Reserve	21	2.4683	1.48007	.32298	1.7945	3.1420	1.00	5.00
Maswa Game Reserve	47	3.5957	1.34090	.19559	3.2020	3.9894	1.00	5.00
Ikona WMA	27	3.4012	.91784	.17664	3.0381	3.7643	1.17	5.00
Makao WMA	37	3.0090	1.51685	.24937	2.5033	3.5148	1.00	5.00
Loliondo Game Controlled Area	39	3.3547	.98763	.15815	3.0345	3.6749	1.00	5.00
Total	370	3.1667	1.27214	.06614	3.0366	3.2967	1.00	5.00

ANOVA

Legitimacy

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	36.282	6	6.047	3.914	.001
Within Groups	560.885	363	1.545		
Total	597.167	369			

Post Hoc Tests

Multiple Comparisons

Legitimacy
Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.52751	.18394	.225	-1.1841	.1291
	Ikorongo/Grumeti game Reserve	.44320	.29266	.890	-.6014	1.4879
	Maswa Game Reserve	-.68429	.21201	.112	-1.4410	.0725
	Ikona WMA	-.48978	.26325	.749	-1.4294	.4499
	Makao WMA	-.09755	.23202	1.000	-.9257	.7306
	Loliondo Game Controlled Area	-.44324	.22735	.703	-1.2548	.3683
Ngorongoro Conservation Area	Serengeti National Park	.52751	.18394	.225	-.1291	1.1841
	Ikorongo/Grumeti game Reserve	.97071	.30877	.133	-.1315	2.0729
	Maswa Game Reserve	-.15678	.23375	.998	-.9911	.6776
	Ikona WMA	.03773	.28105	1.000	-.9655	1.0409
	Makao WMA	.42996	.25204	.819	-.4697	1.3296
	Loliondo Game Controlled Area	.08427	.24775	1.000	-.8001	.9686
Ikorongo/Grumeti game Reserve	Serengeti National Park	-.44320	.29266	.890	-1.4879	.6014
	Ngorongoro Conservation Area	-.97071	.30877	.133	-2.0729	.1315
	Maswa Game Reserve	-1.12749	.32627	.066	-2.2921	.0371
	Ikona WMA	-.93298	.36167	.356	-2.2240	.3580
	Makao WMA	-.54076	.33962	.864	-1.7530	.6715

	Loliondo Game Controlled Area	-.88645	.33645	.329	-2.0874	.3145
Maswa Game Reserve	Serengeti National Park	.68429	.21201	.112	-.0725	1.4410
	Ngorongoro Conservation Area	.15678	.23375	.998	-.6776	.9911
	Ikorongo/Grumeti game Reserve	1.12749	.32627	.066	-.0371	2.2921
	Ikona WMA	.19451	.30017	.999	-.8770	1.2660
	Makao WMA	.58674	.27320	.595	-.3884	1.5619
	Loliondo Game Controlled Area	.24104	.26925	.992	-.7200	1.2021
Ikona WMA	Serengeti National Park	.48978	.26325	.749	-.4499	1.4294
	Ngorongoro Conservation Area	-.03773	.28105	1.000	-1.0409	.9655
	Ikorongo/Grumeti game Reserve	.93298	.36167	.356	-.3580	2.2240
	Maswa Game Reserve	-.19451	.30017	.999	-1.2660	.8770
	Makao WMA	.39223	.31462	.955	-.7308	1.5153
	Loliondo Game Controlled Area	.04653	.31120	1.000	-1.0643	1.1574
Makao WMA	Serengeti National Park	.09755	.23202	1.000	-.7306	.9257
	Ngorongoro Conservation Area	-.42996	.25204	.819	-1.3296	.4697
	Ikorongo/Grumeti game Reserve	.54076	.33962	.864	-.6715	1.7530
	Maswa Game Reserve	-.58674	.27320	.595	-1.5619	.3884
	Ikona WMA	-.39223	.31462	.955	-1.5153	.7308
	Loliondo Game Controlled Area	-.34569	.28527	.961	-1.3640	.6726
Loliondo Game Controlled Area	Serengeti National Park	.44324	.22735	.703	-.3683	1.2548
	Ngorongoro Conservation Area	-.08427	.24775	1.000	-.9686	.8001
	Ikorongo/Grumeti game	.88645	.33645	.329	-.3145	2.0874

Reserve					
Maswa Game Reserve	-.24104	.26925	.992	-1.2021	.7200
Ikona WMA	-.04653	.31120	1.000	-1.1574	1.0643
Makao WMA	.34569	.28527	.961	-.6726	1.3640

Legitimacy

Scheffea,b

Name of PA	N	Subset for alpha = 0.05	
		1	2
Ikorongo/Grumeti game Reserve	21	2.4683	
Serengeti National Park	128	2.9115	2.9115
Makao WMA	37	3.0090	3.0090
Loliondo Game Controlled Area	39	3.3547	3.3547
Ikona WMA	27	3.4012	3.4012
Ngorongoro Conservation Area	71	3.4390	3.4390
Maswa Game Reserve	47		3.5957
Sig.		.069	.439

Table 4: Detailed analysis for Inclusiveness**Descriptives**

Inclusiveness

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	124	2.1883	.92520	.08309	2.0239	2.3528	1.00	4.94
Ngorongoro Conservation Area	66	2.7558	1.24203	.15288	2.4505	3.0611	1.00	5.00
Ikorongo/Grumeti game Reserve	18	1.7582	1.02520	.24164	1.2483	2.2680	1.00	4.24
Maswa Game Reserve	43	3.0492	1.39568	.21284	2.6197	3.4788	1.00	5.00
Ikona WMA	26	2.4548	.95062	.18643	2.0708	2.8387	1.00	4.59
Makao WMA	35	2.7697	1.44415	.24411	2.2737	3.2658	1.00	5.00
Loliondo Game Controlled Area	33	2.1355	.84830	.14767	1.8347	2.4363	1.00	4.00
Total	345	2.4558	1.16554	.06275	2.3323	2.5792	1.00	5.00

ANOVA

Inclusiveness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	45.551	6	7.592	6.084	.000
Within Groups	421.768	338	1.248		
Total	467.319	344			

Multiple Comparisons

Inclusiveness
Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.56746	.17021	.088	-1.1753	.0404
	Ikorongo/Grumeti game Reserve	.43016	.28176	.886	-.5760	1.4363
	Maswa Game Reserve	-.86092	.19769	.005	-1.5669	-.1549
	Ikona WMA	-.26642	.24095	.975	-1.1269	.5940
	Makao WMA	-.58142	.21381	.289	-1.3450	.1821
	Loliondo Game Controlled Area	.05286	.21881	1.000	-.7285	.8342
Ngorongoro Conservation Area	Serengeti National Park	.56746	.17021	.088	-.0404	1.1753
	Ikorongo/Grumeti game Reserve	.99762	.29704	.084	-.0631	2.0584
	Maswa Game Reserve	-.29345	.21892	.937	-1.0752	.4883
	Ikona WMA	.30104	.25865	.968	-.6226	1.2247
	Makao WMA	-.01395	.23358	1.000	-.8481	.8202
	Loliondo Game Controlled Area	.62032	.23816	.344	-.2302	1.4708
Ikorongo/Grumeti game Reserve	Serengeti National Park	-.43016	.28176	.886	-1.4363	.5760
	Ngorongoro Conservation Area	-.99762	.29704	.084	-2.0584	.0631
	Maswa Game Reserve	-1.29108	.31360	.011	-2.4110	-.1712
	Ikona WMA	-.69658	.34252	.658	-1.9197	.5266
	Makao WMA	-1.01158	.32400	.139	-2.1686	.1455
	Loliondo Game Controlled Area	-.37730	.32732	.970	-1.5462	.7916

Maswa Game Reserve	Serengeti National Park	.86092	.19769	.005	.1549	1.5669
	Ngorongoro Conservation Area	.29345	.21892	.937	-.4883	1.0752
	Ikorongo/Grumeti game Reserve	1.29108	.31360	.011	.1712	2.4110
	Ikona WMA	.59450	.27751	.598	-.3965	1.5855
	Makao WMA	.27950	.25431	.976	-.6286	1.1876
	Loliondo Game Controlled Area	.91378	.25852	.055	-.0094	1.8370
Ikona WMA	Serengeti National Park	.26642	.24095	.975	-.5940	1.1269
	Ngorongoro Conservation Area	-.30104	.25865	.968	-1.2247	.6226
	Ikorongo/Grumeti game Reserve	.69658	.34252	.658	-.5266	1.9197
	Maswa Game Reserve	-.59450	.27751	.598	-1.5855	.3965
	Makao WMA	-.31500	.28922	.977	-1.3478	.7178
	Loliondo Game Controlled Area	.31928	.29293	.977	-.7268	1.3653
Makao WMA	Serengeti National Park	.58142	.21381	.289	-.1821	1.3450
	Ngorongoro Conservation Area	.01395	.23358	1.000	-.8202	.8481
	Ikorongo/Grumeti game Reserve	1.01158	.32400	.139	-.1455	2.1686
	Maswa Game Reserve	-.27950	.25431	.976	-1.1876	.6286
	Ikona WMA	.31500	.28922	.977	-.7178	1.3478
	Loliondo Game Controlled Area	.63428	.27105	.486	-.3336	1.6022
Loliondo Game Controlled Area	Serengeti National Park	-.05286	.21881	1.000	-.8342	.7285
	Ngorongoro Conservation Area	-.62032	.23816	.344	-1.4708	.2302
	Ikorongo/Grumeti game Reserve	.37730	.32732	.970	-.7916	1.5462
	Maswa Game Reserve	-.91378	.25852	.055	-1.8370	.0094

Ikona WMA	-.31928	.29293	.977	-1.3653	.7268
Makao WMA	-.63428	.27105	.486	-1.6022	.3336

Inclusiveness

Scheffea,b

Name of PA	N	Subset for alpha = 0.05	
		1	2
Ikorongo/Grumeti game Reserve	18	1.7582	
Loliondo Game Controlled Area	33	2.1355	2.1355
Serengeti National Park	124	2.1883	2.1883
Ikona WMA	26	2.4548	2.4548
Ngorongoro Conservation Area	66		2.7558
Makao WMA	35		2.7697
Maswa Game Reserve	43		3.0492
Sig.		.340	.071

Table 5: Detailed analysis for Equity**Descriptives**

Equity

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	134	2.1766	1.13698	.09822	1.9823	2.3709	1.00	5.00
Ngorongoro Conservation Area	75	2.7356	1.42508	.16455	2.4077	3.0634	1.00	5.00
Ikorongo/Grumeti game Reserve	21	2.1349	1.38506	.30224	1.5044	2.7654	1.00	5.00
Maswa Game Reserve	48	3.0764	1.52169	.21964	2.6345	3.5182	1.00	5.00
Ikona WMA	27	2.5309	1.14545	.22044	2.0777	2.9840	1.00	5.00
Makao WMA	37	2.3288	1.38916	.22838	1.8657	2.7920	1.00	5.00
Loliondo Game Controlled Area	41	2.2927	1.18719	.18541	1.9180	2.6674	1.00	5.00
Total	383	2.4487	1.32254	.06758	2.3158	2.5815	1.00	5.00

ANOVA

Equity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	38.783	6	6.464	3.862	.001
Within Groups	629.374	376	1.674		
Total	668.157	382			

Multiple Comparisons

Equity
Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.55894	.18657	.178	-1.2248	.1069
	Ikorongo/Grumeti game Reserve	.04170	.30364	1.000	-1.0419	1.1253
	Maswa Game Reserve	-.89977	.21763	.010	-1.6765	-.1231
	Ikona WMA	-.35425	.27292	.946	-1.3282	.6198
	Makao WMA	-.15221	.24027	.999	-1.0097	.7053
	Loliondo Game Controlled Area	-.11607	.23091	1.000	-.9401	.7080
Ngorongoro Conservation Area	Serengeti National Park	.55894	.18657	.178	-.1069	1.2248
	Ikorongo/Grumeti game Reserve	.60063	.31942	.739	-.5393	1.7406
	Maswa Game Reserve	-.34083	.23915	.916	-1.1943	.5126
	Ikona WMA	.20469	.29037	.998	-.8316	1.2410
	Makao WMA	.40673	.25992	.874	-.5209	1.3343
	Loliondo Game Controlled Area	.44287	.25129	.795	-.4539	1.3397
Ikorongo/Grumeti game Reserve	Serengeti National Park	-.04170	.30364	1.000	-1.1253	1.0419
	Ngorongoro Conservation Area	-.60063	.31942	.739	-1.7406	.5393
	Maswa Game Reserve	-.94147	.33850	.261	-2.1495	.2666
	Ikona WMA	-.39594	.37643	.981	-1.7394	.9475
	Makao WMA	-.19391	.35348	.999	-1.4554	1.0676
	Loliondo Game Controlled Area	-.15776	.34718	1.000	-1.3968	1.0812

Maswa Game Reserve	Serengeti National Park	.89977	.21763	.010	.1231	1.6765
	Ngorongoro Conservation Area	.34083	.23915	.916	-.5126	1.1943
	Ikorongo/Grumeti game Reserve	.94147	.33850	.261	-.2666	2.1495
	Ikona WMA	.54552	.31124	.799	-.5652	1.6563
	Makao WMA	.74756	.28304	.326	-.2626	1.7577
	Loliondo Game Controlled Area	.78371	.27513	.233	-.1982	1.7656
Ikona WMA	Serengeti National Park	.35425	.27292	.946	-.6198	1.3282
	Ngorongoro Conservation Area	-.20469	.29037	.998	-1.2410	.8316
	Ikorongo/Grumeti game Reserve	.39594	.37643	.981	-.9475	1.7394
	Maswa Game Reserve	-.54552	.31124	.799	-1.6563	.5652
	Makao WMA	.20204	.32747	.999	-.9666	1.3707
	Loliondo Game Controlled Area	.23818	.32066	.997	-.9062	1.3825
Makao WMA	Serengeti National Park	.15221	.24027	.999	-.7053	1.0097
	Ngorongoro Conservation Area	-.40673	.25992	.874	-1.3343	.5209
	Ikorongo/Grumeti game Reserve	.19391	.35348	.999	-1.0676	1.4554
	Maswa Game Reserve	-.74756	.28304	.326	-1.7577	.2626
	Ikona WMA	-.20204	.32747	.999	-1.3707	.9666
	Loliondo Game Controlled Area	.03615	.29337	1.000	-1.0108	1.0831
Loliondo Game Controlled Area	Serengeti National Park	.11607	.23091	1.000	-.7080	.9401
	Ngorongoro Conservation Area	-.44287	.25129	.795	-1.3397	.4539
	Ikorongo/Grumeti game Reserve	.15776	.34718	1.000	-1.0812	1.3968
	Maswa Game Reserve	-.78371	.27513	.233	-1.7656	.1982

Ikona WMA	-.23818	.32066	.997	-1.3825	.9062
Makao WMA	-.03615	.29337	1.000	-1.0831	1.0108

Equity

Scheffea,b

Name of PA	N	Subset for alpha = 0.05
		1
Ikorongo/Grumeti game Reserve	21	2.1349
Serengeti National Park	134	2.1766
Loliondo Game Controlled Area	41	2.2927
Makao WMA	37	2.3288
Ikona WMA	27	2.5309
Ngorongoro Conservation Area	75	2.7356
Maswa Game Reserve	48	3.0764
Sig.		.111

Descriptives

Participation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	134	2.2376	1.15802	.10004	2.0397	2.4354	1.00	5.00
Ngorongoro Conservation Area	76	2.8969	1.25077	.14347	2.6111	3.1827	1.00	5.00
Ikorongo/Grumeti game Reserve	21	2.2778	1.29135	.28180	1.6900	2.8656	1.00	5.00
Maswa Game Reserve	46	3.0580	1.54009	.22707	2.6006	3.5153	1.00	5.00
Ikona WMA	26	2.5321	1.02634	.20128	2.1175	2.9466	1.00	5.00
Makao WMA	35	2.7857	1.48388	.25082	2.2760	3.2954	1.00	5.00
Loliondo Game Controlled Area	41	2.0976	1.05539	.16482	1.7644	2.4307	1.00	4.83
Total	379	2.5273	1.28826	.06617	2.3972	2.6574	1.00	5.00

ANOVA

Participation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	45.804	6	7.634	4.883	.000
Within Groups	581.526	372	1.563		
Total	627.329	378			

Table 7: Detailed analysis for Participation**Multiple Comparisons**Participation
Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.65937	.17954	.038	-1.3001	-.0186
	Ikorongo/Grumeti game Reserve	-.04022	.29344	1.000	-1.0875	1.0071
	Maswa Game Reserve	-.82041	.21366	.024	-1.5830	-.0579
	Ikona WMA	-.29449	.26794	.976	-1.2508	.6618
	Makao WMA	-.54815	.23734	.503	-1.3952	.2989
	Loliondo Game Controlled Area	.14000	.22315	.999	-.6564	.9364
Ngorongoro Conservation Area	Serengeti National Park	.65937	.17954	.038	.0186	1.3001
	Ikorongo/Grumeti game Reserve	.61915	.30824	.672	-.4809	1.7192
	Maswa Game Reserve	-.16104	.23356	.998	-.9946	.6726
	Ikona WMA	.36488	.28407	.949	-.6490	1.3787
	Makao WMA	.11122	.25541	1.000	-.8003	1.0228
	Loliondo Game Controlled Area	.79937	.24227	.095	-.0653	1.6640
Ikorongo/Grumeti game Reserve	Serengeti National Park	.04022	.29344	1.000	-1.0071	1.0875
	Ngorongoro Conservation Area	-.61915	.30824	.672	-1.7192	.4809
	Maswa Game Reserve	-.78019	.32928	.469	-1.9554	.3950
	Ikona WMA	-.25427	.36683	.998	-1.5635	1.0549
	Makao WMA	-.50794	.34511	.903	-1.7397	.7238

	Loliondo Game Controlled Area	.18022	.33551	1.000	-1.0172	1.3777
Maswa Game Reserve	Serengeti National Park	.82041	.21366	.024	.0579	1.5830
	Ngorongoro Conservation Area	.16104	.23356	.998	-.6726	.9946
	Ikorongo/Grumeti game Reserve	.78019	.32928	.469	-.3950	1.9554
	Ikona WMA	.52592	.30677	.816	-.5689	1.6208
	Makao WMA	.27226	.28044	.988	-.7286	1.2732
	Loliondo Game Controlled Area	.96041	.26854	.049	.0020	1.9188
Ikona WMA	Serengeti National Park	.29449	.26794	.976	-.6618	1.2508
	Ngorongoro Conservation Area	-.36488	.28407	.949	-1.3787	.6490
	Ikorongo/Grumeti game Reserve	.25427	.36683	.998	-1.0549	1.5635
	Maswa Game Reserve	-.52592	.30677	.816	-1.6208	.5689
	Makao WMA	-.25366	.32371	.996	-1.4090	.9017
	Loliondo Game Controlled Area	.43449	.31345	.926	-.6842	1.5532
Makao WMA	Serengeti National Park	.54815	.23734	.503	-.2989	1.3952
	Ngorongoro Conservation Area	-.11122	.25541	1.000	-1.0228	.8003
	Ikorongo/Grumeti game Reserve	.50794	.34511	.903	-.7238	1.7397
	Maswa Game Reserve	-.27226	.28044	.988	-1.2732	.7286
	Ikona WMA	.25366	.32371	.996	-.9017	1.4090
	Loliondo Game Controlled Area	.68815	.28774	.457	-.3388	1.7151
Loliondo Game Controlled Area	Serengeti National Park	-.14000	.22315	.999	-.9364	.6564
	Ngorongoro Conservation Area	-.79937	.24227	.095	-1.6640	.0653
	Ikorongo/Grumeti game Reserve	-.18022	.33551	1.000	-1.3777	1.0172
	Maswa Game Reserve	-.96041	.26854	.049	-1.9188	-.0020

Ikona WMA	-.43449	.31345	.926	-1.5532	.6842
Makao WMA	-.68815	.28774	.457	-1.7151	.3388

Participation

Scheffea,b

Name of PA	N	Subset for alpha = 0.05
		1
Loliondo Game Controlled Area	41	2.0976
Serengeti National Park	134	2.2376
Ikorongo/Grumeti game Reserve	21	2.2778
Ikona WMA	26	2.5321
Makao WMA	35	2.7857
Ngorongoro Conservation Area	76	2.8969
Maswa Game Reserve	46	3.0580
Sig.		.080

Table 8: Detailed analysis for Strategic Vision**Descriptives**

Strategic Vision

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	133	2.4226	1.12240	.09732	2.2300	2.6151	1.00	5.00
Ngorongoro Conservation Area	70	3.1543	1.22778	.14675	2.8615	3.4470	1.00	5.00
Ikorongo/Grumeti game Reserve	21	2.2952	1.35443	.29556	1.6787	2.9118	1.00	5.00
Maswa Game Reserve	47	3.2468	1.51469	.22094	2.8021	3.6915	1.00	5.00
Ikona WMA	26	2.6077	1.12211	.22006	2.1545	3.0609	1.00	5.00
Makao WMA	36	2.6944	1.59247	.26541	2.1556	3.2333	1.00	5.00
Loliondo Game Controlled Area	41	2.6927	1.13587	.17739	2.3342	3.0512	1.00	5.00
Total	374	2.7246	1.29606	.06702	2.5928	2.8564	1.00	5.00

ANOVA

StrategicVision

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	42.176	6	7.029	4.415	.000
Within Groups	584.378	367	1.592		
Total	626.554	373			

Multiple Comparisons

Strategic Vision
Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.73173	.18633	.019	-1.3968	-.0667
	Ikorongo/Grumeti game Reserve	.12732	.29630	1.000	-.9303	1.1849
	Maswa Game Reserve	-.82425	.21413	.024	-1.5885	-.0600
	Ikona WMA	-.18514	.27058	.998	-1.1509	.7807
	Makao WMA	-.27189	.23707	.971	-1.1181	.5743
	Loliondo Game Controlled Area	-.27013	.22541	.963	-1.0747	.5344
Ngorongoro Conservation Area	Serengeti National Park	.73173	.18633	.019	.0667	1.3968
	Ikorongo/Grumeti game Reserve	.85905	.31396	.281	-.2616	1.9797
	Maswa Game Reserve	-.09252	.23796	1.000	-.9419	.7568
	Ikona WMA	.54659	.28981	.736	-.4878	1.5810
	Makao WMA	.45984	.25880	.788	-.4639	1.3836
	Loliondo Game Controlled Area	.46160	.24816	.749	-.4242	1.3474
Ikorongo/Grumeti game Reserve	Serengeti National Park	-.12732	.29630	1.000	-1.1849	.9303
	Ngorongoro Conservation Area	-.85905	.31396	.281	-1.9797	.2616
	Maswa Game Reserve	-.95157	.33121	.223	-2.1338	.2306
	Ikona WMA	-.31245	.37023	.994	-1.6339	1.0090
	Makao WMA	-.39921	.34649	.970	-1.6359	.8375
	Loliondo Game Controlled Area	-.39744	.33862	.967	-1.6061	.8112

Maswa Game Reserve	Serengeti National Park	.82425	.21413	.024	.0600	1.5885
	Ngorongoro Conservation Area	.09252	.23796	1.000	-.7568	.9419
	Ikorongo/Grumeti game Reserve	.95157	.33121	.223	-.2306	2.1338
	Ikona WMA	.63912	.30842	.637	-.4617	1.7399
	Makao WMA	.55236	.27948	.689	-.4452	1.5499
	Loliondo Game Controlled Area	.55413	.26966	.647	-.4084	1.5166
Ikona WMA	Serengeti National Park	.18514	.27058	.998	-.7807	1.1509
	Ngorongoro Conservation Area	-.54659	.28981	.736	-1.5810	.4878
	Ikorongo/Grumeti game Reserve	.31245	.37023	.994	-1.0090	1.6339
	Maswa Game Reserve	-.63912	.30842	.637	-1.7399	.4617
	Makao WMA	-.08675	.32477	1.000	-1.2459	1.0724
	Loliondo Game Controlled Area	-.08499	.31635	1.000	-1.2141	1.0442
Makao WMA	Serengeti National Park	.27189	.23707	.971	-.5743	1.1181
	Ngorongoro Conservation Area	-.45984	.25880	.788	-1.3836	.4639
	Ikorongo/Grumeti game Reserve	.39921	.34649	.970	-.8375	1.6359
	Maswa Game Reserve	-.55236	.27948	.689	-1.5499	.4452
	Ikona WMA	.08675	.32477	1.000	-1.0724	1.2459
	Loliondo Game Controlled Area	.00176	.28821	1.000	-1.0270	1.0305
Loliondo Game Controlled Area	Serengeti National Park	.27013	.22541	.963	-.5344	1.0747
	Ngorongoro Conservation Area	-.46160	.24816	.749	-1.3474	.4242
	Ikorongo/Grumeti game Reserve	.39744	.33862	.967	-.8112	1.6061
	Maswa Game Reserve	-.55413	.26966	.647	-1.5166	.4084

Ikona WMA	.08499	.31635	1.000	-1.0442	1.2141
Makao WMA	-.00176	.28821	1.000	-1.0305	1.0270

StrategicVision

Scheffea,b

Name of PA	N	Subset for alpha = 0.05
		1
Ikorongo/Grumeti game Reserve	21	2.2952
Serengeti National Park	133	2.4226
Ikona WMA	26	2.6077
Loliondo Game Controlled Area	41	2.6927
Makao WMA	36	2.6944
Ngorongoro Conservation Area	70	3.1543
Maswa Game Reserve	47	3.2468
Sig.		.092

Table 9: Detailed analysis for Achievements**Descriptives**

Achievements	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
					Serengeti National Park	129		
Ngorongoro Conservation Area	77	3.6429	1.11171	.12669	3.3905	3.8952	1.00	5.00
Ikorongo/Grumeti game Reserve	21	2.9286	1.24786	.27230	2.3606	3.4966	1.00	5.00
Maswa Game Reserve	47	2.9574	1.50300	.21924	2.5161	3.3987	1.00	5.00
Ikona WMA	27	3.2222	1.31802	.25365	2.7008	3.7436	1.00	5.00
Makao WMA	37	3.1622	1.48162	.24358	2.6682	3.6562	1.00	5.00
Loliondo Game Controlled Area	42	3.0714	1.10747	.17089	2.7263	3.4165	1.00	5.00
Total	380	3.1408	1.23410	.06331	3.0163	3.2653	1.00	5.00

ANOVA

Achievements	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27.438	6	4.573	3.103	.006
Within Groups	549.780	373	1.474		
Total	577.218	379			

Multiple Comparisons

Achievements
Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.70100	.17484	.015	-1.3250	-.0770
	Ikorongo/Grumeti game Reserve	.01329	.28568	1.000	-1.0063	1.0329
	Maswa Game Reserve	-.01559	.20685	1.000	-.7538	.7226
	Ikona WMA	-.28036	.25694	.977	-1.1974	.6366
	Makao WMA	-.22030	.22641	.987	-1.0284	.5877
	Loliondo Game Controlled Area	-.12957	.21568	.999	-.8993	.6402
Ngorongoro Conservation Area	Serengeti National Park	.70100	.17484	.015	.0770	1.3250
	Ikorongo/Grumeti game Reserve	.71429	.29888	.458	-.3524	1.7810
	Maswa Game Reserve	.68541	.22473	.161	-.1166	1.4875
	Ikona WMA	.42063	.27154	.879	-.5485	1.3897
	Makao WMA	.48069	.24285	.688	-.3860	1.3474
	Loliondo Game Controlled Area	.57143	.23289	.423	-.2597	1.4026
Ikorongo/Grumeti game Reserve	Serengeti National Park	-.01329	.28568	1.000	-1.0329	1.0063
	Ngorongoro Conservation Area	-.71429	.29888	.458	-1.7810	.3524
	Maswa Game Reserve	-.02888	.31867	1.000	-1.1662	1.1084
	Ikona WMA	-.29365	.35324	.995	-1.5543	.9670
	Makao WMA	-.23359	.33170	.998	-1.4174	.9502
	Loliondo Game Controlled Area	-.14286	.32447	1.000	-1.3009	1.0152
Maswa Game Reserve	Serengeti National Park	.01559	.20685	1.000	-.7226	.7538
	Ngorongoro Conservation Area	-.68541	.22473	.161	-1.4875	.1166

	Ikorongo/Grumeti game Reserve	.02888	.31867	1.000	-1.1084	1.1662
	Ikona WMA	-.26478	.29317	.992	-1.3111	.7815
	Makao WMA	-.20472	.26683	.997	-1.1570	.7476
	Loliondo Game Controlled Area	-.11398	.25779	1.000	-1.0340	.8060
Ikona WMA	Serengeti National Park	.28036	.25694	.977	-.6366	1.1974
	Ngorongoro Conservation Area	-.42063	.27154	.879	-1.3897	.5485
	Ikorongo/Grumeti game Reserve	.29365	.35324	.995	-.9670	1.5543
	Maswa Game Reserve	.26478	.29317	.992	-.7815	1.3111
	Makao WMA	.06006	.30729	1.000	-1.0366	1.1568
	Loliondo Game Controlled Area	.15079	.29947	1.000	-.9180	1.2196
Makao WMA	Serengeti National Park	.22030	.22641	.987	-.5877	1.0284
	Ngorongoro Conservation Area	-.48069	.24285	.688	-1.3474	.3860
	Ikorongo/Grumeti game Reserve	.23359	.33170	.998	-.9502	1.4174
	Maswa Game Reserve	.20472	.26683	.997	-.7476	1.1570
	Ikona WMA	-.06006	.30729	1.000	-1.1568	1.0366
	Loliondo Game Controlled Area	.09073	.27373	1.000	-.8862	1.0677
Loliondo Game Controlled Area	Serengeti National Park	.12957	.21568	.999	-.6402	.8993
	Ngorongoro Conservation Area	-.57143	.23289	.423	-1.4026	.2597
	Ikorongo/Grumeti game Reserve	.14286	.32447	1.000	-1.0152	1.3009
	Maswa Game Reserve	.11398	.25779	1.000	-.8060	1.0340
	Ikona WMA	-.15079	.29947	1.000	-1.2196	.9180
	Makao WMA	-.09073	.27373	1.000	-1.0677	.8862

Achievements

Scheffea,b

Name of PA	N	Subset for alpha = 0.05
		1
Ikorongo/Grumeti game Reserve	21	2.9286
Serengeti National Park	129	2.9419
Maswa Game Reserve	47	2.9574
Loliondo Game Controlled Area	42	3.0714
Makao WMA	37	3.1622
Ikona WMA	27	3.2222
Ngorongoro Conservation Area	77	3.6429
Sig.		.340

Table 10: Detailed analysis for EBM

Descriptives

EBM

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	126	2.2018	1.12403	.10014	2.0036	2.4000	1.00	5.00
Ngorongoro Conservation Area	71	2.8109	1.36529	.16203	2.4877	3.1340	1.00	5.00
Ikorongo/Grumeti game	21	1.7755	1.24423	.27151	1.2091	2.3419	1.00	5.00

Reserve								
Maswa Game Reserve	47	3.4043	1.63706	.23879	2.9236	3.8849	1.00	5.00
Ikona WMA	26	2.6374	1.29881	.25472	2.1128	3.1620	1.00	5.00
Makao WMA	37	2.6216	1.45227	.23875	2.1374	3.1058	1.00	5.00
Loliondo Game Controlled Area	42	2.4966	1.17135	.18074	2.1316	2.8616	1.00	5.00
Total	370	2.5533	1.36200	.07081	2.4140	2.6925	1.00	5.00

ANOVA

EBM

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	67.506	6	11.251	6.619	.000
Within Groups	617.005	363	1.700		
Total	684.511	369			

Multiple Comparisons

EBM

Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.60905	.19347	.132	-1.2996	.0815
	Ikorongo/Grumeti game Reserve	.42630	.30729	.926	-.6706	1.5232
	Maswa Game Reserve	-1.20244	.22283	.000	-1.9978	-.4070
	Ikona WMA	-.43555	.28083	.878	-1.4380	.5669
	Makao WMA	-.41981	.24378	.813	-1.2900	.4504

	Loliondo Game Controlled Area	-.29478	.23229	.951	-1.1240	.5344
Ngorongoro Conservation Area	Serengeti National Park	.60905	.19347	.132	-.0815	1.2996
	Ikorongo/Grumeti game Reserve	1.03535	.32385	.119	-.1206	2.1913
	Maswa Game Reserve	-.59339	.24516	.441	-1.4685	.2817
	Ikona WMA	.17350	.29886	.999	-.8933	1.2403
	Makao WMA	.18924	.26435	.998	-.7543	1.1328
	Loliondo Game Controlled Area	.31427	.25379	.957	-.5916	1.2202
Ikorongo/Grumeti game Reserve	Serengeti National Park	-.42630	.30729	.926	-1.5232	.6706
	Ngorongoro Conservation Area	-1.03535	.32385	.119	-2.1913	.1206
	Maswa Game Reserve	-1.62875	.34221	.001	-2.8503	-.4072
	Ikona WMA	-.86185	.38251	.535	-2.2272	.5035
	Makao WMA	-.84611	.35620	.466	-2.1176	.4254
	Loliondo Game Controlled Area	-.72109	.34844	.639	-1.9648	.5227
Maswa Game Reserve	Serengeti National Park	1.20244	.22283	.000	.4070	1.9978
	Ngorongoro Conservation Area	.59339	.24516	.441	-.2817	1.4685
	Ikorongo/Grumeti game Reserve	1.62875	.34221	.001	.4072	2.8503
	Ikona WMA	.76689	.31865	.449	-.3705	1.9043
	Makao WMA	.78263	.28654	.283	-.2402	1.8054
	Loliondo Game Controlled Area	.90766	.27683	.100	-.0805	1.8958
Ikona WMA	Serengeti National Park	.43555	.28083	.878	-.5669	1.4380
	Ngorongoro Conservation Area	-.17350	.29886	.999	-1.2403	.8933
	Ikorongo/Grumeti game Reserve	.86185	.38251	.535	-.5035	2.2272

	Maswa Game Reserve	-.76689	.31865	.449	-1.9043	.3705
	Makao WMA	.01574	.33364	1.000	-1.1752	1.2067
	Loliondo Game Controlled Area	.14076	.32534	1.000	-1.0205	1.3021
Makao WMA	Serengeti National Park	.41981	.24378	.813	-.4504	1.2900
	Ngorongoro Conservation Area	-.18924	.26435	.998	-1.1328	.7543
	Ikorongo/Grumeti game Reserve	.84611	.35620	.466	-.4254	2.1176
	Maswa Game Reserve	-.78263	.28654	.283	-1.8054	.2402
	Ikona WMA	-.01574	.33364	1.000	-1.2067	1.1752
	Loliondo Game Controlled Area	.12502	.29395	1.000	-.9242	1.1743
Loliondo Game Controlled Area	Serengeti National Park	.29478	.23229	.951	-.5344	1.1240
	Ngorongoro Conservation Area	-.31427	.25379	.957	-1.2202	.5916
	Ikorongo/Grumeti game Reserve	.72109	.34844	.639	-.5227	1.9648
	Maswa Game Reserve	-.90766	.27683	.100	-1.8958	.0805
	Ikona WMA	-.14076	.32534	1.000	-1.3021	1.0205
	Makao WMA	-.12502	.29395	1.000	-1.1743	.9242

EBM

Scheffea,b

Name of PA	N	Subset for alpha = 0.05	
		1	2
Ikorongo/Grumeti game Reserve	21	1.7755	
Serengeti National Park	126	2.2018	
Loliondo Game Controlled Area	42	2.4966	2.4966

Makao WMA	37	2.6216	2.6216
Ikona WMA	26	2.6374	2.6374
Ngorongoro Conservation Area	71	2.8109	2.8109
Maswa Game Reserve	47		3.4043
Sig.		.060	.155

Table 11: Detailed analysis for Consensus Orientation

Descriptives

ConsensusOrientation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	130	2.3192	1.09793	.09629	2.1287	2.5098	1.00	5.00
Ngorongoro Conservation Area	75	2.9700	1.47785	.17065	2.6300	3.3100	1.00	5.00
Ikorongo/Grumeti game Reserve	20	1.7250	.99967	.22353	1.2571	2.1929	1.00	4.00
Maswa Game Reserve	46	3.1413	1.46785	.21642	2.7054	3.5772	1.00	5.00
Ikona WMA	27	2.6019	1.13988	.21937	2.1509	3.0528	1.00	5.00
Makao WMA	37	2.8581	1.39511	.22935	2.3930	3.3233	1.00	5.00
Loliondo Game Controlled Area	41	2.4878	1.26855	.19811	2.0874	2.8882	1.00	5.00
Total	376	2.6097	1.32014	.06808	2.4758	2.7436	1.00	5.00

ANOVA

ConsensusOrientation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	52.252	6	8.709	5.344	.000
Within Groups	601.285	369	1.629		
Total	653.537	375			

Multiple Comparisons

ConsensusOrientation

Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	-.65077	.18510	.057	-1.3114	.0099
	Ikorongo/Grumeti game Reserve	.59423	.30661	.709	-.5001	1.6886
	Maswa Game Reserve	-.82207	.21899	.031	-1.6037	-.0404
	Ikona WMA	-.28262	.26997	.982	-1.2462	.6810
	Makao WMA	-.53888	.23786	.528	-1.3878	.3101
	Loliondo Game Controlled Area	-.16857	.22864	.997	-.9846	.6475
Ngorongoro Conservation Area	Serengeti National Park	.65077	.18510	.057	-.0099	1.3114
	Ikorongo/Grumeti game Reserve	1.24500	.32125	.022	.0984	2.3916
	Maswa Game Reserve	-.17130	.23906	.998	-1.0246	.6819
	Ikona WMA	.36815	.28649	.948	-.6544	1.3907
	Makao WMA	.11189	.25645	1.000	-.8034	1.0272

	Loliondo Game Controlled Area	.48220	.24793	.706	-.4027	1.3671
Ikorongo/Grumeti game Reserve	Serengeti National Park	-.59423	.30661	.709	-1.6886	.5001
	Ngorongoro Conservation Area	-1.24500	.32125	.022	-2.3916	-.0984
	Maswa Game Reserve	-1.41630	.34190	.010	-2.6366	-.1960
	Ikona WMA	-.87685	.37660	.492	-2.2210	.4673
	Makao WMA	-1.13311	.35428	.119	-2.3976	.1314
	Loliondo Game Controlled Area	-.76280	.34816	.570	-2.0055	.4799
Maswa Game Reserve	Serengeti National Park	.82207	.21899	.031	.0404	1.6037
	Ngorongoro Conservation Area	.17130	.23906	.998	-.6819	1.0246
	Ikorongo/Grumeti game Reserve	1.41630	.34190	.010	.1960	2.6366
	Ikona WMA	.53945	.30948	.804	-.5651	1.6440
	Makao WMA	.28320	.28189	.985	-.7229	1.2893
	Loliondo Game Controlled Area	.65350	.27417	.461	-.3251	1.6320
Ikona WMA	Serengeti National Park	.28262	.26997	.982	-.6810	1.2462
	Ngorongoro Conservation Area	-.36815	.28649	.948	-1.3907	.6544
	Ikorongo/Grumeti game Reserve	.87685	.37660	.492	-.4673	2.2210
	Maswa Game Reserve	-.53945	.30948	.804	-1.6440	.5651
	Makao WMA	-.25626	.32310	.996	-1.4094	.8969
	Loliondo Game Controlled Area	.11405	.31638	1.000	-1.0152	1.2433
Makao WMA	Serengeti National Park	.53888	.23786	.528	-.3101	1.3878
	Ngorongoro Conservation Area	-.11189	.25645	1.000	-1.0272	.8034
	Ikorongo/Grumeti game Reserve	1.13311	.35428	.119	-.1314	2.3976
	Maswa Game Reserve	-.28320	.28189	.985	-1.2893	.7229
	Ikona WMA	.25626	.32310	.996	-.8969	1.4094

	Loliondo Game Controlled Area	.37030	.28946	.950	-.6628	1.4034
Loliondo Game Controlled Area	Serengeti National Park	.16857	.22864	.997	-.6475	.9846
	Ngorongoro Conservation Area	-.48220	.24793	.706	-1.3671	.4027
	Ikorongo/Grumeti game Reserve	.76280	.34816	.570	-.4799	2.0055
	Maswa Game Reserve	-.65350	.27417	.461	-1.6320	.3251
	Ikona WMA	-.11405	.31638	1.000	-1.2433	1.0152
	Makao WMA	-.37030	.28946	.950	-1.4034	.6628

ConsensusOrientation

Scheffea,b

Name of PA	N	Subset for alpha = 0.05	
		1	2
Ikorongo/Grumeti game Reserve	20	1.7250	
Serengeti National Park	130	2.3192	2.3192
Loliondo Game Controlled Area	41	2.4878	2.4878
Ikona WMA	27	2.6019	2.6019
Makao WMA	37		2.8581
Ngorongoro Conservation Area	75		2.9700
Maswa Game Reserve	46		3.1413
Sig.		.171	.241

Descriptives

Power

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Serengeti National Park	132	3.4227	1.38930	.1209 2	3.1835	3.6619	1.00	5.00
Ngorongoro Conservation Area	75	2.7467	1.46798	.1695 1	2.4089	3.0844	1.00	5.00
Ikorongo/Grumeti game Reserve	20	3.7500	1.68195	.3760 9	2.9628	4.5372	1.00	5.00
Maswa Game Reserve	47	3.4128	1.52224	.2220 4	2.9658	3.8597	1.00	5.00
Ikona WMA	27	4.1037	.98975	.1904 8	3.7122	4.4952	2.00	5.00
Makao WMA	37	3.2054	1.48136	.2435 3	2.7115	3.6993	1.00	5.00
Loliondo Game Controlled Area	41	3.3854	1.39885	.2184 6	2.9438	3.8269	1.00	5.00
Total	379	3.3282	1.45730	.0748 6	3.1810	3.4754	1.00	5.00

ANOVA

Power

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	47.367	6	7.895	3.888	.001
Within Groups	755.401	372	2.031		
Total	802.768	378			

Table 12: Detailed analysis for Power**Multiple Comparisons**Power
Scheffe

(I) Name of PA	(J) Name of PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Serengeti National Park	Ngorongoro Conservation Area	.67606	.20606	.099	-.0594	1.4115
	Ikorongo/Grumeti game Reserve	-.32727	.34193	.988	-1.5476	.8931
	Maswa Game Reserve	.00996	.24205	1.000	-.8539	.8738
	Ikona WMA	-.68098	.30099	.530	-1.7552	.3932
	Makao WMA	.21732	.26508	.995	-.7287	1.1634
	Loliondo Game Controlled Area	.03736	.25478	1.000	-.8719	.9467
Ngorongoro Conservation Area	Serengeti National Park	-.67606	.20606	.099	-1.4115	.0594
	Ikorongo/Grumeti game Reserve	-1.00333	.35862	.254	-2.2832	.2766
	Maswa Game Reserve	-.66610	.26510	.391	-1.6123	.2801
	Ikona WMA	-1.35704	.31982	.007	-2.4985	-.2156
	Makao WMA	-.45874	.28628	.860	-1.4805	.5630
	Loliondo Game Controlled Area	-.63870	.27677	.504	-1.6265	.3491
Ikorongo/Grumeti game Reserve	Serengeti National Park	.32727	.34193	.988	-.8931	1.5476
	Ngorongoro Conservation Area	1.00333	.35862	.254	-.2766	2.2832
	Maswa Game Reserve	.33723	.38044	.992	-1.0206	1.6950
	Ikona WMA	-.35370	.42041	.994	-1.8541	1.1467
	Makao WMA	.54459	.39549	.929	-.8669	1.9561
	Loliondo Game Controlled Area	.36463	.38866	.990	-1.0225	1.7518
Maswa Game Reserve	Serengeti National Park	-.00996	.24205	1.000	-.8738	.8539
	Ngorongoro Conservation Area	.66610	.26510	.391	-.2801	1.6123

	Ikorongo/Grumeti game Reserve	-.33723	.38044	.992	-1.6950	1.0206
	Ikona WMA	-.69094	.34411	.672	-1.9191	.5372
	Makao WMA	.20736	.31319	.998	-.9104	1.3251
	Loliondo Game Controlled Area	.02740	.30452	1.000	-1.0594	1.1142
Ikona WMA	Serengeti National Park	.68098	.30099	.530	-.3932	1.7552
	Ngorongoro Conservation Area	1.35704	.31982	.007	.2156	2.4985
	Ikorongo/Grumeti game Reserve	.35370	.42041	.994	-1.1467	1.8541
	Maswa Game Reserve	.69094	.34411	.672	-.5372	1.9191
	Makao WMA	.89830	.36068	.403	-.3890	2.1856
	Loliondo Game Controlled Area	.71834	.35318	.658	-.5422	1.9788
Makao WMA	Serengeti National Park	-.21732	.26508	.995	-1.1634	.7287
	Ngorongoro Conservation Area	.45874	.28628	.860	-.5630	1.4805
	Ikorongo/Grumeti game Reserve	-.54459	.39549	.929	-1.9561	.8669
	Maswa Game Reserve	-.20736	.31319	.998	-1.3251	.9104
	Ikona WMA	-.89830	.36068	.403	-2.1856	.3890
	Loliondo Game Controlled Area	-.17996	.32313	.999	-1.3332	.9733
Loliondo Game Controlled Area	Serengeti National Park	-.03736	.25478	1.000	-.9467	.8719
	Ngorongoro Conservation Area	.63870	.27677	.504	-.3491	1.6265
	Ikorongo/Grumeti game Reserve	-.36463	.38866	.990	-1.7518	1.0225
	Maswa Game Reserve	-.02740	.30452	1.000	-1.1142	1.0594
	Ikona WMA	-.71834	.35318	.658	-1.9788	.5422
	Makao WMA	.17996	.32313	.999	-.9733	1.3332

Power

Scheffea,b

Name of PA	N	Subset for alpha = 0.05	
		1	2
Ngorongoro Conservation Area	75	2.7467	
Makao WMA	37	3.2054	3.2054
Loliondo Game Controlled Area	41	3.3854	3.3854
Maswa Game Reserve	47	3.4128	3.4128
Serengeti National Park	132	3.4227	3.4227
Ikorongo/Grumeti game Reserve	20	3.7500	3.7500
Ikona WMA	27		4.1037
Sig.		.146	.264

Table 13: KMO and Bartlett's Test results**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.899
Bartlett's Test of Sphericity	Approx. Chi-Square	36002.443
	df	2080
	Sig.	.000

Table 14: Varimax Rotated Component Matrix for governance statements

	Rotated Component Matrixa									
	Component									
	1	2	3	4	5	6	7	8	9	10
PA management has legal authority	.220	.159	.058	.218	.177	.795	.251	.107	.010	.160
Stakeholders freely accept the governing body's authority	.223	.159	.100	.277	.125	.780	.137	.175	.112	.084
The governing body acts in accordance within its legal authority	.240	.171	.088	.278	.171	.786	.183	.106	.085	.128
PA management has long standing cultural attachment to the area	.243	.120	.076	.323	.111	.762	.092	.166	.111	.123
The governing body acts with integrity and commitment	.260	.133	.111	.313	.101	.714	.068	.214	.149	.099
Governance and decision making is open to scrutiny by stakeholders	.124	.112	.178	.782	.111	.299	.079	.186	.133	.040
The reasoning behind decisions is evident	.111	.131	.121	.773	.178	.314	.100	.170	.148	.165
Achievements and failures are evident	.105	.146	.171	.759	.195	.320	.092	.160	.133	.176
Information is presented to stakeholders in ways they can understand	.155	.129	.186	.777	.092	.278	.066	.204	.154	.088
The governing body is answerable to its constituents (stakeholders)	.224	.270	.265	.520	.164	.340	.159	.034	.308	-.114
PA management is upwardly accountable	.202	.213	.210	.413	.248	.449	.332	-.082	.201	-.039
There are checks and balances for ensuring accountability in PA management	.235	.235	.278	.553	.148	.370	.179	-.011	.282	-.100
Power is exercised appropriately	.231	.234	.258	.543	.197	.365	.151	.000	.315	-.101
The PA management actively engage marginalised and disadvantaged	.418	.351	.261	.405	.318	-.026	.060	.418	.136	.102

stakeholders										
Actors in our village are involved in PA management (Planning, decision making, execution of activities)	.439	.363	.234	.383	.380	.011	.117	.361	.080	.119
I am informed about my roles in PA management	.413	.326	.261	.379	.350	-.038	.078	.390	.081	.150
PA management has participatory mechanisms for seeking views from actors in our village	.458	.333	.267	.396	.352	-.008	.050	.400	.156	.128
Participatory mechanisms for seeking views from village actors are effective	.416	.327	.295	.381	.365	.015	.104	.311	.102	.142
PA management recognise grievances and solve internal and external disputes	.440	.320	.280	.353	.399	.016	.046	.374	.144	.131
Stakeholders are heard and treated with respect	.193	.237	.245	.142	.755	.186	.199	.136	.107	.106
There is respect for governors from higher or lower authorities	.252	.236	.151	.115	.716	.246	.260	.108	.078	.116
Decisions are made consistently and without bias	.245	.256	.244	.207	.737	.156	.138	.233	.170	.054
Human rights and local values are respected	.218	.237	.270	.176	.719	.141	.094	.270	.166	.050
Intrinsic value of nature is respected	.233	.218	.228	.131	.733	.195	.139	.236	.166	.073
Benefits and costs of decisions are shared fairly	.196	.217	.295	.237	.690	.122	.088	.290	.163	.047
Those who wanted to contribute to the public participation process had the opportunity to do so	.185	.218	.790	.146	.225	.142	.036	.184	.115	.126
Those who contributed to the public participation process were taken seriously	.205	.210	.816	.183	.199	.107	-.019	.188	.115	.079
The structure of the public participation process results in appropriate recommendations	.198	.220	.763	.138	.284	.143	.082	.105	.098	.222

Input is sought early in the decision-making process	.191	.190	.801	.206	.157	.068	-.019	.220	.170	.101
Reasons for public involvement are clearly explained	.211	.220	.817	.187	.165	.080	.022	.213	.109	.111
Conflict resolution between the village and PA is satisfactory	.212	.199	.817	.174	.189	.066	-.009	.211	.121	.106
The neighbouring PA has a strategic vision	.167	.132	.206	.112	.335	.381	.344	.538	.023	.129
Our village is in partnerships and collaborative relations with the PA	.212	.198	.266	.127	.347	.265	.185	.623	.148	.072
Risks are foreseen by both the PA and village management	.207	.194	.285	.179	.227	.219	.107	.730	.201	.061
Risks are managed effectively	.169	.188	.309	.203	.220	.194	.117	.742	.132	.079
Conflicts are satisfactorily resolved	.200	.177	.315	.180	.252	.197	.107	.725	.191	.062
Neighbouring PA achieves its objectives	.201	.142	.201	.058	.090	.175	.031	.137	.223	.771
Other actors are in support of the PA	.178	.165	.238	.092	.102	.155	.066	.094	.182	.780
PA management coordinate with other PAs and villages in planning	.238	.711	.245	.115	.279	.212	.225	.161	.119	.153
PA and other PAs and villages conducts joint patrols	.277	.758	.225	.192	.200	.161	.195	.153	.135	.093
PA management sits in ecosystem based forum meetings	.300	.749	.200	.196	.165	.151	.139	.212	.199	.118
PA management include village land use plans in their PA management plan	.277	.762	.228	.201	.176	.146	.118	.197	.177	.079
Village socio-economy is linked to conservation in the Serengeti ecosystem	.286	.751	.261	.120	.234	.165	.144	.178	.225	.044
PA management plans are consistent with ecosystem and national conservation agendas	.247	.748	.245	.157	.283	.201	.230	.083	.109	.151
PA management has good relationship with other actors such as NGOs, investors, district and regional	.251	.726	.257	.175	.266	.209	.194	.105	.159	.133

authorities, communities										
PA management is cost effective and efficient	.586	.258	.268	.236	.219	.197	.173	.020	.057	.367
PA management have sufficient capacity to carry out their required roles	.557	.270	.225	.204	.279	.192	.243	-.030	-.013	.347
PA management are effectively coordinated	.568	.251	.205	.271	.249	.166	.173	.016	.065	.400
PA management provide information to allow assessments of their performance	.604	.269	.210	.314	.138	.139	.109	.058	.089	.353
PA management respond to criticism	.658	.216	.166	.086	.189	.356	.197	.195	.244	.042
PA management respond to complaints	.657	.207	.181	.060	.212	.371	.215	.220	.242	.059
PA management act on suggestions from village actors	.690	.255	.230	.116	.151	.298	.118	.239	.272	.019
PA management responds readily to requests from village actors	.684	.273	.196	.105	.231	.292	.217	.166	.191	.065
PA management is easy to reach by village actors	.681	.251	.187	.110	.241	.303	.200	.173	.203	.079
PA management make efforts to reach villagers for inputs	.678	.225	.236	.137	.138	.284	.112	.270	.312	.051
PA management identify threats and address them	.675	.267	.218	.150	.189	.284	.159	.168	.254	.057
PA have mechanisms for reaching consensus decisions	.236	.194	.162	.198	.189	.168	.247	.121	.723	.179
PA decision making allows interactions with actors in your village	.249	.205	.177	.207	.170	.131	.218	.159	.768	.134
Enough time is allocated for decision making	.236	.193	.164	.242	.149	.106	.160	.193	.780	.176
Ecosystem based forums are used in reaching decisions	.253	.207	.175	.265	.149	.115	.201	.149	.775	.136
Villagers have planning powers	.128	.117	-.010	.117	.060	.075	.912	.103	.137	.030

Village actors have revenue generation powers	.120	.109	.003	.130	.071	.095	.925	.089	.106	.030
Village actors have decision-making powers	.117	.137	.018	.062	.134	.148	.932	.062	.110	.038
Village actors have powers to enter into contracts	.157	.144	.018	.054	.131	.124	.921	.075	.096	.046
Village actors have spending powers	.131	.138	.028	.040	.148	.159	.910	.075	.124	.040

Appendix 10: Census data for Grumeti Reserves

Game Population Count 2003-2008						
	2003	2004	2005	2006	2007	2008
<i>Wildebeest</i>	2759	19160	**	53225	50297	9580
<i>Zebra</i>	15651	3149	**	30427	18267	47905
<i>Elephant</i>	355	744	**	892	629	770
<i>Giraffe</i>	331	668	**	864	880	803
<i>Buffalo</i>	605	733	**	2248	3124	3815
<i>Warthog</i>	435	907	**	2429	2432	2551
<i>Impala</i>	7147	9394	**	9967	10218	11942
<i>Coke's Hartebeest</i>	189	259	**	414	469	525
<i>Eland</i>	254	1090	**	1286	1211	2330
<i>Reedbuck</i>	1005	501	**	706	1557	1690
<i>Waterbuck</i>	212	498	**	462	499	770
<i>Thompson's Gazelle</i>	3480	19707	**	18506	17105	22606
<i>Grants Gazelle</i>	200	205	**	229	263	248
<i>Topi</i>	5705	6587	**	10342	11409	14770

** No survey done