Synergy for Environmental Governance at Lake Nakuru National Park, Kenya

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Abstract

Protected areas are essential in the conservation of biodiversity and endangered species. Studies indicate that ineffective governance could undermine conservation benefits brought by protected areas. However, protected areas governance studies mainly focus on impacts of governance on conservation outcomes. Although governance and synergies are closely related, only a few studies have examined this linkage. This research aims to clarify a synergy framework for sustainable conservation of protected areas using empirical evidence from Lake Nakuru National Park, Kenya.

The Park, a strictly protected area, was largely selected due to its importance in conservation of wildlife biodiversity, endangered species, migratory species and wetland. It is one of the most visited parks in Kenya, receiving about 245,000 to 300,000 tourists annually. Due to its importance, it has been designated as a prime park nationally, a Ramsar site (1990), an Important Bird and Biodiversity Area (1999) and the UNESCO World Heritage site (2011). The Park has experienced drastic water level fluctuations, water pollution, poaching, and conflicting interests between conservationists and agriculturalists.

This thesis examines four synergy issues. The first case focuses on Kenya's wildlife governance history. I found that local people were largely perceived as threat to wildlife conservation. As a result, conservation activities adopted command and control approaches that largely empowered the Kenyan government and influential conservation organizations.

The second synergy issue focuses on the in-situ and ex-situ conservation of the Park and the Lake Nakuru watershed. At Lake Nakuru National Park, local communities and residents were mainly engaged in cleaning the Park. The Kenya Wildlife Service (KWS) has not evolved locally to address wetland protection and research. The ex-situ conservation is characterized by political influence and administrative overlaps.

The third case study explores a synergy outlook for endangered rhinoceros (*Rhinocerotidae*) conservation. The KWS has heavily focused on safeguarding rhinoceros in protected areas. Hardly are poaching incidents comprehensively investigated and culprits prosecuted. Here I clarified collaboration opportunities in community policing and intelligence and law enforcement.

The fourth synergy issue explores the Kenya-Tanzania transboundary conservation of migratory lesser flamingoes (*Phoeniconaias minor*), a near threatened species in the IUCN Red List. Every year, about 850,000 lesser flamingoes migrate from Lake Nakuru in Kenya to Lake

Natron in Tanzania for breeding. Although multilateral environmental agreements are expected to set pretext for transboundary synergy, lack of commitment in the implementation of the Ramsar Convention, Convention on the Conservation of Migratory Species of Wild Animals (CMS) and Agreements on the Conservation of African-Eurasian Migratory Water Birds (AEWA) in Kenya and Tanzania has derailed collaboration in conservation of lesser flamingoes.

Overall, I found that wildlife conservation is largely based on wildlife tourism, influential conservation organizations and emphasis on protection of endangered species. To attain synergy in wildlife conservation, I propose that wildlife conservation should be separated from tourism policies and mainstreamed more on environmental issues and local livelihoods. As the local people were identified as key stakeholders, they could be more empowered to participate in wildlife conservation. To do so, I recommend that the KWS to adopt wildlife democracy: that is, wildlife conservation for the people by the people.

Keywords: Environmental governance; Poaching; Protected areas; Transboundary governance; Wildlife conservation, Wildlife democracy

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List of Abbreviations

AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
CBD	Convention on Biological Diversity
CEPA	Communication, Capacity Building, Education, Participation, and Awareness Programme of the Ramsar Convention
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species of Wild Animals
GDP	Gross Domestic Product
IUCN	International Union for Conservation of Nature
JKIA	Jomo Kenyatta International Airport
KES	Kenya Shillings
KFS	Kenya Forest Service
KWS	Kenya Wildlife Service
KWTA	Kenya Water Towers Agency
MENR	Ministry of Environment and Natural Resources of the Republic of Kenya
MNRT	Ministry of Natural Resources and Tourism of the Republic of Tanzania
NACOSTI	National Commission for Science, Technology and Innovation
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
SGD	Sustainable Development Goal
TAWIRI	Tanzania Wildlife Research Institute
WWF	World Wildlife Fund for Nature
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNODC	United Nations Office on Drugs and Crime

Chapter 1 Introduction

1.1 Background

Governance could benefit or undermine conservation at protected areas (Amano et al., 2018). The Johannesburg Plan of Implementation of the World Summit on Sustainable Development affirmed that good governance is essential at all levels for sustainable development (UN, 2002). The concept of governance for protected areas emerged at the 5th International Union for Conservation of Nature (IUCN) World Parks Congress held in Durban, South Africa (IUCN, 2003).

Despite this increasing international support for good governance, many international organizations still largely focus on assessing management effectiveness. The concept of management effectiveness of protected areas has been promoted by the Convention on Biological Diversity (CBD), the IUCN, the World Wild Fund for Nature (WWF), and the United Nations Educational, Scientific and Cultural Organization (UNESCO) (CBD Decisin X/2, 2010; WWF, 2007). The developed toolkits, by these organizations, for assessing the effectiveness of protected areas examine how protected areas are managed and to what extent they have achieved their primary targets and objectives (WWF, 2004; Stoll-Kleemann, 2010; Eklund and Cabeza, 2017).

There is need, however, to explore the good governance of protected areas. While management largely focuses on goals and their outcomes (Lockwood, 2010; Stoll-Kleemann, 2010; Eklund and Cabeza, 2017), governance focuses on the means to an end, not necessarily an end itself (Scanlon and Burhenne-Guilmin, 2004; Eklund and Cabeza, 2017). Mitchell et al. (2015) and Shields et al. (2016) illustrated that the effective management of protected areas depends on good governance.

The IUCN defines environmental governance as “the interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken and how citizens or other stakeholders have their say” (Borrini-Feyerabend et al., 2013). The governance structure is defined by legal and policy frameworks (Scanlon and Burhenne-Guilmin, 2004; IUCN, 2018a). In other words, environmental governance consists of laws, rules and policies as well as stakeholders that develop, regulate, implement, and monitor them. The stakeholders include government agencies, non-governmental organizations (NGOs), civil societies, research institutions, media, and local people.

In this thesis, good environmental governance is based on the IUCN principles of good governance for protected areas that were adopted in 2003. These principles are legitimacy and voice, direction, performance, accountability, and fairness and rights (Graham et al., 2003; Borrini-Feyerabend et al., 2013). Each principle has some key indicators. The principle of legitimacy and voice calls for the effective participation of all key stakeholders in decision-making. Also, it seeks for active dialogue and broad consensus to meet and maintain best interests of stakeholders and rightsholders (Graham et al., 2003; Borrini-Feyerabend et al., 2013). The principle of direction is defined by strategic vision, effective coordination, and clear and consistent plans and policies at all levels for protected area conservation. The principle of performance promotes effective management, resource use efficiency, and stakeholders and rightsholders needs. The accountability principle upholds integrity, commitment, and transparency in conserving a protected area. Lastly, the principle of fairness and rights promotes rule of law and equitable sharing of costs and benefits in the management of protected areas (Graham et al., 2003; Borrini-Feyerabend et al., 2013).

Although governance and synergies are closely related, there are limited studies that have examined this linkage particularly in the field of protected area conservation (Najam et al., 2006; Scott, 2011; Kanie, 2015). Understanding synergy for protected areas governance is important since studies have indicated that governance fragmentation is one of the major barriers to good governance (Buzbee, 2003; Matsui, 2012). A lack of synergy among stakeholders can lead to the mismanagement of natural resources (Buzbee, 2003; Crowder et al., 2006; O'Connel, 2006; Doremus, 2009; Matsui, 2012). Also, to sustainably conserve wildlife biodiversity, an effective synergy among stakeholders is essential so that all wildlife conservation corridors are considered.

Therefore, this study explores synergy for governing Lake Nakuru National Park, Kenya. This is one of the prime parks in Kenya. It is crucial for the conservation of biodiversity, endangered species, migratory species and wetland.

1.2 Research objectives

The objectives of this thesis are:

i. To examine historical wildlife governance in Kenya to better understand synergy issues today;
ii. To examine fragmentation in the in-situ and ex-situ conservation of Lake Nakuru National Park;

iii. To explore synergy issues affecting the in-situ (Lake Nakuru National Park) and ex-situ (within Kenya) conservation of endangered rhinoceros (*Rhinocerotidae*); and

iv. To examine factors that have impeded effective transboundary synergy for migratory lesser flamingoes (*Phoenicoparrus minor*).

1.3 Lake Nakuru National Park

Lake Nakuru National Park is located between 0^0 24'S and 35^0 05'E in the Rift Valley of Kenya (Figure 1.1). The Park is situated within Nakuru municipality, approximately three kilometers south of Nakuru town (Odada et al., 2006; Gichuhi, 2013). The entire Park area is protected by electric fences. This park mainly exists for wildlife protection and tourism promotion (Government of Kenya, 2014).

Lake Nakuru National Park could be listed under category II of the IUCN classification of protected areas (Borrini-Feyerabend et al., 2013; UNEP-WCMC and IUCN, 2016). The Park's governance regime falls under category A (governance by government) of the IUCN and the CBD governance types of protected areas (Borrini-Feyerabend et al., 2013). It is managed by the Kenya Wildlife Service (KWS) (Government of Kenya, 2014).

Lake Nakuru and its surrounding area were set aside as a conservation area in 1957, a bird sanctuary in 1960 to protect flamingoes, and as a national park in 1961. At the time, the Park's size was only around 40 km^2. Through a WWF-led initiative, from 1964 to 1972, the Park size was expanded to 188 km^2 to create a buffer zone between Park's wildlife and human population (Odada et al., 2006).

The Park has been critical in protecting endangered species and preventing wildlife crimes. For instance, it is home to Rothschild giraffe, one of endangered species introduced to the Park in 1977. Due to the rampant poaching in the 1970s and the early 1980s, black and white rhinoceros were brought into the Park in 1987 (Odaba et al., 2006; Raini, 2009). Today, about 60 rhinoceros are found here. The Park is now home to 450 bird species, including about 850,000 flamingoes (Nasirwa, 2000), 56 mammal species, several geological features, and 550 plant species (savanna vegetation) (Kenya Wildlife Service, 2017a). It is one of the most visited parks in Kenya, with a range of 245,000 to 300,000 tourists per year (Nyunja, 2012; IUCN, 2014). Domestic tourism accounts for about 60% of the visitation (citizens and foreign residents) (IUCN, 2014). Due to its importance, it received international recognition as a Ramsar site in 1990, an Important Bird and Biodiversity Area in 1999 and, as a UNESCO World Heritage site in 2011 (UNESCO, 2017; IUCN, 2017).

Despite its importance, Lake Nakuru National Park has experienced some critical challenges, including poaching, water level fluctuations, and water pollution (Gichuhi, 2013; Government of Kenya, 2014). For instance, on July 31, 2018, a 12-year old black rhinoceros was poached here (Damary, 2018). Other external challenges include deforestation of the main catchment, and conflicting interests between conservationists and agriculturalists (Gichuhi, 2013).

Lake Nakuru is a closed lake with a shallow basin and high salinity (Nyunja, 2012). High evaporation and low precipitation have heightened the alkalinity level of lake water, while this area is already rich in alkaline minerals. Its water sources are from permanent Baharini springs and five seasonal rivers (Njoro, Nderit, Makalia, Naishi and Larmudiak). The underground water inflow into the lake is minimal since it lies 1,759 meters above sea level (Gichuhi, 2013).

In the last ten years, the lake has experienced drastic water level fluctuations that affected wildlife (Jenkins et al., 2009). In 2013, the lake surface rapidly rose and flooded from about 27% to 40% of the national park (Nyabuti, 2015). This inundated the Park's main gate area, nearby office blocks, and some parts of the road (Korross, 2013; Nyabuti, 2015). It reduced alkalinity level and hampered the growth of algae that thousands of flamingoes feed on. As a result, a large number of flamingoes left the Lake in search of algae. Also, the habitat and grazing land for herbivores have been reduced (Korross, 2013; Nyabuti, 2015).

In addition, industrial and domestic waste discharges have polluted the Lake largely because of urbanization and population increase in Nakuru town. Pollution was severe as the town did not have effective waste management. The increased uses of agrochemicals by farmers upstream also contaminated the Lake (Gichuhi, 2013).

1.4 Methodology

This thesis mainly adopted qualitative research. Qualitative research design is widely recognized as a rigorous social research method used to subjectively acquire in-depth knowledge and understand complex issues that are impossible to quantify (Neuman, 2011). In this study, qualitative research was considered suitable in understanding and disentangling a complex web of environmental governance.

The data were primarily collected through field surveys with key stakeholders and experts involved in the conservation of Lake Nakuru National Park and connected ecosystems. Interviews were conducted to investigate people's opinions in depth (Alshenqueeti, 2014). I

initially contacted the KWS and received its permission to talk to its officials about my thesis topics. In December 2016, I conducted 17 interviews with KWS officials at the headquarters in Nairobi and the Nakuru station (Table 1.1). My interviews sought to understand the in-situ governance of Lake Nakuru National Park with specific emphasis on its key species like rhinoceros and lesser flamingoes. Four key factors (vulnerability level, importance to the Park, population size, and external threats) were used to determine these species (Table 1.2).

Lake Nakuru National Park is one of the most important protection sites as it is home to about 8% of rhinoceros in Kenya (Ouma, 2004). Also, Lake Nakuru provides habitat to about 34%-57% of the global population for lesser flamingoes (Wetlands International, 2012). In addition, external influences necessitated the need to examine in-situ and ex-situ governance. For instance, rhinoceros is threatened by poaching and trafficking of rhino horns while lesser flamingoes, migratory birds, breed in Lake Natron in Tanzania. Therefore, successful conservation of these species requires effective in-situ and ex-situ governance. Due to their importance and sensitivity to ex-situ ecosystems, rhinoceros and lesser flamingoes were considered suitable representative species.

In August 2018, to understand the ex-situ governance of the Lake Nakuru watershed, which extends beyond the Park, I conducted follow-up phone interviews with officials in the KWS, the National Environment Management Authority (NEMA), the Kenya Forest Service (KFS), the Kenya Water Towers Agency (KWTA), the Water Resources Authority, and the Nakuru County government (Table 1.1).

The interview results were analyzed by thematic contents. This method helped me understand stakeholders' perceptions about governance fragmentation situations at Lake Nakuru National Park and its connected areas.

To clarify legislative gaps for the conservation of the Mau Forest (primary catchment for Lake Nakuru wetland) and river pollution control, I collected and reviewed relevant laws, including the Wildlife Conservation and Management Act (2013), the Water Act (2016), the Forest Conservation and Management Act (2016), the Agriculture Amendment Act (2012), and the Environmental Management and Coordination Amendment Act (2015).

To validate interview surveys and better understand the complexity of wildlife governance in Kenya, I analyzed published materials, such as government reports, government strategic plans, books, journal papers, university theses, NGOs' reports and publications, newsletters and newspapers.

1.5 Literature review

Since 2003, protected area governance has received increasing scholarly attention. Generally, protected areas governance studies tend to focus on impacts of governance/governance principles on biodiversity conservation (Smith et al., 2003; Dearden et al., 2005; Porter-Bolland et al., 2012; Miller et al., 2013; Nolte et al., 2013; Eklund and Cabeza, 2017; de Koning et al., 2017; Vento, 2017). Most of these studies emphasized the importance of good governance for biodiversity and protected area conservation. A global perception study on the governance of protected areas, for example, indicated that 90% of the respondents found it improved overall from 1992 to 2002. The improvement was largely associated with increasing stakeholder participation (83%), legal reforms (75%) and accountability (67%) (Dearden et al., 2005).

Smith et al. (2003) found that there was a causal correlation between good governance and the quality of biodiversity conservation. Using the Corruption Perception Index as an indicator of governance, they found that bad governance contributed to global biodiversity loss. It also revealed that national corruption scores corresponded with the population trend of African elephants (*Loxodonta*) and black rhinoceros (*Diceros bicornis*) (Smith et al., 2003). Similarly, Wright et al. (2007) indicated that corruption levels correlated with frequency of forest fires in protected areas globally. De Koning et al. (2017) also reported that corruption was an obstacle to good protected area governance in Laos.

However, the reliability of global perception data to assess conservation outcomes has been questioned. Critics claim that ranking countries on governance bears a stigma of uncertainties as there is no universal standard for perfect governance (Williams, 2008). There are also concerns among those who focused on local governance, whether the national level of good governance model is applicable to local level like protected areas (Arndt and Oman, 2006; Heylings and Bravo, 2007; Eklund and Cabeza, 2017). Localized studies have examined whether governance types (based on IUCN classification) determine conservation outcomes. Nolte et al. (2013) observed that strictly protected areas like some parts of Brazilian Amazon rainforests were more consistent in avoiding deforestation when indigenous peoples governed lands. In East Africa, Pfeifer et al. (2012) found that national parks (governed by government) were more successful in conserving evergreen forests. Porter-Bolland et al. (2012) found that community managed forests were more effective in controlling deforestation compared to state controlled protected areas.

In Kenya, different socio-political governance indicators were used to determine the state of conservation and tourism quality in national protected areas (Tsavo National Parks), community-owned (LUMO Community Wildlife Sanctuary) and private ones (Sarova Taita Hills Wildlife Sanctuary) in Taita Taveta County. The indicators include regulatory framework, public participation and consensus among stakeholders (Vento, 2017).

Some studies have identified barriers to effectively govern protected areas. These barriers include lack of mutual trust and respect between local communities and protected areas authorities in Kenya (Karanja et al., 2018) and Laos (de Koning et al., 2017). Also, institutional constraints (Kabiri, 2010a) and conflicts surrounding protected areas (Kabiri, 2010b; de Koning et al., 2017) hinder effective governance. Mai et al. (2013) found that ineffective coordination and overlapping legal frameworks impeded protected area governance in Southeast Asia. Similarly, a study on tourism governance at Phong Nhan-Ke Bang National Park in Vietnam indicated that inadequate institutional capacity, centralized decision making, and unequitable benefit sharing affected tourism governance (Hubner et al., 2014).

Despite this increasing attention to governance studies, limited studies have examined synergy for governance. Synergy not only facilitates good governance, but also promotes quality governance, efficiency and collective actions among stakeholders (Gunningham, 2009).

1.6 Structure of the dissertation

This dissertation consists of six chapters. The second one traces the history of wildlife governance in Kenya to shed some light on the complexity of wildlife governance today. It examines historical legislative and regulatory frameworks as well as historical injustices to understand challenges of collaborating with local people today particularly those living around protected areas such as Lake Nakuru National Park. To contextualize this argument, the third chapter examines governance fragmentation and legislative overlaps for in-situ and ex-situ conservation of Lake Nakuru National Park[1]. The fourth chapter explores synergy issues for protecting one of the nationally endangered species at the Park, rhinoceros[2]. The

[1] Part of this chapter was published a conference proceeding paper in the Dakam International Conference on Ecology, Ecosystems and Climate Change held on February 23-24, 2018 in Istanbul, Turkey.

[2] The findings of this chapter were partly published in the International Journal of Environmental Science and Development in 2018 (doi: 10.18178/ijesd.2018.9.11.1125).

fifth chapter examines factors that have hampered transboundary collaboration of lesser flamingoes that annually migrate from Lake Nakuru to Lake Natron in Tanzania for breeding[3]. The last chapter summarizes the key findings and their significance. It also provides recommendations to enhance environmental governance in Kenya.

[3] Part of this chapter was published as a conference proceeding paper in the IAFOR International Conference on Sustainability, Energy and the Environment held on January 4-6, 2018 in Hawaii, USA. (http://25qt511nswfi49iayd31ch80-wpengine.netdna-ssl.com/wp-content/uploads/papers/iicseehawaii2018/IICSEEHawaii2018_39019.pdf).

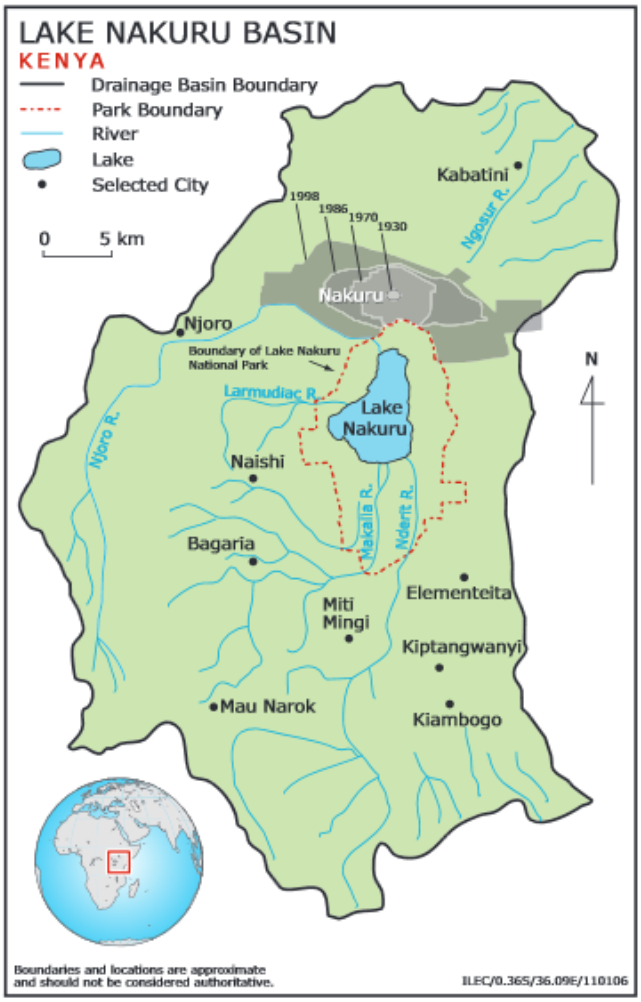

Figure 1.1 Lake Nakuru catchment area, showing rivers and communities
Source: Odada et al., 2006

Table 1.1 Number of the interviewees

Stakeholders	Number of interviewees
KWS (Nairobi-headquarters)	5
KWS (Nakuru station)	12
KFS	2
KWTA	1
NEMA	2
Water Resources Authority	2
Nakuru County government	2
Elderly people	8
Total	34

Table 1.2 Selection criteria for species[4]

Factors	Rhinoceros	Lesser flamingoes
Vulnerability level	• Endangered Species	• Near threatened species
Importance to the Park	• Key tourist attraction • Prioritized species at the Park	• Key tourist attraction • Contributes US$26 million/yr
Population size	• Habitat to 8% rhinoceros	• About 850,000 (most populous)
External threats	• Poaching	• Breeds in Lake Natron, Tanzania

[4] This table shows the status of vulnerability for two species that are discussed in this thesis. It highlights how these species are important on Lake Nakuru National Park conservation activities and what are the challenges this conservation faces.

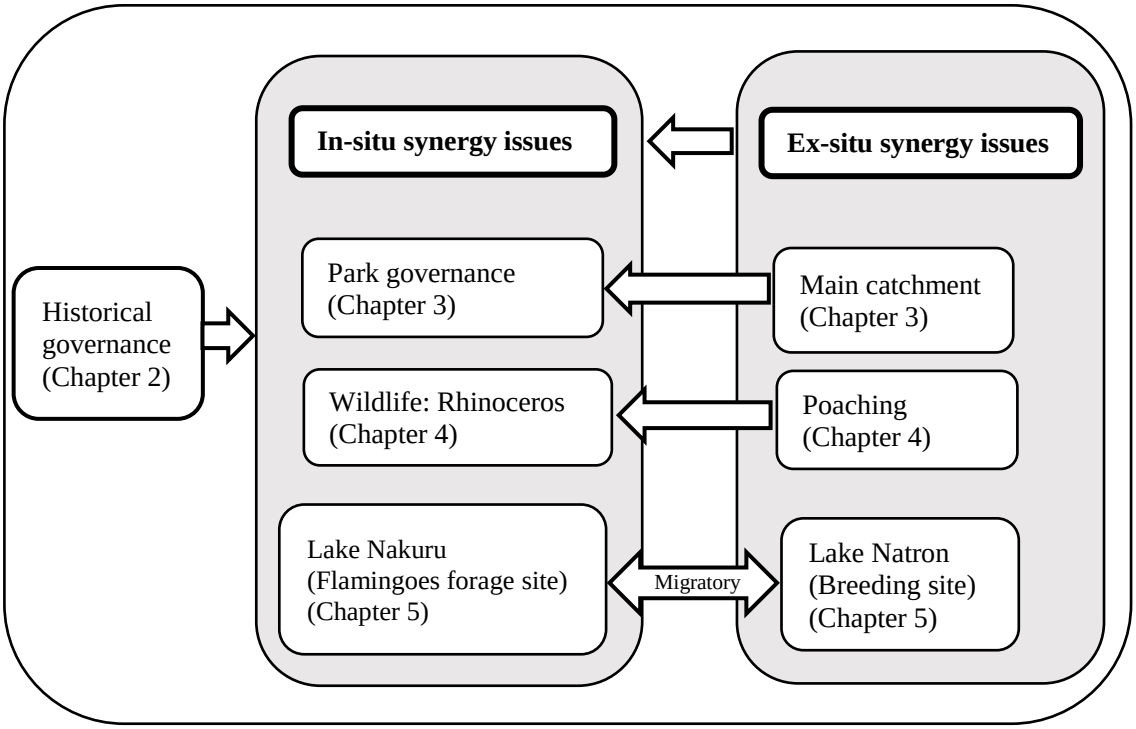

Figure 1.2 Dissertation synthesis[5]

[5] This figure illustrates how each chapter throughout this dissertation covers both in-situ and ex-situ issues.

Chapter 2 Wildlife Conservation Governance History in Kenya

2.1 Introduction

Wildlife conservation has been a contentious issue particularly in the rangelands of Kenya (Atama, 1996; Makindi et al., 2014). Past studies have shown that many local communities do not have incentives to conserve wildlife (Akama et al.,1995; Ogada, 2016). However, this does not mean that local people do not value or appreciate wildlife (Guthiga et al., 2008). Lack of collaboration is somewhat attributable to Kenya's top down or command-and-control wildlife management (Ogada, 2016).

This chapter traces the history of wildlife conservation governance in Kenya to better understand incentives and disincentives for local people to conserve and collaborate with government authorities. Recently the KWS has shown interests in engaging local people in conservation works, but having actual local collaboration requires justice to past mistreatment and misunderstanding. This chapter attempts to show how relationships between local people and government authorities for wildlife conservation are historically rooted. It argues that without this understanding it is difficult to establish a trust relationship that can lead to effective wildlife conservation collaboration in the future.

This chapter traces the history of wildlife governance in three periods: pre-colonial (before 1885), colonial (1885-1963), and post-colonial (after 1963). In each period, different stakeholders with cultural mores, laws and policies influenced the degree of community participation and collaboration. In a nutshell, historically wildlife conservation has marginalized and disempowered local cultural practices. Also, wildlife policies and political structure have growingly emphasized economic values (mainly tourism).

2.2 Methodology

This chapter is based on my analysis of published works that are related to wildlife conservation history in Kenya. I collected information from books, journal papers, government reports, laws, policies, NGOs reports and publications as well as newsletter and newspapers. Also, to clarify how local people co-existed with wildlife during the pre-colonial era, I conducted eight phone interviews in June 2018 with elders of Kikuyu, Kalenjin, Luhya and Maasai tribes. I used snow-balling technique to identify key interviewees. The selection of these four tribes was largely guided by my network. The Kikuyu, Kalenjin and Luhya are the most populous tribes in Kenya (World Population Review, 2018). Arguably, they

interacted more with wildlife. The Maasai was selected because they have largely maintained their traditional culture and way of life. I also incorporated my own experience in the analysis.

2.3 Wildlife governance during the pre-colonial era

This period can be characterized as the time of wildlife abundance (Akama, 1998). Three main ethnic groups, Bantu, Cushites, and Nilotes, emerged and thrived. The Bantu were the populous groups in central, eastern and western parts of Kenya and mainly practiced mixed farming (crop cultivation and animal rearing). The Cushites were classified into two: The Southern Cushites, who were hunters and gatherers, and the North-East Cushites, who were herders and pastoralists. Today, they are mainly found in arid and semi-arid areas. The Nilotes were divided into the Highland Nilotes, who practiced pastoralism and farming in the Rift Valley and western Kenya, the Plain Nilotes, who were mainly pastoralists in the Rift Valley, and the River Lake Nilotes, who were mainly pastoralists and fishers. The Luo tribe, the main River Lake Nilotes, settled around Lake Victoria (Wamicha and Mwanje, 1999; SoftKenya, 2018).

During this period, wildlife was regarded as a communal property. Each tribal member had the right to use wildlife resources that were overall governed by the council of elders. The council of elders enforced rules through sanctions, fines and punishment to guarantee safety and the sustainable utilization of natural resources. These rules were socially accepted (Akama, 1998; Wamicha and Mwanje, 1999). The community needs and cultural practices were the main drivers for this utilization (Deisser and Njuguna, 2016).

Although people had easy access to the abundant wildlife, only a few tribes relied on them as a source of food, clothing, ornaments or currency. Each tribe had customary values and morals that surrounded wildlife resources utilization (Waithaka, 2012). For instance, in some pastoralist communities, hunting was only permitted during the severe drought seasons when livestock was scarce (Waithaka, 2012). In most tribes, killing venerated animals was considered to attract natural calamities, such as diseases and severe drought (Akama, 1998). Elephants, lions, cheetah, and leopards were totems for Kikuyu, Maasai, Meru and Gusii tribes (Akama, 1996). Python was a totem among the Luo community (United Press International, 1988; Gumo et al., 2012). Some of the Kikuyu family names were derived from wild animals, for instance Njogu (an elephant), Ngare (a leopard), Wangari (of a leopard), Mbogo (a buffalo), Ngigi (a grasshopper), Ndege (a bird), and Nyaga (an ostrich) (Deisser and Njuguna, 2016).

The question that arises is how communities co-existed with the abundant wildlife? Were there instances of human-wildlife conflicts? How were they addressed? The phone interviews I conducted with elderly people in June 2018 revealed that non-reptile animals were less hostile at the time. The livestock used to share pastureland with other herbivores like buffaloes, elephants and rhinoceros. To prevent human-wildlife conflict, communities used fire to scare away animals. At night, they lit fire outside their homesteads. Also, the local people studied animal behaviors and learned how to communicate with them.

The arrival of European and Arabic explorers marked the beginning of ivory trading (around 3,500 years ago) and other types of wildlife trade (Akama, 1996; Waithaka, 2012). The explorers collaborated with local tribes for hunting animals and trading their products. For instance, the Kamba tribe helped the ivory trade by extending their trading networks with their partners in various parts in Kenya. Around the 1840s, it was estimated that Kamba caravans were delivering five tons of ivory every week in Mombasa port (Deisser and Njuguna, 2016).

2.4 Wildlife governance during the colonial era

Colonialism and the subsequent integration of Kenya into the global market economy marked the beginning of modern wildlife conservation (Deisser and Njuguna, 2016). The colonial government disrupted the traditional forms of governance. Promulgated wildlife regulations did not consider Indigenous governance (Table 2.1). The first wildlife law was passed in 1898 to control hunting (National Wildlife Conservation and Management Policy, 2013). It authorized sport hunting among colonizers and tourists but prohibited subsistence hunting and native hunting methods (Waithaka, 2012). This created hostile environment particularly among hunters and gatherers. Also, people's access to wildlife to exercise their cultural values and beliefs was hindered (Deisser and Njuguna, 2016). In 1907, the Game Department was established to enforce hunting regulation and protect farmlands from wildlife (National Wildlife Conservation and Management Policy, 2013). The Game Department adopted a centralized approach that failed to recognize the rights of local people (Table 2.2).

In the early twentieth century, wildlife sport hunting became a prime business. Most hunters partnered with locals to learn their hunting techniques and strategies (Hemingway, 2004). Hemingway (2004) narrates how natives guided hunters to track animals such as rhinoceros, antelope, leopards and hyenas. The natives also knew which seasons and areas were best for hunting (Hemingway, 2004). The "Big Five" (buffalo, elephant, leopard, lion

and rhinoceros) became the main target (Waithaka, 2012). The trading of wildlife trophies attracted famous personalities to Kenya for hunting expeditions, such as Winston Churchill in 1907 and the U.S. President Theodore Roosevelt in 1909. Roosevelt was known to have killed at least 296 animals during his visit (Wahome and Gathungu, 2013; Mwaura, 2016).

The colonial authority, however, forbid native people to consume wildlife for food and other daily needs. They could not understand why local communities conducted subsistence hunting, shifting cultivation and pastoralism and categorized all as "primitive" and pagan practices (Akama, 1998; Wamukoya, 2013; Garland, 2008).

Wildlife conservation advocacy by non-state actors emerged in the early 1930s when some professional hunters, such as Donald Ker and Sid Downey became champions for wildlife tourism and conservation (Deisser and Njuguna, 2016; Mwaura, 2016). The pioneer conservationists organized a series of awareness campaigns in the U.S. and Europe to encourage colonial governments to establish conservation measures. This led to the 1933 London Conference on Wildlife Conservation in Africa (Akama, 1998). The governments in attendance, including Kenya, affirmed their commitment to the establishment of national parks and game reserves. This galvanized the birth of national parks, game reserves and national sanctuaries in Kenya that now occupy approximately 8% of the country's landmass (Karanja, 2012; Wamukoya, 2013; Kenya Wildlife Service, 2018a). Again, the natives were overlooked during this process.

A game committee was established in 1939 to investigate and give recommendations about the establishment of game parks in Kenya. The Committee consisted of British naturalists, aristocrats, explorers and top colonial government officials. Following its recommendations, the colonial government set aside Nairobi (1946), Amboseli (1947), Tsavo (1948) and Mt. Kenya (1949) National Parks. The National Parks Organization was created to manage national parks (Wamukoya, 2013). Other parks/game reserves established before independence include Buffalo Springs (1948), Aberdare (1950), Lake Nakuru (1961), and Maasai Mara sanctuary (1961) (Mungumi, 2012).

The local communities were excluded from using these parks. Outside Tsavo National Park, for instance, Walianguru community's subsistence hunting was regarded illegal (Akama, 1998), whereas sport hunting was practiced within the Park. This led to new types of conflict between the National Parks Organization and local communities (Thompson and Homewood, 2002; Western and Waithaka, 2005). At the time, parks were not established to improve conservation but partly to promote sport hunting and safari in East Africa. For instance, two

main conservation piooners, Donald Ker and Sid Downey, established Ker and Downey Safaris in 1946. It largely organized sport hunting safaris. Currently, the organization operates sightseeing safaris (Mbaria and Ogada, 2017).

When many African countries were gaining independence, European conservationists warned that African independence would jeopardize nature and wildlife conservation. These concerns led to the organization of the symposium on Conservation Nature and Natural Resources in modern African States (Arusha conference) in 1961 in Arusha, Tanganyika. The IUCN's African Special Project statement in part read: "The peoples of Africa and their administrations should be induced to look favorably upon their unique inheritance of faunal resources*"* (IUCN, 1963). To induce newly independent and prospective African states, international organizations would provide technical expertise and financial support particularly to establish more protected areas. Institutions were also recommended to be established to train African conservation experts. As a result, the African Wildlife Leadership Foundation (now the African Wildlife Foundation) was established in 1961. This marked the beginning of enormous influence of conservation organizations in wildlife policies particularly in East Africa (Mbaria and Ogada, 2017).

Like the 1933 London Conference on the Conservation of Fauna and Flora, the 1961 Arusha conference emphasized land demarcation and control in conserving wildlife (IUCN, 1963). The role of the natives and their ecological knowledge were overlooked. This meant that Kenya heavily depended on European experts and organizations in forming national wildlife policies. As explored later in this chapter, this is still largely the case in Kenya. One of the Arusha conference recommendations was to organize a tour for potential African leaders to national parks so that they could appreciate biodiversity and natural heritage (IUCN, 1963).

When Kenya was about to get full independence, like most African countries, it was pressured to assure the international community about its commitment to nature conservation. During the IUCN General Assembly in September 1963 in Nairobi, President Jomo Kenyatta told stakeholders of his government's commitment to wildlife protection and solicited for support:

> The natural resources of this country, its wildlife, which offers such attraction to visitors from all over the world, the beautiful places in which these animals live, the mighty forests which guard the water catchment areas so vital to the survival of man and beast-are a priceless heritage for the future. The Government of Kenya, fully

> realizing the value of its natural resources, pledges itself to conserve them for prosperity with all the means at its disposal. We are confident of the cooperation of other governments of East Africa in this important task, but at present, we are unable, unaided, to provide the specialists staff and money that are necessary. We, therefore, invite other nations and lovers of nature throughout the world to assist us in honoring this solemn pledge (Waithaka, 2012: p. 28).

2.5 Wildlife governance during the post-colonial era

2.5.1 Before the establishment of the KWS

Since its independence in 1963, the number of Kenya's stated protected areas increased. As of 2018, there are 23 terrestrial national parks, 28 terrestrial national reserves, four marine national parks, six marine national reserves and four national sanctuaries (Karanja, 2012; Kipng'etich, 2012; Kenya Wildlife Service, 2018a). These parks are strictly protected and are only used for tourism and research purposes. Minimal community activities (e.g., fishing, firewood collection) are permitted in national reserves under strict conditions and monitoring by the KWS (Kenya Wildlife Service, 2018a).

After independence, the Kenyan government maintained centralized wildlife conservation management despite some hopes among local authorities and people that they would have more influence on wildlife conservation and utilization (Akama, 1998) (Table 2.2). Land disputes over protected areas during the colonial period were not addressed (Akama, et al., 1995; Deisser and Njuguna, 2016). In my field survey of December 2016, I found that a third of Kenyan rangers at Lake Nakuru National Park perceived local people as a threat to the Park.

In 1976, Kenya established the Wildlife Conservation and Management Act (1976) to enhance wildlife governance and institutional coordination (Table 2.1). It merged the Game Department and the National Park Service to form the Wildlife Conservation and Management Department (Wildlife Conservation and Management Act, 1976; National Wildlife Conservation and Management Policy, 2013). It penalized wildlife crimes and empowered the Department with arresting power. This escalated the militarization trend of wildlife management. In 1977 all forms of hunting were banned. In the following year, all forms of wildlife trade were banned (National Wildlife Conservation and Management Policy, 2013).

The Wildlife Conservation and Management Department continued to employ an exclusive top-down approach. Despite the institutional and legal reforms, poaching went record high both inside and outside protected areas. For instance, the population of elephants in Tsavo National Park declined from 38,000 (1973) to less than 5,000 (1989) (Akama, 1998). The population of black rhinoceros decreased from 20,000 in the 1970s to about 300 in the early 1990s (Poaching Facts, 2018; Weru, 2016). This was attributed to inadequate coordination for wildlife conservation, internal corruption and insufficient capacity among government agencies. Although wildlife crimes were record high during this time, prosecution was minimal (Wildlife Conservation and Management Act, 1976; Akama, 1996; Weru, 2016).

To date, wildlife conservation entails the enactment of tough laws, retraining and equipping wildlife rangers, increasing anti-poaching campaigns and deterring peasant farmers and pastoralists from entering parks (Akama, 1998; Wamukoya, 2013; Deisser and Njuguna, 2016). Collaboration with local communities has not been developed even though about 65% of wildlife lives outside the protected areas (Kenya Wildlife Conservancies Association, 2016).

2.5.2 After the establishment of the KWS

To curb prevalent poaching and perhaps solicit for public support, the KWS was established in 1990. The KWS is a uniform and disciplined service mandated with the management and conservation of wildlife nationally. It replaced the Wildlife Conservation and Management Department. The KWS manages over 60 national parks and reserves and about 125 wildlife stations outside protected areas (Kipng'etich, 2012; Kenya Wildlife Service, 2018a).

The establishment of the KWS as a semi-autonomous government agency (Wildlife Conservation and Management Amendment Act, 1989) made it possible for the KWS to directly collaborate and solicit for support from conservation organizations and donor agencies. These organization included the Rhino Ark (Kipng'etich, 2012), the WWF, the Space for Giants, and WildlifeDirect (chapter 4).

At the time of establishing the KWS, wildlife conservation was one of the top government agendas. In 1989, for instance, President Daneil Toroitich arap Moi presided over the burning of 12 tons of seized ivory tusks (Perlez, 1989). It symbolized the country's commitment to observing national and international laws as well as its fight against poaching.

The wildlife law amendment of 1989 authorized officers to arrest and detain wildlife suspects without warrant. The Act also introduced sanction provisions for the offences committed by the KWS staff (Wildlife Conservation and Management Amendment Act, 1989) partly to curb internal corruption (Leakey and Morell, 2001).

At the time, the wildlife policies and laws were successful in reducing poaching and partly in enhancing the conservation status of endangered species. For instance, the population of black rhinoceros increased from about 300 in the 1990s to about 650 in 2016 (Karanja, 2012; Weru, 2016; Poaching Facts, 2018). However, they failed to address human-wildlife conflicts. As a result of marginalization of local communities, human-wildlife conflicts persisted. Among local people in wildlife rich areas there remained wide-spread poverty (Kabiri, 2010a).

To reduce human-wildlife conflicts, a compensation scheme was introduced to those who suffered from damages caused by wildlife, but human-wildlife conflicts persisted particularly in areas surrounding protected areas (Sindiga, 1995; Western and Waithaka, 2005; Okello, 2006; Makindi et al., 2014). Some scholars have argued that this compensation mechanism discouraged farmers to prevent crop damage (Bulte and Rondeau, 2005).

President Daniel Toroitich arap Moi appointed Dr. Richard Leakey, a famous conservationist and palaeontologists, as the first chairman of the KWS in 1990. He was primarily interested in strengthening the armed anti-poaching unit. This partly led to reduction in poaching incidents (Leakey and Morell, 2001; Menya, 2015). His policy of "shoot to kill" suspected poachers scared off some poachers, but the KWS was later accussed of abusing power (Salesa, 2015; Bryant and Shabibi, 2017). This practice was particularly notorious among local communities. In one of the recent interviews, as the chairman of the KWS Board of Trustees, he furiously affirmed that there was a human price to be paid in wildlife protection (Bryant and Shabibi, 2017). Following the political fallout that led to the formation of the Safina Party, Leakey resigned from the KWS in 1994 (Leakey and Morell, 2001).

After his exit, Dr. David Western was appointed as the new chairman. His policy was different from that of his predecessor. Rather than alienating local people from protected areas, he tried to foster human-wildlife co-existence. The KWS then unsuccessfully tried to devolve wildlife conservation and empower emerging community-based organizations (Kabiri, 2010b). Most of community involvement programs ended up with enriching village elites. Monopoly by the local elites further discouraged local people to conserve and protect wildlife (Akama, 1996; Mungumi, 2012). This made it harder for the KWS to collaborate with local

communities since they started losing faith in the KWS (Kabiri, 2010b). In 1998, President Moi re-appointed Leakey who again led militaristic wildlife governance (Leakey and Morell, 2001; Kabiri, 2010b; Menya, 2015).

Instability of the top leadership of the KWS has hindered effective wildlife governance. Nearly, all the directors of the KWS have exited under unclear cirumstances. In 1998, Dr. David Western was fired under unclear circumstances (Menya, 2015). In 1999, a year after Leakey's re-appointment, Nehemiah Rotich became the first native to be appointed as the Director of the KWS, but he was suspended from the Service two years later for unknown reasons (Mbaria, 2001). Then Joseph Kioko was appointed as the acting director. He was replaced by Michael Wamithi in 2002. One year later, Wamithi was suspended because of the misuse of KWS property. His successor, Evans Mukolwe, was fired in 2004 due to corruption allegations over the recruitment of game rangers (Muiruri, 2004).

After this, Dr. Julius Kipng'etich took the helm of the KWS in 2004. As a management and finanicial expert, he focused on institutional reforms particulary to increase accountability. During his tenure for eight years, the KWS adopted information and communications technology to enhance management (Kipng'etich, 2012). Despite his success in management, his business focus ended up with alienating local communities more. During this time, poaching problem re-emerged (Kenya Wildlife Service, 2012). From 2006 to 2013 (Table 2.3), about 1,647 elephants and 167 rhinos were poached (Poaching Facts, 2018).

After his resignation, President Mwai Kibaki appointed William Kiprono, a former district officer, as an acting Director General of the KWS. In 2016, Kitili Mbathi, an expert in financial management, became the first Director General to be appointed under the 2013 wildlife law. He was a chief executive at the CFC Stanbic Bank. This shows that the KWS continued to emphasize business aspects of the agency (Karanja, 2016). In 2017, however, he left the KWS for unkown reasons. Julius Kimani was named as an acting director by the Board of Trustees (Mathenge, 2017). The Board is now led by Leakey who was appointed by President Uhuru Kenyatta in 2015 (Menya, 2015).

Following the 2003 IUCN World Congress Park held in Durban, South Africa, Kenya adopted community-owned wildlife conservancy model to promote Congress' theme of "benefits beyond boundaries" (IUCN, 2003; Ogada, 2016). The private and community conservancies grew to about 160 in 2016. However, there are increasing conflicts between conservancies and local people particularly herders over loss of grazing land. Also, revenue sharing disputes have been reported with claims of conservancies' deception (Ogada, 2016).

Most private conservancies are owned by non-natives. This means that local ownership is yet to be felt by the local people (Kenya Wildlife Conservancies Association, 2016; Ogada, 2016). Thompson and Homewood (2002) and Kabiri (2010a) argue that the urban-based economic, political elites and entrepreneurs benefit from wildlife tourism at the expense of local communities. The latter bear the opportunity cost brought by the establishment of protected areas. This has contributed to the impoverishment of local communities (Kabiri, 2010a).

To date, Kenya's wildlife conservation has been separated from other environmental issues. Wildlife tourism is largely the basis of conservation (Ogada, 2016; Allan et al., 2017). For instance, prior to the promulgation of the 2010 constitution, wildlife conservation had been under the Ministry of Tourism and Wildlife. Following the 2013 general elections, wildlife conservation and the KWS merged under the Ministry of Environment and Natural Resources. In my field survey of December 2016, I found that this merger made it better to collaborate with relevant environment agencies under the auspices of the Ministry such as the NEMA, KFS and Water Resources Authority. This is important because KWS is also mandated to manage Ramsar sites (wetlands), forest reserves, and marine protected areas.

However, following the reorganization of government ministries after the 2017 general elections, wildlife conservation became separated again from other environmental related issues. It was placed under the Ministry of Tourism. But still the KWS is a semi-autonomous agency under the Ministry of Environment and Forestry (Ministry of Environment and Forestry, 2018).

In 2016, President Uhuru Kenyatta showed renewed interests in anti-poaching campaigns and burned 105 tons of ivory and 1.35 tons of rhinoceros horns, the largest amount confiscated in history (AWF, 2016). The previous two presidents showed similar political gesture. President Daniel Toroitich arap Moi burned 12 tons of ivory tusks by in 1989 (Perlez, 1989), and President Mwai Kibaki had five tons destroyed in 2011 (Mnyamwezi, 2011).

2.6 Prospects for wildlife governance and conservation in Kenya

Over the years, minor penalties for wildlife crimes have been stressed as one of the major triggers for wildlife crimes. Kenya has responded by strengethening wildlife protection mechanisms. In 2014, Kenya enacted a new wildlife law that introduced stringent penalties and sentencing. It increased maximum penalty for crimes relating to endangered species from KES 40,000 (US$400) to KES 20,000,000 (US$200,000) and/or life imprisonment (Wildlife Conservation and Management Act, 2013). Partly as a result of this, the number of prosecuted

wildlife crimes increased to 91% of the total arrests between 2013 and 2016 (Office of the Director of Public Prosecutions, 2016).

Since the passage of the Wildlife Conservation and Management Act in 2013, Kenya has growingly understood the importance of collaboration with local communities. This has been manifested in the new wildlife law. The Act recognized public participation as one of key principles for wildlife conservation. It mandates administrations to engage in public consultation in developing wildlife and wetland management plans as well as marine conservation and national parks operation (Wildlife Conservation and Management Act, 2013).

On March 29, 2018, a Taskforce on Sustainable Consumptive Wildlife Utilization was established to develop modalities for the consumptive use of wildlife under the 2013 wildlife law (Ministry of Tourism and Wildlife, 2018) were phrased in technical terms so that perhaps only experts in wildlife ecology could understand the questions (appendix 2). It asked the public whether they support consumptive utilization such as culling, cropping, farming, and off-take. The Taskforce did not provide definitions for these technical terms nor their equivalent Swahili translation. In total, the Taskforce only received 22 opinions (Koech, 2018). Also, licensing the consumptive use of wildlife could further alienate wildlife communities since is largely considered within protected areas. Therefore, it does not necessary promote subsistence use by the local people. Consumptive use was largely advocated by some conservancies (Kenya Wildlife Conservancies Association, 2016; Koech, 2018; Rajab, 2018).

The 2013 Act also established the County Wildlife Conservation and Compensation Committees. Unlike the defunct District Committee, the County Committee expanded its membership to include the county environment officer, a medical officer, an agricultural officer, and a livestock officer. The latter two are essential, especially when reviewing compensation claims for crop and livestock damage. Additionally, if dissatisfied, the claimant has a chance to appeal to the National Environmental Tribunal and the Environment and Land Court (Wildlife Conservation and Management Act, 2013).

The 2013 Act provided to compensate for the loss due to wildlife and listed those animals, such as elephant, lion, leopard, rhino, hyena, crocodile, cheetah, buffalo, poisonous snakes, hippo, shark, stone fish, whale, sting ray, wild dog, wild pig, zebra, eland and wildebeest (Wildlife Conservation and Management Act, 2013). However, some animals like monkeys that have caused a lot of destruction and triggered human-wildlife conflicts were not

listed (Colonna, 2011; Makindi et al., 2014). In 2012, farmers in Wundanyi, Taita Taveta County, warned authorities that they would poison monkeys to protect their crops (Mwadime, 2012). In 2018, Murang'a County government lauched a program to track and trap monkeys to reduce losses in agriculture. In the same year, the County government allocated KES 17 million (US$170,000) for this policy. To reduce their numbers, the local residents started eating hunted monkeys (Gikandi, 2018).

To integrate people into conservation initiatives, the KWS is now expected to develop benefit-sharing mechanisms with communities living in wildlife areas. The 2013 Act requires to allocate at least 5% of national parks revenues to the neighboring communities (Wildlife Conservation and Management Act, 2013). How to satisfactory share or allocate these resources shall be a huge challenge for the KWS. Wildlife democracy (conservation by the people for the people) could promote equitable distribution costs and benefits in wildlife conservation. Nevertheless, Southern Cushites (former hunters and gatherers) suffered greatly with state policies that illegitimated their way of life.

Perhaps one the greatest challenges to sustainable wildlife conservation in Kenya is external influence. This was partly due to KWS's high dependence on donor organizations for technical support and financing its activities (Mbaria and Ogada, 2017). For instance, donor organizations placed heavy pressure on the KWS to translocate rhinoceros from Lake Nakuru and Nairobi National Parks to a new rhinoceros sanctuary in Tsavo East National Park in June and July 2018 (AFP, 2018; Musyoki, 2018). However, there were ecological concerns about the suitability of this site. As a result, all eleven translocated rhinoceros died (Kahongeh, 2018). Nevertheless, the WWF denied claims of pressuring KWS (AFP, 2018). Koech (2018) also reported that wildlife ranchers put a lot of pressure on the KWS to allow the consumptive use of wildlife. Kabiri (2010b) reported that investors in wildlife tourism have a huge influence on wildlife conservation in Kenya.

2.7 Summary

This chapter has seen that traditional wildlife governance was disrupted by the colonial government. Centralized and exclusive wildlife governance largely replaced this traditional governance. Upon independence, the newly independent government similarly failed to recognize local equity and justice to correct past wrongs under the colonial regime. As a result, the erosion of cultural values and practices have continued and determined the conflict outlook between government authorities and local communities.

The new wildlife law has provided new prospects in integrating local communities as key stakeholders in wildlife conservation. The main challenge now is how the political structure can mainstream wildlife conservation into both economic, social and environmental policies. This is important because since the mandate of the KWS has increased to include wetlands protection, research and protection of migratory species that I have examined in the following chapters. In the following chapter, I examine how the KWS has evolved to address these emerging roles by examining the case at Lake Nakuru National Park.

Table 2.1 Evolution of wildlife conservation law in Kenya[6]

Year	Legal instruments	Agency in charge	Main objectives
1898	Hunting regulations	Game Department (established in 1907)	• Authorized sport hunting and prohibited subsistence hunting
1976	Wildlife Conservation and Management Act	Wildlife Conservation and Management Department (WCMD)	• Provided legal and regulatory framework for wildlife conservation in Kenya • Established WCMD
1977	Hunting regulations	WCMD	• Banned all forms of hunting
1978	Wildlife trade ban	WCMD	• Banned all forms of wildlife trade
1989	Wildlife Conservation and Management Amendment Act	KWS	• Established KWS as the national wildlife law enforcing authority. • KWS guaranteed arresting and prosecuting powers
2013	Wildlife Conservation and Management Act	KWS	• Stringent penalties for wildlife criminals • Modalities for consumptive and non-consumptive wildlife use • Modalities for public participation

[6] This table summarizes historical development of wildlife regulations in Kenya. It also shows changes in administrative roles and tasks with different agenda.

Table 2.2 Historical factors that altered people's perceptions about authorities[7]

Factors	Pre-colonial era (Before 1885)	Post-colonial era (1885-1963)	Post-colonial era (1963 to date)
• Governance Style	• Consensus based	• Command and control	• Top-down
• Rules	• Socially accepted norms	• Biased rules	• Anti-poaching laws
• Rights to use	• Right to use	• Biased use right	• Controlled use right
• Perception on natives	• Stakeholders	• Threat to wildlife	• Largely as a threat
• Public participation	• Active	• None	• Partly engaged
• People-wildlife relations	• Co-habitation	• Conflicts largely with authorities	• Conflicts with wildlife and authorities
• Conservation value	• Cultural significance	• Sporting	• Economic (value)
• Willingness to collaborate with authorities	• High	• Low	• Low

[7] This table summarizes factors that influenced local people's willingness to collaborate with wildlife conservation authorities. This analysis is based on historical events: pre-colonial, colonial and post-colonial periods.

Table 2.3 Poaching trend of elephants and rhinos in Kenya

Years	2006	2007	2008	2009	2010	2011	2012	2013	2014
Elephants	55	47	116	267	187	289	384	302	164
Rhinos	3	1	6	21	22	25	30	59	35

Source: Poaching Facts, 2018; Weru, 2016

Chapter 3 Fragmented In-situ and Ex-situ Conservation for Lake Nakuru National Park

3.1 Introduction

This chapter examines the fragmented outlook of in-situ and ex-situ conservation for Lake Nakuru National Park. This examination helps us better understand existing institutional gaps of wildlife and wetland conservation. In Kenya, as discussed in the previous chapter, the militarized national agency has controlled wildlife and endangered species protection. This top-down management has limited community participation in wildlife and wetland conservation (Kabiri, 2010b; Mungumi, 2012). For example, governance at Lake Nakuru National Park entails multiple conservation efforts, such as wetland conservation, species protection, and water catchment management (KWTA, 2016). Considering these fragmented governance areas, what could be the possible outlook of institutional synergy or cooperation mechanism? Is it possible to establish inter-departmental collaboration between Park management and surrounding communities?

3.2 In-situ and ex-situ site characteristics

Lake Nakuru National Park is a strictly protected area. The entire area is protected by electric fences. These fences were put in place mainly to protect wildlife from poachers. This area is also important for biodiversity and wetland conservation, including flamingoes (Gichuhi, 2013; Odada et al., 2006). It is one of the most visited tourism sites in Kenya. About 245,000 tourists come each year (Gichuhi, 2013; Nyunja, 2012).

Although the Park boundary has isolated the area from outside intruders, much of its ecosystem depends on the effective conservation and governance of the Mau Forest (Figure 1.1). It is the primary catchment area for the Lake. Four of the five seasonal rivers that drain into the Lake arise from the Forest (Ouko et al., 2016). The Mau Forest consists of seven forest blocks (Ouko et al., 2016), bordering Counties of Bomet, Kericho, Nakuru and Narok (Waitagei, 2017). It is the source for 12 rivers that flow into Lakes Victoria, Nakuru, Baringo, Turkana and Natron.

The Forest provides and supports invaluable ecosystem services to people, such as hydropower production, agriculture, water, wildlife, tourism and industries (Ouko et al., 2016; Waitagei, 2017). Due to this economic value, many stakeholders with competing interests are

involved in its conservation. A synergy is, therefore, needed to harmonize the in-situ and ex-situ management surrounding the Park.

In-situ challenges include poaching, water level fluctuations, water pollution, and limited public participation. The main ex-situ problems are the deforestation and encroachment of the Mau Forest. It is estimated that about 41% of the Forest was lost between 1973 and 2009 (Khamala, 2010; Olang and Kundu, 2011). Ouko et al. (2016) reported that water levels significantly dropped in the Njoro, Nderit, Makalia and Naishi rivers that arise from Mau Forest and drain into Lake Nakuru. Since 2009, the Kenyan government has struggled to evict illegal settlers in the Forest (KWTA, 2016).

Other ex-situ challenges include river pollution with agrochemicals by upstream farmers. The problem of siltation has been reported. These have gradually dwindled Lake Nakuru water quality (Gichuhi, 2013; Ouko et al., 2016). Industrial and domestic waste discharges have impacted on the Park's ecosystems. The Park is located about three kilometers south of Nakuru town. Since the early 1970s, Nakuru has been urbanized rapidly without much effort for waste management/treatment (Ouko et al., 2016). In 1972, the Giotto dumping site (about 50 ha) was established in the Kiamunyi area mainly to dispose domestic and industrial waste. However, the current generated waste of 240-250 tons a day exceeds the carrying capacity of the dumping site (Ouko et al., 2016; Mwanzia et al., 2013). Only about 60% of the waste is disposed at the site. Some of the remaining waste is deposited into Lake Nakuru National Park by wind and surface runoff (Ouko et al., 2016; Gichuhi, 2013).

3.3 Methodology

This chapter is based on document content analysis and interviews with key officials (Table 1.2). Regarding in-situ issues, I focused on the organization structure of the KWS and the Wildlife Conservation and Management Act (2013). To better understand the KWS structure and clarify fragmented conditions, I interviewed 12 KWS officials who were in charge of wildlife management, research, wetlands protection, forestry, and tourism at the head office and Nakuru office in December 2016. I also asked them about the level of inter-departmental and inter-agency collaboration, existing research sharing techniques, and local participation. Some questions aimed to see how the Ramsar and World Heritage Conventions were incorporated into conservation activities at the Park.

In clarifying fragmented governance at the ex-situ level, I reviewed national laws, policies and strategic plans for the agencies involved in Mau Forest conservation. These

included the Wildlife Conservation and Management Act (2013), the Forest Conservation and Management Act (2016), the Water Act (2016), the National Environment Policy (2013) (MENR, 2013) and the Forest Policy (2014) (MENR, 2014). The current strategic plans for the Kenya Forest Service (KFS) (2014-2017) (Kenya Forest Service, 2015), the Kenya Water Towers Agency (KWTA) (2016-2020) (KWTA, 2016) and the Water Resources Authority (2012-2017) (Water Resources Authority, 2013) were comparatively analyzed. In December 2016, I interviewed key representatives from the KFS, KWS, KWTA and Water Resources Authority to understand how they collaborate (Table 1.2). In August 2018, I did a follow-up phone interviews with some of these officials to understand the current conservation status and coordination efforts, including the on-going evictions of about 40,000 settlers in the Mau Forest.

Regarding river pollution, I reviewed relevant laws and conducted interviews. These include the Environmental Management and Coordination Amendment Act (2015), the Water Act (2016), Water Quality Regulations (2006), Agriculture Amendment Act (2012), and Environmental Management and Coordination (Waste Management) Regulations (2006). I interviewed the National Environment Management Authority (NEMA) officials to understand how they collaborate in monitoring agricultural pollution in Lake Nakuru watershed. To examine how the Municipal Council of Nakuru conduct and collaborate in waste collection and disposal, in December 2016, I conducted interviews with Nakuru County government officials. I also reviewed existing literature to validate the results.

3.4 Results

3.4.1 Fragmentation in the in-situ conservation

In this section, I highlight how on-site conservation has been conducted. The main focus has been wildlife protection and wildlife tourism. A disconnect, however, exists between wetlands (Lake Nakuru) conservation and tourism promotion. I have also identified loopholes that hamper research sharing and promotion.

In short, I found that the KWS has not done much about institutional synergy largely due to its organizational structure. From interviews with KWS officials, for example, I found that the KWS Nakuru station did not have personnel in charge of wetlands. Its 74km electric fence requires at all times one officer to check in each 4km-long fenced section. The KWS game rangers regularly patrol and report to an area warden who then reports to the park warden. The daily communication is usually done with VHF (very high frequency) radios.

An erection of electric fence significantly reduced human-wildlife conflict in Lake Nakuru National Park. As a result, the relationship between Park authorities and surrounding communities somewhat improved (IUCN, 2014; IUCN, 2017). Although this provided opportunities for authorities to actively engage with the local people, I found that militarized park management impeded public participation even though Lake Nakuru National Park is covered by the Ramsar Convention that calls for public participation (Ramsar Convention Resolution XII.9; Ramsar Convention Resolution VIII.36). My interviews revealed that about a third of the rangers in Lake Nakuru National Park perceived local people/residents as a threat to the Park. However, 63% of the rangers perceived local people as key stakeholders in wildlife conservation. In reality, local people are rarely engaged in wildlife conservation within the Park. The only instances where local people participated were the annual Rhino event and cleanup activities.

I also found that armed rangers sometimes intimidate local residents. The rangers have license to kill suspected poachers within the Park. Elsewhere, the rangers were accused of extrajudicial killing, disappearance and torture of detained suspects (Bryant and Shabibi, 2017; Salesa, 2015). No cases were reported at Lake Nakuru National Park.

Although the KWS is the national focal point for the Ramsar Convention, the Convention ratification has not been important part of the KWS tasks. Instead, the National Museums of Kenya is the designated government focal point for the communication, capacity building, education, participation, and awareness (CEPA) program of the Convention. The Community Action for Nature Conservation is the current nominated NGO's CEPA focal point in Kenya (Terer and Macharia, 2013; Karanja et al., 2018).

The KWS has an education center at Lake Nakuru National Park. It is managed by the Education Warden. The center educates visitors (largely to visiting schools) about wildlife conservation through talks, videos and printed materials (Kenya Wildlife Service, 2018b). Also, the Wildlife Clubs of Kenya inside the Park conduct conservation awareness activities and training. The Wildlife Clubs of Kenya has mainly educated high school students in the past.

Tourism is the main revenue earner for the KWS. Much of the acquired revenues are used for Park conservation. I asked KWS officials about measures taken to promote tourism at the Park. I found that the KWS initiated some efforts to enhance tourism. For instance, on January 1, 2017, it adopted a cashless system to partly curb internal corruption at the points of entrance, and partly to enhance accountability as well as improve customer service through

efficient payment systems. Also, the KWS made its website contents available in more than 10 languages. It also considerably subsidized the price of entrance fees for East African Community citizens.

At Lake Nakuru National Park, some interviewees were of opinion that the KWS take advantage of special days to promote domestic tourism and sensitize local residents about wildlife conservation. Lake Nakuru National Park organizes a "Cycle with Rhino" event annually as part of the Rhino Day on September 22. In 2017 and 2018, it partnered with celebrities like Herman Kago (famous comedian with stage name of Professor Hamo) and Michael Olunga (a professional football player) to attract people to the Park and create awareness about rhinoceros conservation. In 2018, in collaboration with local communities, it organized cleanup activities within the Park to celebrate the Wetlands Day (February 2), the World Wildlife Day (March 3) and the Environment Day (June 3).

However, I found out that tourism promotion is mainly associated with wildlife. In promoting tours, the KWS has not taken advantage of the Park's designation as the Ramsar and UNESCO World Heritage sites even though the KWS is the focal point for the Ramsar Convention implementation (Kenya Wildlife Service, 2017b). Lake Nakuru National Park promotion brochures that the KWS headquarters (Nairobi) has distributed do not contain any information about the Convention and UNESCO designation. The KWS, however, does work with the Kenya Tourism Board to advertise national parks and reserves locally and internationally. The Board launched a "Magical Kenya" initiative, which is a database for tourism attraction. The Lake Nakuru National Park page does not have information about international recognitions (Kenya Tourism Board, 2014).

The way research has been done at Lake Nakuru National Park also tells how institutional synergies are needed. I found out that the KWS has a research division, but it is underfunded and under-staffed. As of December 2016, the KWS Nakuru office had only three researchers who were responsible for all research issues related with wildlife conservation within the Park and the entire Central Rift Conservation Area (CRCA). I found that the researchers are overwhelmed by the diverse research areas and scope to be covered. This was also stressed by the latest status of management report of the Park (Government of Kenya, 2014).

To supplement research capacity, the interviews revealed that the KWS Nakuru station collaborate with other research institutions such as Egerton University and the University of Nairobi in conducting research and animal censuses within the Park. Interviews with the

KWS officials revealed that the internal research sharing mechanism was not well coordinated. The research findings rarely trick down to rangers and other implementers. The respondents indicated that the formulation of management plans hardly take into account research findings. This is partly due to communication disconnect between research division and planners and partly due to exclusion of researchers in the planning phase.

To conduct research in Kenya, a research permit from the National Commission for Science, Technology and Innovation (NACOSTI) is required (NACOSTI, 2018). For outsiders to conduct research at the Park, an additional research permit from the KWS is needed (Wildlife Conservation and Management Act, 2013). The KWS research permit requires non-KWS staff (whether individuals or organizations) to submit their research findings to the headquarters. It was observed that only about 40% of the researchers comply. The KWS research division is expected to monitor and promote research sharing, but no established mechanism to do so.

3.4.2 Fragmented ex-situ conservation

My surveys in 2016 and 2018 revealed that the national government tried to address the problem of encroachment in the Mau Forest by removing some residents there. According to the KFS officials, about 40,000 settlers were to be evicted by 2018. The KFS led this eviction policy.

My interviews with the KFS partly attempted to clarify this eviction issue. According to the KFS assessment, about 70% of the evictees have lived in the Forest for over 20 years. Most of them bought the forest land from prominent leaders and families. Some of them had genuine title deeds issued by the government (Kimanthi, 2018). Among the people evicted were the Ogiek minority group, an Indigenous forest community that have regarded the Mau Forest as their ancestral home.

The four County governments that share the Mau Forest are divided on the issue of resettlement and compensation. The national government, the Narok County government and Narok County political leaders support evictions without compensation and/or resettlement while political leaders from Bomet, Kericho and partly Nakuru Counties are demanding for resettlement or compensation of the evictees. Forceful evictions and destruction of evictees' property intensified political pressure and dispute.

In addition, jurisdictional boundaries in the Mau Forest are not well demarcated and understood differently by various government agencies and law enforcement authorities

(Lang'at and Sayagie, 2018). My interviews sought to understand why the current forest cut-line is disputed. All people living within the Forest cut-line are to be evicted, but, in some cases, I found that police stations, public schools and public hospitals (government institutions) were within it (Lang'at and Sayagie, 2018). This inconsistency has intensified settlers' resistance to eviction. They have also received staunch support from local political leaders in Counties of Bomet and Kericho along with western Nakuru (Lang'at and Sayagie, 2018).

I found out that the current cut-line was developed in 2008 by a taskforce that investigated the destruction of the Mau Forest. This taskforce consisted of the KFS, the KWS, the Water Resources Authority, government ministries in charge of forest conservation and land, non-governmental organizations, private sector and local communities (KWTA, 2016). In my interview, I found that the involvement of local people was limited. Their views and opinions were overshadowed by government officials. I also found that the taskforce was largely represented by pro-conservation government agencies (KFS, KWS, and the Water Resources Authority). They wanted to evict residents. On August 13, 2018, appearing before the National Assembly Committee on Environment, the Cabinet Secretary for the Ministry of Environment and Forestry, Keriako Tobiko, ruled out chances of compensating evictees despite recommendations from the KWTA to do so, especially to those with genuine title deeds (Kimanthi, 2018; KWTA, 2016). The declaration of the Cabinet Secretary met loud opposition from some legislators (Mwai, 2018).

Also, through these evictions, the national government has contravened the 2017 decision by the African Court on Human and People's Rights. In this decision, the Court recognized Mau Forest as the native home for the Ogiek minority group and ordered the Kenyan government to make necessary reparations for the previous forcible evictions of the Ogiek Indigenous people (Vigliar, 2017). Although the Ogiek community developed map of their ancestral land (Rambaldia et al., 2007; Vigliar, 2017), they were still targeted in the 2018 evictions. On August 2018, the Ogiek community filed another case in the African Court on Human and People's Rights (Matara and Sayagie, 2018).

Apart from fragmentation in the on-going evictions, generally, there is governance fragmentation in the conservation of Mau Forest. The 2008 taskforce report noted that the institutional arrangement was ineffective and recommended for administrative synergy among the KWS, the KFS, and the Water Resources Authority. An Interim-Coordinating Secretariat was established in 2009 to implement taskforce's recommendations. The tremendous

achievements of the Secretariat (e.g. reposed over 21,000 ha forestlands, demarcated six forest blocks boundaries, abated illegal activities, enhanced resource mobilization, protecting the marginalized forest communities) led to the establishment of a coordinating agency, the KWTA (KWTA, 2016).

The KWTA was to coordinate relevant agencies for the rehabilitation, conservation, protection and sustainable management of water towers, forestlands and wetlands. It also would coordinate and promote synergy in the governance of trans-boundary and inter-county water resources. Its strategic plan (2016-2020) recommended for the establishment of a county integrated development plan to enhance the governance of natural resources (KWTA, 2016). This plan is yet to be established.

The KFS (2014-2017) and the Water Resources Authority (2012-2017) strategic plans (Kenya Forest Service, 2015; Water Resources Authority, 2013) acknowledge that there are still overlaps and sometimes conflicts over the conservation of the Mau Catchment (Kenya Forest Service, 2015; Water Resources Authority, 2013). I found that this governance fragmentation largely arises from administrative overlaps. Different institutions have been mandated with the role of conserving and protecting water catchment areas. The Water Resources Authority administers the Water (Amendment) Act, 2012, but the new Water Act (2016) removed the role of the Water Resources Authority. Although the KFS is entrusted with public forest conservation, protection and management (Forest Conservation and Management Act, 2016), forest reserves fall under the KWS (Wildlife Conservation and Management Act, 2013). Since 2017, these two agencies are under different ministries. The KFS is under the auspices of the Ministry of Environment and Forestry and the KWS under the Ministry of Tourism and Wildlife.

Water pollution is one of the critical challenges facing Lake Nakuru National Park. Pollution comes from non-point sources largely through the usage of agrochemicals (Gichuhi, 2013). In my interviews, NEMA and Water Resources Authority officials indicated that it is difficult for them to monitor and prevent water pollution. It is difficult to know the boundary of riparian zones, in which farmers are not allowed to practice farming. For example, the Environmental Management and Coordination Regulations (2009) and the Environmental Management and Coordination (Water quality) Regulations (2006) set 6-30 meter as the riparian zone, whereas the Agriculture (Amendment) Act (2012) define the zone that extends between 2 and 30 meters.

Among officials, there was some confusion about who should monitor and regulate agricultural pollution. For example, the NEMA regulates effluent discharge (Environmental Management and Coordination (Water Quality) Regulations, 2006) and protects riparian reserves (Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009). Under the Water Act (2016), which predominantly adjudicates water use and allocation, the Water Resources Authority administers. The Ministry of Agriculture oversees sustainable agricultural practices and use of agrochemicals under the Agriculture (Amendment) Act (2012).

Other than agricultural sources, water pollution was partly attributed to domestic waste. The Nakuru County government collects and disposes domestic waste. The NEMA monitors and supervises compliance (Environmental Management and Coordination (Waste Management) Regulations, 2006). Interviews with KWS officials revealed that the Park receives good cooperation from the Nakuru County government for waste management in areas surrounding the Park. According to the Nakuru County government and NEMA officials, the waste management in Nakuru improved significantly through the implementation of integrated solid waste management plan largely due to municipal by-laws that emphasized community-based and private waste management enterprises.

3.5 Discussion

My findings indicate that the KWS has not evolved locally to address all the Park's values. Largely due to its militarized organizational structure, it has specialized in wildlife protection. For instance, there are about 116 permanent wildlife rangers stationed inside the Park (Government of Kenya, 2014). Wetlands protection, tourism and research are somewhat neglected. Although the KWS is charge of implementing the Ramsar Convention, a wetland department is yet to be established at Lake Nakuru National Park (a Ramsar site). Also, partly due to this structure, the recognition of the Park by the Ramsar and World Heritage Conventions have not substantially influenced wetlands conservation and tourism policies at Lake Nakuru National Park.

The 2013 Wildlife Conservation and Management Act and the Ramsar Convention promote public participation in wildlife and wetlands conservation, respectively. However, at Lake Nakuru National Park, local people are engaged on ad hoc basis. They are mainly invited to the Park to assist clean-up activities and/or participate in special events such as Rhino event. Measures that have been undertaken to sensitize local people and target schools

visiting the Park. The focus on awareness is largely on wildlife conservation and barely on wetlands conservation. Rather, the Ramsar CEPA program is implemented by the National Museums of Kenya that has limited access to the Park (Terer and Macharia, 2013; Karanja et al., 2018). This indicates fragmentation in public participation and awareness creation in issues relating to wetlands and waterbirds conservation.

Beyound the boundaries of the Park, public participation is also limited in the conservation of main water catchment for Lake Nakuru, Mau Forest. For instance, the eviction policies from Mau Forest are largely driven by pro-conservation government organizations. Here, command and control approach was applied in 2018 to forcefully evict settlers within forest boundaries including Indigenous forest communities (Ogiek) and settlers with genuine title deeds.

The evicted Ogiek forest community won a 2017 court case, in which Mau Forest was declared to be their ancestral home (Vigliar, 2017). However, they were targeted in the 2018 evictions. Studies indicate that the Ogiek people protect and preserve Mau Forest. Their spiritual, cultural and economic values are based on the Mau Forest ecosystem. It has been reported that evictions and denial to their ancestral land rights endangered their cultural survival (Nomi, 2004; Rambaldia et al., 2007).

Instead of eviction, the involvement of the Ogiek community could have enhanced forest and biodiversity conservation. This has been proven with other forest Indigenous people/community: the Mijikenda of Kaya forest in Kenya (Wekesa et al., 2016), the Kayapo of Brazil (Zimmerman et al., 2001), the Raute of Nepal (Banu and Matsui, 2016), and the Jinuo of China (Long and Zhou, 2001). I found that the current plan under consideration is fencing the Mau Forest.

Considering that about 70% of the evictees had settled in the Forest for over 20 years, the question is: Are they entitled to land rights through adverse possession? Articles 37 and 38 of the Limitation of Actions (Amendment) Act of 2012 recognize landownership through adverse possession. Although these provisions do not define a period of squatting time to be qualified for it, one of the successful adjudicated 2017 cases between James Maina Kinya (plaintiff) and Gerald Michael Kwendeka (defendant) extinguished the defendant's title deed on the premise of plaintiff's adverse possession for 12 years (Environment and Land Court of Murang'a, 2018).

3.6 Summary

This research has found that administrative fragmentations have inhibited sustainable ecosystem management at Lake Nakuru National Park. Although the KWS was established to conserve and protect wildlife, the KWS has not evolved locally to address all Park's values such as wetlands conservation and research. Wetlands protection (Lake Nakuru) and conservation of water birds is an important task for the KWS since it is the national focal point for the Ramsar Convention. Although tourism is the major revenue source for the KWS, the KWS has not fully exploited available opportunities presented by international recognitions of the Park. At the ex-situ level, politicization has hindered sustainable efforts to conserve Mau Forest and effectively address the problem of encroachment. I also found that ex-situ fragmentation surface as result of legislation overlaps particularly in the Mau Forest Catchment conservation and water pollution control. This results into conflicting roles between supposedly lead agencies. Since 2008 attempts have been made to enhance institutional arrangements in the conservation of Mau Forest. Nonetheless, little has been done to address fragmentation in the in-situ conservation initiatives.

Chapter 4 Synergy Issues for Rhinoceros Conservation and Protection at Lake Nakuru National Park

4.1 Introduction

This chapter examines the current status of rhinoceros protection from poaching threat, and discusses how the collaborative protection governance regime can be improved in the future. For decades, Kenya has attempted to curtail poaching activities by strengthening wildlife protection mechanisms, but it has achieved only limited success. Kenya has about 1,149 rhinoceros (of which 650 are black rhinoceros) (Kenya Wildlife Service, 2017c; Weru, 2016). The black rhinoceros (*Diceros bicornis*) is designated as critically endangered species in the IUCN Red List as well as in Kenya (IUCN, 2018b; Wildlife Conservation and Management Act, 2013). The white rhinoceros (*Ceratotherium simum*), another prominent rhinoceros species, is listed as near threatened species in the IUCN Red List (IUCN, 2018b). In Kenya, it is designated as an endangered species (Wildlife Conservation and Management Act, 2013).

Poaching has been the major threat to the survival of the rhinoceros. The population of Kenya's black rhinoceros declined from about 20,000 in the 1970s to about 300 in the early 1990s. Since then, its population increased to about 650 in 2016 (Weru, 2016). From 2006 to 2017, however, about 236 rhinoceros were poached in Kenya (Figure 4.1) (Poaching Facts, 2018; Save the Rhino, 2018). On March 20, 2018, the last male northern white rhinoceros died in Kenya. This leaves the sub-species at the edge of extinction given that the remaining two female species are infertile (Komu, 2018).

It has been a great challenge to crack down poaching cartels, as they are widespread but tight-knit global organizations. Past studies on wildlife crimes have emphasized the importance of establishing cross-jurisdictional and international collaboration efforts to dismantle poaching and illegal trafficking of wildlife products (Akella and Allan, 2012; UNODC, 2012; CMI and U4, 2016; Pink and White, 2016). Source countries probably have the largest responsibility and opportunity to prevent poaching and trafficking through collaborative efforts. However, Kenya, a source country, faces formidable challenges to establish effective anti-poaching collaboration among key players like conservationists, researchers, law enforcement agencies, judiciary, public and media. This said, examining the possible outlook of national synergy could help better deal with wildlife crimes.

Therefore, this chapter examines how rhinoceros protection can be better formulated in Kenya at in-situ and ex-situ levels. At the conservation site (in-situ), it looks at how the

KWS has attempted to coordinate rhinoceros protection at Lake Nakuru National Park. This Park is one of the most important protection sites as it is home to about 60 black and southern white rhinoceros. Lake Nakuru National Park was selected since the first rhinoceros sanctuary in Kenya was established here in 1987. It has been a model of rhinoceros conservation to the other protected areas. Following successful breeding, rhinoceros have been translocated from here to other rhinoceros sanctuaries in Kenya (Ouma, 2004; Odada et al., 2006).

In the following discussion, I first examine the evolution of the wildlife governance regime in Kenya to better understand the current protection status. Then I discuss in-situ and ex-situ protection conditions. Finally, the chapter explores future collaborative governance opportunities in-situ and ex-situ situations.

In this chapter, I argue that inter-agency collaboration and public engagement are key to dismantle poaching cartels. These ideas can also facilitate the implementation of Kenya's Rhinoceros Action Plan. I found out that local communities are key stakeholders as they can help identify poachers and provide testimonies in courts. Inter-agency partnership through sharing of information and intelligence among law enforcement agencies, investigators, and prosecutors could promote both human and wildlife justice. Wildlife crimes involving endangered species could be prosecuted at the Environment and Land Court to expedite wildlife crime litigation.

4.2 Kenya's anti-poaching policies and institutional change for collaboration

The Kenyan government began its own efforts to protect rhinoceros as early as the late 1970s. In 1977, it banned trophy hunting partly to curb rampant poaching (Akama, 1998). It ratified the CITES in 1979 (CITES, 2017). However, the government lacked a sufficient institutional mechanism to prevent internal corruption and miscommunication among relevant agencies, allowing trafficking of rhinoceros horns possible even at Jomo Kenyatta International Airport (JKIA) and Mombasa Port (Weru, 2016). Wildlife protection law enforcement was also lax and disorganized at Lake Nakuru National Park partly because most workers were not sufficiently trained to fight against poaching (Karanja, 2012). The situation somewhat improved with the establishment of the KWS in 1990, but stopping poaching remained to be extremely difficult tasks as rhinoceros horns had increasing demands and fetched high prices. Poachers and traffickers also became more sophisticated and organized (Weru, 2016; Karanja, 2012).

To curb prevalent poaching, Kenya established a rhino conservation program in 1985. The program aimed at enhancing protection of rhinoceros in sanctuaries. In 1987, the first rhinoceros sanctuary was established within Lake Nakuru National Park. The program facilitated collaboration with private conservancies, NGOs and local communities to enhance wildlife law enforcement (Odada et al., 2006; Ouma, 2004).

In 2013, Kenya promulgated the Wildlife Conservation and Management Act to enhance law enforcement against wildlife crimes. As discussed in chapter 2, it increased maximum penalty for crimes related to poaching and trafficking rhinoceros horns from KES 40,000 (US$400) to KES 20,000,000 (US$200,000) and/or life imprisonment (Wildlife Conservation and Management Act, 2013). The main concern, however, is people's awareness. For instance, Ariya and Momanyi (2015) found that about 87% the surveyed respondents living near Ruma National Park were not aware about wildlife laws. Therefore, public education about severe penalties for wildlife crimes is required to successfully deter poachers and potential poachers. Ideally, the KWS could collaborate with rhino ambassador, County government, political leaders, religious leaders, community elders and NGOs to sensitize the public.

The wildlife law empowered the KWS to arrest, detain, and prosecute suspects. The KWS could now search land, premises, vessels, vehicles, aircrafts and trailers. They gained power to confiscate illegal wildlife trophies or materials. Partly as a result of this, the number of prosecuted wildlife crimes increased to 91% of the total arrests between 2013 and 2016 (Office of the Director of Public Prosecutions, 2016a).

In implementing this tightened policy for years, Kenyan officials became more aware of the importance of inter-jurisdictional collaboration. As the 2013 Act also empowers law enforcement agencies like assistant warden and officer above the rank to act against wildlife crimes, law enforcement has increasingly required relevant agencies to coordinate and collaborate, for example, in searching vehicles and arresting people outside national parks (Wildlife Conservation and Management Act, 2013). As of August 2017, the KWS had only two prosecutors, but, in the same year, it established partnership with Space for Giants, an NGO for big mammal protection in Kenya with close connection to the U.S. and U.K., to train new wildlife crime prosecutors. As a result, the KWS can now have at least 12 prosecutors (Capital News Correspondent, 2017). The KWS can also collaborate with the National Police Service, the National Intelligence Service, the Kenya Anti-Corruption

Authority and the Office of Director of Public Prosecutions to investigate and prosecute suspects (Kipng'etich, 2012).

These joint efforts increased partly due to political support in the prosecution of wildlife crimes. In 2016, for instance, Kenyan president spearheaded the action to burn 105 tons of ivory and 1.35 tons of rhinoceros horns, the largest amount of confiscated items in history (AWF, 2016). This political demonstration, partly fueled by wide domestic and international media coverage, enhanced anti-poaching/trafficking sentiment among Kenyans and others. It also showcased Kenyan government's commitment to observing the national and international laws. The strong political support paved way for inter-agency collaboration among courts, legislators and administrators in strengthening the anti-poaching regime.

4.3 In-situ synergy for rhinoceros conservation at Lake Nakuru National Park

Although the KWS has evolved and embraced technology and new partnerships to better address wildlife crimes, poaching methods and cartels' organization have evolved and advanced over time. Rhinoceros poaching and trafficking are largely organized crime. Poachers can be local communities living around national parks. They understand the local environment very well. If paid, some local people can host or inform non-resident poachers. Poachers are connected to middlemen. These middlemen purchase rhino horns from poachers. They utilize both public and private transport systems. The middlemen also provide logistics, intelligence and supplies. They deliver rhino horns to their patrons or kingpins (Akella and Allan, 2012; Gumbo et al., 2016).

The kingpins have financial muscle and connections with key government officials and private sectors at transit points. They finance the poaching and trafficking network. They can ship the horns in both illegal and legal cargoes and fabricate exportation documents. At a destination country, they use the Internet and black markets to sell rhinoceros horns. Due to the sophisticated methods and networks, it is difficult to monitor, detect and predict trafficking routes (Pink and White, 2016; Gumbo et al., 2016).

Poaching techniques changed over time. In the early 1970s and 1980s, rhinoceros poaching occurred predominantly outside protected areas. Poachers mainly used firearms. When finding rhinoceros became difficult, poachers began to target protected areas, including Lake Nakuru National Park. Then snaring and poisoning (silent methods) became common (Karanja, 2012), making it more difficult for rangers to detect (Gumbo et al., 2016).

In response to these new methods, the KWS has trained rangers and increased patrols within Lake Nakuru National Park. At all times, one ranger is stationed within each four-kilometer electric fence area. This fence is attached to the back-up solar powered grid system. The Park's rhinoceros are monitored daily. Their ears are notched for identification. In 2014, the KWS at Lake Nakuru National Park partnered with the WWF to insert microchips into rhinoceros bodies. Rhinoceros are now easily tracked, monitored and identified (WWF, 2014).

The KWS also has partnered with local ranchers and residents living around the Park to collect information about wildlife crimes. These local people sometimes tip off the Service about potential poachers or intruders around the Park's boundaries. To enhance this communication and ensure timely response, the KWS has nine-digit toll free number (080059700). So far, many local people found this number difficult to memorize (ideally the KWS may adopt three-digit toll free emergency number instead). Currently, people mainly report wildlife crimes by using National Police Service emergency numbers (999 or 112). I tried the above Police Service numbers, but they appeared to be usually busy. Sometimes it took me about 30 minutes to get through.

The KWS has celebrated Rhino Day (September 22) with support from local communities and celebrities. Rhino Day is to raise awareness about rhinoceros conservation and tourism promotion. At Lake Nakuru National Park, the KWS invited Herman Kago, a famous comedian known as "Professor Hamo," and Michael Olunga, a professional footballer, in promoting "Cycle with Rhino" event. The KWS appointed Kago as rhino ambassador to assist in raising support for rhinoceros conservation (Wanja, 2017).

4.4 Ex-situ synergy for rhinoceros Protection

4.4.1 Law enforcement, investigation and intelligence

Collaboration is essential to effectively enforce wildlife laws and investigate wildlife crimes not only within a national park, where rhinoceros are protected, but also outside national parks, including port of entries (Figure 4.2). The KWS law enforcement unit works with other law enforcement agencies and communities to protect wildlife in Kenya at large (Karanja, 2012).

Research indicates that violent and property crimes decreased in Nakuru County after the National Police Service introduced community policing in 2009 (Mwaniki, 2016). This means that collaboration between the KWS and the National Police Service as well as local communities can enhance community policing. Community policing has proved to be

effective elsewhere. For instance, from 2011 to 2014, Nepal recorded zero rhinoceros poaching incidences following the introduction of the community policing system (WWF, 2015).

For community policing to work, the public must have faith in coordinating institutions like the KWS. In some situations, the KWS has been accused of extra-judicial killing, torture and disappearance of suspects. Such abuses are rarely investigated and prosecuted (Amnesty International, 2016; Bryant and Shabibi, 2017). The local people unlikely report poaching incidents to the Service with such distrustful past practices (UNODC, 2012). To improve the image of the KWS and gain support for community policing, the training may focus also on public/community relations among KWS' personnel.

It has been often reported that poor security at seaports and airports facilitated the trafficking of wildlife products. JKIA in Nairobi and Kilindini Port in Mombasa are key transit routes (Weru, 2016). At JKIA, the wildlife-sniffing dogs are mobilized apart from custom control sniffing dogs, but many reports have confirmed that the Airport has much room for improvement in tightening its security (Gumbo et al., 2016). In March 2017, for instance, about 112 kg of rhinoceros horns were confiscated at Noi Bai International Airport (Vietnam). These goods were shipped from JKIA (Vietnam net, 2017). Partly to deal with this weak security at the airport, the Manyani Training Field School has started training some Kenya Port Authority staff (Karanja, 2012; Kenya Wildlife Service, 2018b).

The KWS also solicits for support from international organizations particularly to enhance its investigation and prosecution capacity. In November 2014, for instance, the United Nations Office on Drugs and Crime (UNODC) organized "Recovering the Proceeds for Wildlife and Forest Crimes" workshop in Kenya. The workshop brought together 40 participants that included prosecutors, investigators, custom officials, the Kenya Revenue Authority, the judiciary and wildlife authorities for training. In the same year, UNODC signed a Memorandum of Understanding with Kenya to establish the Container Control Program to prevent illegal trafficking and smuggling via seaports (UNODC, 2014). Also, African Wildlife Foundation supported the KWS to strengthen its Canine Unit at JKIA (Gumbo et al., 2016).

4.4.2 Prosecution and judicial system

Until recently most of poachers who were arrested for wildlife crimes were not brought to court. For instance, no court cases regarding rhinoceros horns and ivory trafficking were

reported in Mombasa County between 2008 and June 2013 even though a large number of contrabands was seized there (Kahumbu et al., 2014). In the same period, only about 4% of wildlife crime suspects were convicted for a jail term. In 2014, out of 1,430 suspects for wildlife crimes only five were related to rhinoceros poaching and trafficking (Gitari et al., 2016). In 2013 and 2014, however, 59 and 35 rhinoceros were poached respectively (Poaching Facts, 2018).

Corruption among law enforcement officials has obstructed law enforcement. Regarding trafficking ivory tusks and rhinoceros horns, about 60% of the offenders were found guilty from 2008 to 2013, but only less than 7% was sentenced for a jail term. The rest received fines (Kahumbu at el., 2014). About 11% of elephant and rhinoceros cases were dismissed by magistrates or withdrawn by prosecutors. The offenders were discharged allegedly due to lack of evidence, missing case files, incomplete investigation and/or lack of preparation for the prosecution. The KWS rarely appealed (Kahumbu at el., 2014). Kahumbu *et al*. (2014) showed that only poachers were convicted.

Wildlife case file mismanagement has been found deficient. From 2008 to mid-2013, about 70% of reviewed wildlife case files went missing (Kahumbu at el., 2014) partly due to poor record keeping (UNODC, 2012; Kahumbu at al., 2014). Kenya's Judicial Transformation Framework (2012-2016) tried to adopt the electronic filing system and digitize court records and proceedings. The judiciary has started adopting text message-based inquiry to inform parties and people about the status of their cases. In early 2018, pilot studies were launched at a few courts (Wakaya, 2018; Maina, 2012).

Since 2011, Kenya has run the Environment and Land Court with the status of the High Court. Its decisions can be appealed to the Court of Appeal (Environment and Land Court Act, 2011; Constitution of Kenya, 2010). Also, magistrate courts can hear environment and/or wildlife crime cases (Constitution of Kenya, 2010). There are about 116 magistrate courts throughout the nation (Judiciary, 2018). To enhance courts' capacity to deal with wildlife crimes, the KWS has collaborated with UNODC to educate some judges and magistrates about wildlife crimes (UNODC, 2014).

Accountability and integrity of the Judiciary are essential for wildlife justice. The corrupt judiciary can cripple community policing, law enforcement, investigation and prosecution efforts. The local communities, conservation agencies, law enforcement authorities, investigators, prosecutors and judges should all have a common goal of protecting

wildlife (UNODC, 2012). In Kenya, the Judiciary Ombudsman provides a platform for the public to issue complains to address administrative justice in the Judiciary (Judiciary, 2018).

The wildlife cases are now prosecuted by the Office of Director of Public Prosecution. The Office has a specialized Environment and Wildlife Section (Office of the Director of Public Prosecutions, 2016b) that facilitates collaboration between investigators and prosecutors. Prior to this, the KWS took prosecution tasks. Instead of prosecuting, the Service now provides evidence to the Public Prosecution Office.

In 2015, the KWS established a wildlife forensics laboratory with support from the WWF, the United States Embassy in Kenya, the Canadian government and the East African Community (Karanja, 2015). The KWS also collaborated with the University of Pretoria and Jomo Kenyatta University of Agriculture and Technology to develop the Rhinoceros DNA Indexing System (RHoDIS) (WWF, 2012).

Finally, witness protection is not yet widely used for wildlife crimes although it is important to secure testimonies against serious and organized crimes, especially wildlife crime cartels (Kramer, 2010). The Kenya Witness Protection Agency was established in 2008 (Witness Protection (Amendment) Act, 2016), but somehow the KWS has been excluded from the Witness Protection Advisory Board (Witness Protection (Amendment) Act, 2016).

4.5 Summary

The 2013 wildlife law and institutional reforms have been a great impetus for the KWS to extend its anti-poaching works in collaboration with various agencies and international organizations. Prosecution against wildlife crimes largely improved due to a better synergy and capacity building activities in the last five years. However, in the course of this research, I also found some more room for improvement in establishing an institutional synergy. For example, the KWS, the Intelligence Unit, the National Intelligence Service and the Wildlife Justice Commission collaborate for expansive intelligence-based investigations against environmental crime cartels. Here I argued that community policing could be further promoted to empower local communities for reducing poaching (Figure 4.2). Some liaison officers can enhance communication between the KWS and local tribes in sharing information about poaching. To bring more people to the anti-poaching side, a financial compensation scheme for witnesses, and witness protection can further motivate people to testify in court. Also, the cases involving rhinoceros and other endangered species could be heard and determined by the Environment and Land Court. This may help expedite wildlife crime cases

litigation. In the future, county environment courts may be established to better handle specialized prosecution of environment and wildlife crimes. To enhance wildlife justice and win public confidence, the KWS and the judiciary should observe accountability and transparency.

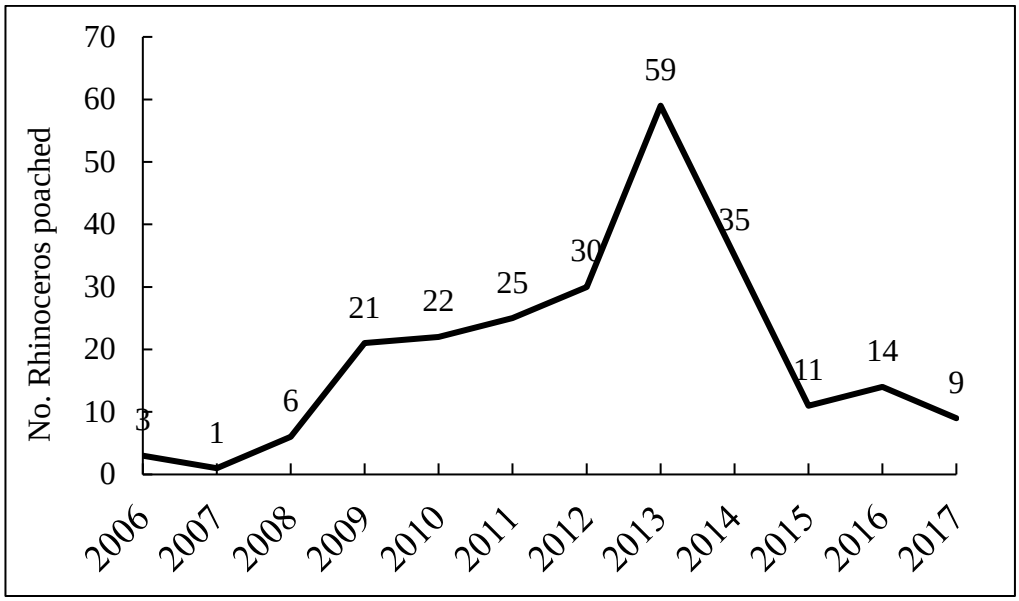

Figure 4.1 Rhinoceros poaching trend in Kenya

Source: Poaching Facts, 2018; Save the Rhino, 2018; Kenya Wildlife Service, 2017c

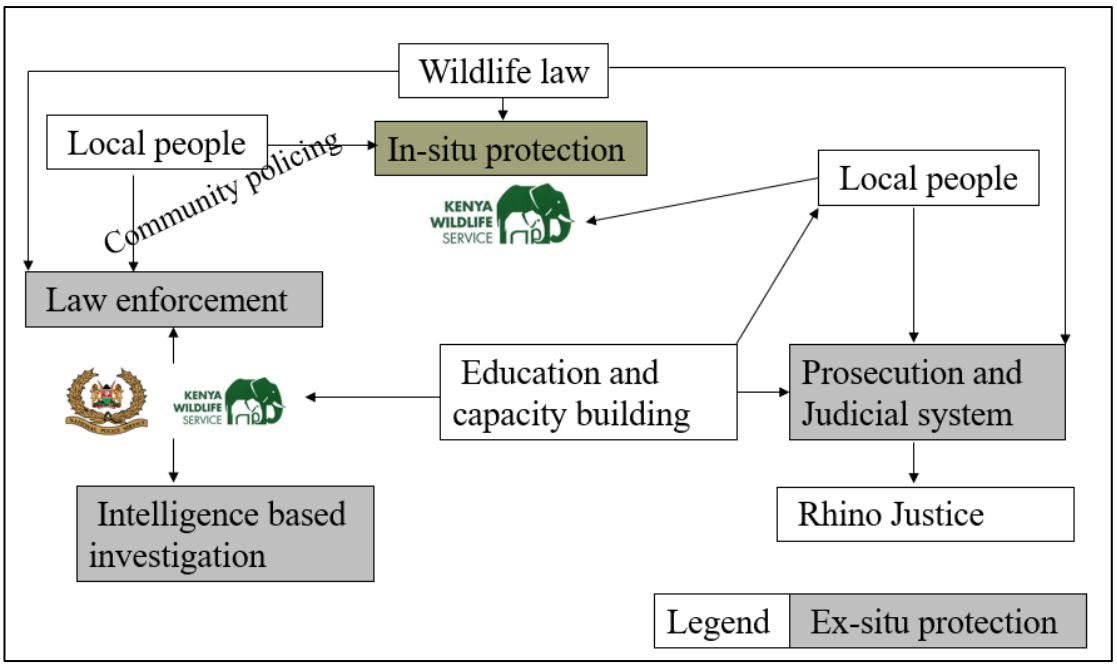

Figure 4.2 Synergy outlook for rhinoceros protection in Kenya[8]

[8] This synergy outlook figure illustrates how stakeholders like local people, the KWS, and the local police are interconnected in in-situ and ex-situ levels to protect rhinoceros.

Chapter 5 Kenya-Tanzania Conservation Synergy for Migratory Lesser Flamingoes

5.1 Introduction

Every year, about 850,000 lesser flamingoes (*Phoenicoparrus minor*) migrate between Kenya's Lake Nakuru and Lake Natron in Tanzania. These two countries play significant roles in protecting this species as they provide habitat to at least 77% of the world's lesser flamingoes. Recently the population has been declining (Table 5.1) partly due to habitat loss and lack of effective collaboration for its conservation (Nasirwa, 2000; BirdLife International, 2012a). Therefore, good cooperation and institutional synergy between Kenya and Tanzania are essential for sustainable conservation of this species. This chapter explores the challenges to establishing a Kenya-Tanzania transboundary conservation synergy for the migratory lesser flamingoes.

In Kenya and Tanzania, the protection of these birds and the habitat conservation differ considerably. In Kenya, the lesser flamingo habitats are protected areas, but in Tanzania they are either partially protected or not protected (Childress et al., 2007). This paper mainly focuses on Lake Nakuru in Kenya, an important single forage site for about 850,000 flamingoes (Nasirwa, 2000) and Lake Natron in Tanzania, the single most important regular breeding site for 1.5 to 2.5 million flamingoes (BirdLife International, 2016; Childress et al., 2007).

Flamingoes are the main tourist attractions at Lakes Nakuru and Natron. Lake Nakuru National Park is one of the most visited parks in Kenya with approximately 245,000 to 300,000 tourists annually (Nyunja, 2012; IUCN, 2017). Through tourism, the flamingoes contribute about US$26 million in Kenya and US$1 to 5 million in Tanzania (Wildlife Division, 2010). Therefore, a threat to lesser flamingoes and these two key habitats will possibly affect tourist revenues (BirdLife International, 2012a).

5.1.1 About the lesser flamingo

The lesser flamingo global population was estimated to be in the range of 1,960,000 to 2,980,000 (Wetlands International, 2012). It is listed as a near threatened species on the IUCN Red List, on Appendix II of the CITES, and on Appendix II of the CMS (BirdLife International, 2016; CITES, 2018; CMS, 2018). This necessitates the need for transboundary cooperation for their effective conservation.

About one to two million lesser flamingoes breed in Lake Natron (Childress et al., 2007). The lesser flamingoes thrive in shallow and highly alkaline lakes mainly in the eastern Rift Valley, such as Lakes Bogoria, Elmenteita and Nakuru in Kenya and two others at Manyara and Natron in Tanzania (Childress et al., 2007; Nasirwa, 2000). They migrate as a group between these alkaline lakes. A tracking survey in Kenya indicated that in a span of fifteen months, the birds made up to 70 visits to as many as 11 lakes in Eastern Africa (Childress et al., 2007).

Every year between August and September, about 850,000 flamingoes migrate from Lake Nakuru to Lake Natron for breeding. The peak breeding period is between October and November. They migrate back to Kenya between February and April. The migration period is largely determined by hatching period (Elowitt, 2015).

5.2 Characteristics at Lake Nakuru and Lake Natron

Lake Nakuru is located inside Lake Nakuru National Park. The Lake has a surface area of about 45 km^2. The mean depth of this closed Lake is 2.5 meters (maximum 4.5 meters). It is also highly alkaline with a water pH of about 10 (Odada et al., 2006). Its water sources include Baharini Springs and five seasonal rivers (the Njoro, Nderit, Makalia, Naishi and Larmudiak rivers) (Gichuhi, 2013). Lake Nakuru is commonly known as "the Bird Watchers' Paradise" (Kenya Wildlife Service, 2017a) as it is home to thousands of flamingoes (Gichuhi, 2013). The Lake was designated as the conservation area in 1957 and the bird sanctuary in 1960. Due to its importance particularly in flamingoes' conservation, it was designated as a Ramsar site in 1990 and an Important Bird and Biodiversity Area in 1999 (Odada et al., 2006; UNESCO, 2017).

Lake Natron, a soda lake, is located at 02^0 21'S and 25^0 00'E in northern Tanzania near the Kenya-Tanzania border. This Lake sits within a closed basin with approximately 930 km^2 of the surface area. It has a shallow basin with a maximum depth of 2 meters. It is highly alkaline with an average water pH of 12. The Southern Ewaso Ngiro River that rises from the Mau Forest catchment in Kenya primarily feeds the Lake. Other three small rivers, the Ngare Sero, Moinik and Pinyinyi, also run into the Lake (Ramsar, 2001).

Lake Natron is the single most important breeding ground for the lesser flamingoes in the world. Approximately 1.5 to 2.5 million of them breed here. The Lake also has about 30% of the world's population of the threatened chestnut-banded plover (*Charadrius pallidus*)

(BirdLife International, 2012a). Due to its importance, in 2001, it was listed as a Ramsar site and as an Important Bird and Biodiversity Area (Ramsar, 2001; BirdLife International, 2018).

The pastoralist communities also inhabit the Lake Natron Basin. About 95% of them belong to the Maasai tribe. Livestock, Maasai's main livelihoods, largely depends on the Lake Natron ecosystem. The Tribe also supplement their incomes through small farm irrigation and tourism (BirdLife International, 2012a).

5.3 Threats

5.3.1 Soda ash mining in Tanzania

One of the major threats to the lesser flamingoes is a plan to mine soda ash in Lake Natron. In 2006, the Tanzanian government announced a plan to have a soda ash factory at the Lake. The factory was expected to bring a net income of US$480 million. The National Development Corporation's research indicated that the soda ash mining would not have any negative impacts on the lesser flamingoes (BirdLife International, 2012a).

However, many raised concerns about this plan. Some said that the disruption to the breeding site would occur as a result of water pollution and the usage of heavy machineries. It was estimated that about 129,000 liters of fresh water per hour would be required to run the factory. This would threaten water security in this semi-arid region. Others feared that the factory would negatively affect local communities' livelihoods that directly depend on Lake Natron (BirdLife International, 2012a; Kadigi et al., 2014).

In 2007, the BirdLife International and Lake Natron Consultative Group launched the "Think Pink" campaign to save the lesser flamingoes. This Consultative Group is the coalition of 56 organizations. These organizations undertook intensive national, regional and international pressure campaigns and collected a large number of petitions against the plan. These activities successfully placed great pressure on the Company. On May 22, 2008, the Tata Chemicals Limited officially withdrew from the soda ash mining plan (BirdLife International, 2012a; Kadigi et al., 2014).

However, this was not the end of the story (BirdLife International, 2012a). In 2011, Tanzania announced its renewed interest in establishing a soda ash mining factory at Lake Natron. This announcement puzzled many economists and policymakers as an earlier cost benefit analysis study indicated that a 50-year investment in soda ash mining at Lake Natron would lead to a loss of up to US$492 million. Alternative options were presented, including

tourism and ecosystem conservation, which was estimated to yield benefits up to US$157 billion in 50 years (BirdLife International , 2012b).

5.3.2 Other concerns over habitat loss

Another threat lesser flamingoes face is drastic water level fluctuations in Lake Nakuru. In 2013, for example, the Lake water level rose rapidly and expanded lake's size from 27% to 40% of the National Park area. The water level rise reduced alkalinity, forcing flamingoes to move to neighboring Great Rift Valley lakes like Elmenteita and Bogoria in Kenya (Nyabuti, 2015).

The deforestation and encroachment of the Mau Forest is another threat. These are partly blamed for the water fluctuation problem discussed above. The Mau Forest is the main catchment area for Lakes Nakuru and Natron. Four of the five seasonal rivers that feed Lake Nakuru, and the Southern Ewaso Ngiro River that drains into Lake Natron, arise from the Mau Forest. Some studies estimated that 41% of the Forest was lost between 1973 and 2009 (Khamala, 2010; Olang and Kundu, 2011). Since 2009, the Kenyan government has attempted to enhance catchment conservation (KWTA, 2016). In chapter 3, I illustrated that overlapping mandates hindered effective collaboration and conservation of the Forest.

Both lakes also have experienced agricultural pollution. Most farmers in Njoro and Elburgon regions in Kenya (eastern part of the Mau Forest) have used synthetic agrochemicals extensively and polluted rivers that flow into Lake Nakuru (Gichuhi, 2013). The damming of the Southern Ewaso Ngiro River in Kenya for irrigation purposes has obstructed the normal water flow. Extensive irrigation activities resulted into pollution with synthetic agrochemicals (Ramsar, 2001).

5.4 Factors impeding Kenya-Tanzania collaboration

5.4.1 Inadequate compliance with international agreements

Kenya and Tanzania face these challenges on top of their obligations to meet international treaty requirements. Lake Nakuru (Ramsar, 2005) and Lake Natron (Ramsar, 2001) are designated Ramsar sites. After ratifying the Convention on Wetlands of International Importance especially as Waterfowl Habitat (mainly known as the Ramsar Convention), these countries promised to establish a number of proper wetland conservation measures, including the protection of migratory waterbirds (UNESCO, 1994). The Convention calls for a proper management in the "shared wetlands." Although it does not define the shared wetlands, with

the proper emphasis on migratory waterbirds, one may argue that Lake Nakuru and Lake Natron are virtually shared through the frequent migration of the lesser flamingoes between these two lakes.

Kenya and Tanzania have agreed to cooperate in protecting migratory species by ratifying other transboundary agreements. The CMS and the AEWA require respective parties to take coordinated efforts to protect migratory (waterbird) species (AEWA Resolution 6.1, 2015; CMS, 1979). The lesser flamingo is listed in the Appendix II of the CMS. The Convention requires member states with species listed in this Appendix to develop regional agreement(s) that foster conservation and management of shared species (CMS, 2018). So far, Kenya and Tanzania have not done so.

However, partly to respond to AEWA and CMS requirements, Kenya (in 2008) and Tanzania (2010) developed the National Single Species Action Plan for the Conservation of the Lesser Flamingo (Wildlife Division, 2010). The East Africa Regional Lesser Flamingo Network coordinates these action plans and shares information about conservation status. Nonetheless, the KWS of Kenya and the Wildlife Division of Tanzania that undertake wildlife conservation activities are not prepared for establishing transboundary conservation actions for migratory birds. The agencies are rather specialized in protecting and safeguarding mainly mammalian and carnivorous species (Mbaria and Ogada, 2017).

Also, the Tanzanian government does not appear to be committed to implementing the Ramsar Convention requirements in managing Lake Natron. Going back to the soda ash mining case, for example, the Convention requires parties to notify the Secretariat about planned developments on Ramsar sites if they will or likely affect ecological characteristics (UNESCO, 1994). Tanzania did not inform the Secretariat about its plan to mine soda ash (BirdLife International, 2012a).

The Tanzania government might have found it unnecessary to inform the Secretariat because it believed that the mining would not affect Lake Natron's "ecological characteristics." However, it has also ratified Principle 15 of the Rio Declaration on Environment and Development (UNCED, 1992), CBD, (CBD Decision II/10, 1995) and the AEWA's second fundamental principle (AEWA Resolution 6.1, 2015). These principles and decision promote the precautionary principle.

Resolution VII.16 of the Ramsar Convention requires that a project that "potentially" alter the ecological character of a Ramsar site should be subjected to a rigorous impact assessment (Ramsar Convention Resolution VII.16, 1999). This Resolution is not alone. The

Convention on Biological Diversity and the AEWA expect that all countries with a shared basin/wetland should be involved in the environmental impact assessment process (UN, 1992; AEWA Resolution 6.1, 2015). In promoting the soda ash mining, Tanzania did conduct the environmental and social impact assessment, but it did not carefully consider impacts on lesser flamingo breeding. Only selective information was made available to the public and relevant stakeholders (BirdLife International, 2012a).

Kenya has also been partially blamed for threatening the lesser flamingo breeding site at Lake Natron (Ramsar, 2001; Clamsen et al., 2011). It constructed Oletukat Olenkuluo, Leshota and Oldorko dams on the Southern Ewaso Ngiro River for water supply, irrigation and hydroelectric generation (Alliance of Leading Environmental Researchers and Thinkers, 2017). This River is the primary water source for Lake Natron and plays an important role in maintaining the Lake ecosystems (Ramsar, 2001). The dams are reducing sediment/nutrient flows into the Lake and causing the decline of blue algae, which is the main plant the lesser flamingoes feed on (Alliance of Leading Environmental Researchers and Thinkers, 2017; Ramsar, 2001). Kenya and Tanzania did not conduct the environmental impact assessments together for the construction of these dams though required under the CBD (UN, 1992) and AEWA (AEWA Resolution 6.1, 2015).

5.4.2 Legal and regulatory frameworks for collaboration

Regarding regional transboundary legal frameworks, negotiating over the proposed East Africa Federation, six countries in the East African Community (Burundi, Kenya, Rwanda, South Sudan, Tanzania, and Uganda) have shown interests in collaboratively managing the environment. As a result, the 2006 East Africa Protocol on Environment and Natural Resources Management was established. Nonetheless, Tanzania has not signed it (Wabunoha, 2008). This has impeded transboundary conservation initiatives to protect lesser flamingoes. Also, the capacity of the East Africa Court of Justice is still limited in resolving environmental disputes. The implementation of the Protocol plays an important role in further empowering this Court.

Legislative frameworks are necessary for building foundation for joint policies and action plans. The two countries have established wildlife protection laws. Kenya has the Wildlife Conservation and Management Act (2013). Tanzania has the Wildlife Conservation Act (2009). The implementing agencies are the KWS and the Wildlife Division of Tanzania. These laws authorize these responsible agencies to conserve wildlife and combat wildlife

crimes. They also provide avenues for regional cooperation in the management of transboundary wildlife conservation areas. Waterbird species are implicitly protected.

The National Wildlife Conservation and Management Policy of Kenya (2017) (MENR, 2017) and the Wildlife Policy of Tanzania (2007) (MNRT, 2007) promote collaboration with relevant regional and international stakeholders in implementing these policies. So far, Kenya and Tanzania have established collaboration in the management of the Mara River Basin particularly to protect wildlife migration between Serengeti National Park (Tanzania) and the Maasai Mara National Reserve (Kenya). Although this type of cooperation has not yet been done for the lesser flamingoes, the Mara River case demonstrates the possibility for doing so.

Kenya and Tanzania have legal grounds to establish better collaboration and policy synergy. Article 109 of the Kenya Wildlife Management and Conservation Act (2013) and Article 94 of the Tanzanian Wildlife Conservation Act (2009) similarly stipulate that responsible ministers in both countries have power to negotiate over regulations and conservation measures for transboundary habitats. These Articles mandate them to ensure compliance with ratified international agreements. These provisions possibly pave way for joint ministerial committee/meeting on the conservation of migratory flamingoes and their shared habitats. The committee can recommend on how these countries can collaboratively manage wildlife.

The two countries have already collaborated on the management of the Mau Forest mainly under the Lake Victoria Basin Commission and the Mara River Transboundary Water Users Forum (WWF, 2010). A similar effort can be done for effectively managing the Southern Ewaso Ng'iro River, another transboundary water body. The water laws mandate the Water Resources Authority of Kenya (Water Act, 2016) and the Water Resources Division of Tanzania (Water Resources Management Act, 2009) to coordinate with regional stakeholders in using transboundary water resources. The collaboration can help determine the quantity of water stakeholders can use/share. The two authorities can help the KWS, Tanzania's Wildlife Division and other relevant stakeholders to monitor water quality standards in the Southern Ewaso Ng'iro River to reduce and/or prevent pollution in Lake Natron.

The two countries also need to establish dispute resolution mechanisms in case there is lack or mismanagement of shared resources and overlapping claims to water. One option is to empower the East Africa Legislative Assembly to develop binding regional/bilateral environmental laws. This will enable the East Africa Court of Justice to effectively address

transboundary environmental disputes and crimes. In the absence of the legal ground, a joint ministerial committee can alternatively address some disputes. Community authorities can also resolve small conflicts. This is likely to be effective considering Maasai people are the main residents around Lake Natron in both Kenya and Tanzania. They can easily communicate in both Maasai and Swahili.

5.4.3 Research and monitoring

Research is often seen as a major drive for collaborative environmental governance particularly for migratory waterfowls (Kirby et al., 2008). Understanding their migration route, breeding habitats and their interaction within an ecological context is essential for their conservation and effective collaboration. Research on migratory species helps to inform policies and aid the development of transboundary conservation plan and bilateral/multilateral agreements.

Lack of sufficient scientific information about lesser flamingoes and their habitats has hindered their conservation and Kenya-Tanzania collaboration. For instance, very limited studies have been published that inform environmental impact assessment on soda ash mining in Lake Natron (BirdLife International, 2012a). There are no established data sharing methods among the key conservation agencies, hence limiting the accessibility of data (Iliffe et al., 2011).

Research institutions for wetlands and water birds play important roles in facilitating collaborative research between Kenya and Tanzania. The KWS and the Wildlife Division of Tanzania are the closest agencies responsible for management and conservation of the wetlands. The KWS manages Lake Nakuru and Wildlife Division manages Lake Natron. The Division has an independent research body, the Tanzania Wildlife Research Institute (TAWIRI), for conducting and coordinating wildlife research. It has not yet focused on waterbirds, however (TAWIRI, 2018). The KWS has no independent research institute to conduct research not only on the wetlands but also on wildlife conservation. The Wildlife Conservation and Management Act (2013), however, mandated the establishment of the Wildlife Research and Training Institute.

Financial constraints and insufficient institutional capacity are serious challenges to the KWS and the Wildlife Division of Tanzania. Monitoring migratory birds is an expensive task. So far, the Nakuru branch of the KWS has no wetland division or staff (Chapter 3). The

KWS's headquarter in Nairobi, which is the Kenya's focal point for the Ramsar Convention, has a wetland department with less than five employees.

In 1991, Kenya started taking the African Waterbird Census in collaboration with Wetlands International. The lesser flamingos' censuses are frequently conducted in Lakes Bogoria and Nakuru by reserve/park staff (Iliffe et al., 2011). The censuses are less frequently conducted in Tanzania (Clamsen et al., 2011; Iliffe et al., 2011). However, as there has not been an attempt to count the number by two countries, it is still challenging to estimate the actual population and changes of eastern African lesser flamingoes.

Collaboratively monitoring and sharing information are important to conserve flamingoes and other migratory bird species. For example, if the Wildlife Research and Training Institute is established, it can propose a memorandum of understanding with TAWIRI to conduct joint research on migratory species. Research institutions also need to harmonize research permits for transboundary research. To encourage information sharing and dissemination, the two institutions can organize frequent conferences in partnership with local universities and relevant stakeholders.

Synergy in research can also be developed through inter-university collaboration, not only between the two countries but also with universities from other countries. This can help overcome financial burden at least partially. If possible and where necessary, migratory bird research can involve governmental and NGOs, such as the African Conservation Center, African Wildlife Foundation, BirdLife International, Japan International Cooperation Agency, KWS, IUCN, Tanzania National Park Authority, Wetlands International, Wildlife Division of Tanzania, and WWF, among others.

5.5 Summary

This chapter has argued that Kenya and Tanzania have much room to improve the conservation of the lesser flamingoes. The frequent migrations of the lesser flamingoes between Lakes Nakuru and Natron require wildlife protection officials to more actively engage in transboundary conservation activities. Kenya and Tanzania so far have not adequately ratified and observed international agreements that are relevant to the protection of the lesser flamingoes. One potential option to improve transboundary synergy for wildlife conservation is to empower the East African Legislative Assembly to develop binding regional environmental laws. This Assembly may also enable the East Africa Court of Justice to better address transboundary environmental mismanagement and crimes.

Table 5.1 Estimated global population of lesser flamingoes

Regions	Minimum	Maximum	Status
Eastern Africa	1,500,000	2,500,000	Declining
Southern Africa	55,000	65,000	Stable
South Asia	390,000	390,000	Unknown
West Africa	15,000	25,000	Stable
Total	1,960,00	2,980,000	

Source: Wetlands International, 2012

Chapter 6 Conclusion and Recommendations

6.1 Main findings

In the previous four case study chapters, I explored fragmentation and synergy in wildlife governance in Kenya. First, Chapter 2 examined how wildlife governance has changed over years in Kenya (Objective 1). Chapter 3 illustrated governance fragmentation in the management of Lake Nakuru National Park and Lake Nakuru watershed (Objective 2). Chapters 4 and 5 focused on the conservation and governance of two key species of Lake Nakuru National Park. Here, I discussed challenges impeding collaboration in the conservation of nationally endangered rhinoceros species (Objective 3) and near threatened migratory lesser flamingoes (Objective 4).

In Chapter 2, I found that centralized and exclusive wildlife governance is largely applied where local people, their values, knowledge and use rights are excluded in wildlife conservation. The weakened traditional governance systems, marginalization of the local people, and continuous treatment of local people as a threat to wildlife (by the authorities) have aggregately contributed to their low willingness to collaborate with authorities in wildlife conservation.

I also found that wildlife conservation and governance have been separated from environmental issues and local livelihoods. This compartmentalization has limited meaningful public participation in wildlife conservation. Rather, interests in tourism (through safaris) have considerably determined courses of KWS activities. In particular, KWS's heavy emphasis on tourism at Lake Nakuru National Park tends to highlight certain species of animals even though it could have advertised more on Park's wetland heritage under the protection of the Ramsar Convention and the UNESCO world heritage.

However, in Chapter 2, I discovered that the KWS has growingly understood the importance of collaboration with local communities. This has been manifested in the new wildlife law (2013). The Act recognized public participation as one of key principles for wildlife conservation. It mandates administrations to engage in public consultation in developing wildlife and wetland management plans as well as marine conservation and national parks operation. It is expected that this will enhance wildlife conservation and human-wildlife coexistence.

Chapters 2 and 4 revealed that wildlife laws in Kenya are largely designed to curb poaching and protect endangered and key animal species (commonly known as the big five).

In Chapter 3, I demonstrated that the militarization of the KWS has resulted into further alienating local people from wildlife governance.

Nevertheless, Chapter 4 exemplified the KWS has adopted several collaborative initiatives to conserve endangered species such as rhinoceros. Annually, for instance, the KWS collaborate with different stakeholders to create awareness on rhinoceros conservation during the 'Cycle with the Rhino' event. Also, in 2014, they partnered with the WWF to insert microchips into rhinoceros bodies. Rhinoceros are now easily tracked, monitored and identified.

Although in-situ conservation has led to protection of endangered species, a closer examination of the roles the KWS has played revealed some gap areas (Chapter 3). It has not dealt with its responsibilities for the protection of the wetland and waterbirds. It needs to conduct more research on wildlife and other areas that are relevant to national park governance. For instance, the KWS is the national focal point for the Ramsar Convention that promote wise use of wetlands and sustainable conservation of waterbirds. Nonetheless, in Chapter 3, I found that the KWS did not adequately address these responsibilities. Also, in Chapter 5, I noted that the KWS was not prepared to collaborate with Tanzania authorities to effectively conserve the critical habitat of migratory lesser flamingoes.

Insufficient and overlapping environmental laws have also hindered effective collaboration and coordination in wildlife and wetlands governance. For instance, Chapter 3 indicated that the conservation of Mau Forest (main water catchment for Lake Nakuru) is characterized by administrative overlaps between the KFS, KWS and Water Resources Authority. Also, Chapter 5 revealed that insufficient wetlands and waterbirds laws have impeded effective collaboration in the conservation of migratory lesser flamingoes.

6.2 Recommendations

Through identifying the above findings, I have listed the following four areas to be improved further in the future: (1) community participation, (2) in-situ and ex-situ anti-poaching coordination, (3) jurisdictional overlap and fragmentation, (4) environmental law reform, and (5) future research areas for wildlife governance. Below I discuss my ideas about how the Kenyan government, especially the KWS, may act in the future.

(1) To promote meaningful community participation, which is part of good governance principles, I propose that the KWS should adopt wildlife democracy: that is, wildlife conservation for the people by the people. Rather than increasing protected areas and

empowering private conservancies (that tend to limit local people from wildlife conservation), the KWS should empower local communities to promote human-wildlife co-habitation particularly in rangelands. Through this system, wildlife shall be conserved, and pastoralist livelihoods and their culture maintained. Also, this can be another form of tourism. The proposed possible synergy outlook for Lake Nakuru National Park identifies different roles that local people could play in wildlife conservation and protection both in in-situ and ex-situ areas (Figure 6.1).

(2) To enhance in-situ and ex-situ coordination against poaching rhinoceros and other species, I developed a synergy outlook for rhinoceros conservation in Chapter 4 (Figure 4.2). This is also captured in the proposed synergy outlook for Lake Nakuru National Park (Figure 6.1). Here, in-situ sites refer to rhinoceros sanctuaries. The wildlife law provides legal framework for conservation of endangered species. The KWS could promote effective collaboration with the communities surrounding protected areas. The local people are key stakeholders in rhinoceros conservation and promotion of wildlife justice. At in-situ levels, they can tip off KWS about potential poachers, they can enhance enforcement through community policing, and they can act as witnesses in court. Also, considering poaching is a well-organized, the KWS could seriously consider adopting intelligence-based investigation. It can enhance its collaboration with the National Police Service and the National Intelligence Service.

To expedite wildlife crime litigation, wildlife crimes could be prosecuted at the Environment and Land Court. In the future, county environmental courts could be established to better handle environmental and wildlife crimes. To increase witnesses' willingness to testify, witness protection and proper compensation should be provided.

(3) To effectively address challenges posed by jurisdictional fragmentation in the conservation of Mau Forest, trans-county/inter-sectoral coordination committees could be established. These committees should at least have representatives from the four counties sharing the Mau Forest (Bomet, Kericho, Nakuru and Narok), national government lead conservation agencies (KFS, KWS, KWTA, Water Resources Authority) and the local people. The representatives of the local people should be carefully selected to avoid the danger of involving just local elites. For instance, forums could be organized for the local people to identify their representatives.

(4) Environmental law reforms are required to overcome legislative overlaps. For instance, amendments to Environmental Management and Coordination (Water quality)

Regulations (2006), Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations (2009), and the Agriculture Amendment Act (2012) are necessary to standardize the riparian zone distance. The amendments should clearly define agencies in charge of monitoring and controlling water pollution from usage of agrochemicals by small-scale farmers.

To overcome indequate legal framework (in Kenya and Tanzania) for the transboundary conservation of migratory lesser flamingoes, I recommend that signatory countries empower the East African Community Legislative Assembly further to develop binding environmental and wildlife conservation laws. Also, an inter-ministerial meeting committee could be established to enhance coordination and joint planning.

(5) There is need to examine how the national and international designation of Lake Nakuru National Park as a prime park, Ramsar site, UNESCO World Heritage and an Important Bird and Biodiversity Area has impacted on the conservation and governance of the Park. In chapter 4, I explored national synergy for rhinoceros conservation. There is need to examine how Kenya can partner with demand countries to effectively conserve rhinoceros. Also, to induce more community participation, traditional ecological knowledge about wildlife conservation should be investigated and documented.

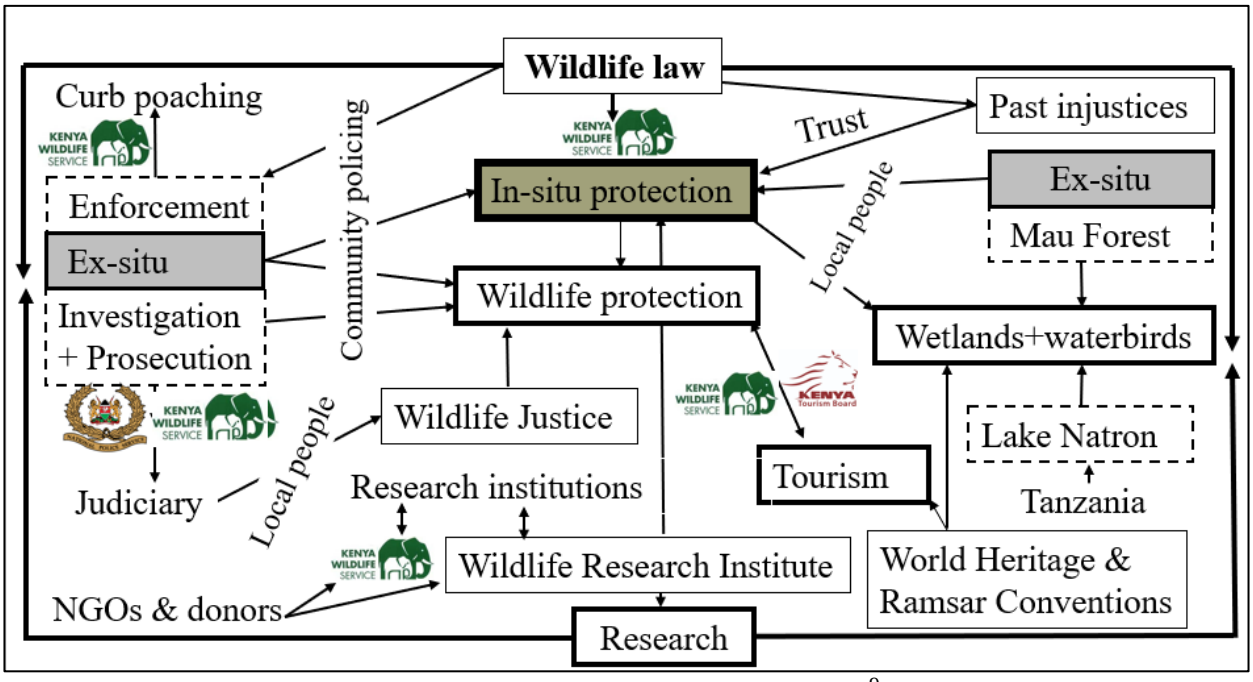

Figure 6.1 Possible synergy outlook for Lake Nakuru National Park[9]

[9] This figure illustrates a potential synergy outlook for sustainable conservation of Lake Nakuru National Park. Overall, wildlife law is expected to provide framework for conservation of wildlife and protected areas like Lake Nakuru National Park. To sustainably conserve the Park, Lake Nakuru wetland, and wildlife (including endangered species and migratory waterbirds), in-situ and ex-situ governance ought to be effectively connected and coordinated. As illustrated in the figure, local people have crucial roles to play ranging from wildlife law enforcement and investigation, acting as witnesses in law courts, and enhancing conservation of ex-situ ecosystems such as Mau Forest. However, one of the challenges is low incentives for local communities to collaborate with wildlife conservation authorities.

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Appendices

Appendix 1.1 NACOSTI National Research Permit

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEACH CLEARANCE PERMIT

Serial No.A 12404

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MR. JOSEPH MUIRURI KARANJA
of THE UNIVERSITY OF TSUKUBA, 4-350 Ibaraki, Japan,has been permitted to conduct research in *Nakuru County*

on the topic: *ADMINISTRATIVE SYNERGY FOR WETLANDS GOVERNANCE IN A JOINT RAMSAR AND WORLD HERITAGE SITE: LAKE NAKURU NATIONAL PARK, KENYA*

for the period ending:
15th December,2017

Permit No : NACOSTI/P/16/33401/15083
Date Of Issue : 16th December,2016
Fee Recieved :Ksh 2000

Applicant's Signature

Director General
National Commission for Science, Technology & Innovation

Appendix 1.2 KWS's Research Permit

KENYA WILDLIFE SERVICE

ISO 9001:2008 Certified

KWS/BRM/5001

5 December 2016

Mr. Joseph Muiruri Karanja
P.O.Box 11304-00100
NAIROBI
e-mail: josentokaranja@gmai.com

Dear Mr. Karanja

PERMISSION TO CONDUCT RESEARCH IN LAKE NAKURU NATIONAL PARK

We acknowledge receipt of your letter dated 1st December 2016 requesting for permission to conduct research on a project titled: '**Administrative Synergy for Wetlands Governance in a Joint Ramsar and World Heritage Site: Lake Nakuru National Pak, Kenya'**. The study will generate data and information to enhance conservation and management of wetland ecosystems in Kenya.

You have been granted permission to conduct the study from **December 2016 – February 2017** upon payment to KWS academic research fees of **ksh.1,200** (data collection). However, you will abide by the set KWS regulations and guidelines regarding acquisition and dissemination of information and that the information acquired will be used for research and education purposes only. You will distribute the research questionnaires to the officers listed below for administration.

You will submit a bound copy of your PhD thesis to the KWS Deputy Director, Biodiversity Research and Monitoring on completion of the study.

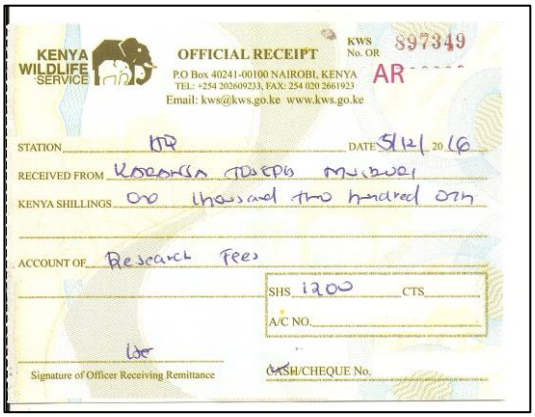
Yours, Sincerely

DR. THADEUS OBARI, PhD
FOR: DEPUTY DIRECTOR
BIODIVERSITY RESEARCH AND MONITORING

Copy to:
- Head Budget Section
- Business & Tourism Development Manager
- Senior Warden, Lake Nakuru N. Park
- Senior Scientist, CRCA
- Head, Wetlands Conservation

P.O Box 40241-00100, Nairobi, Kenya. Tel: +254-20-2609233, +254-20-2609234
Wireless: +254-020-2379407-15. Mobile: +254-735 663 421, +254-726 610 508/9. Fax: +254-020-2661923
Email: kws@kws.go.ke Website:www.kws.go.ke

Appendix 1.3 Receipt for KWS's Research Permit


KENYA WILDLIFE SERVICE

OFFICIAL RECEIPT KWS No. OR 897349 AR

P.O Box 40241-00100 NAIROBI, KENYA
TEL: +254 202609233, FAX: 254 020 2661923
Email: kws@kws.go.ke www.kws.go.ke

STATION NP DATE 5/12/ 2016

RECEIVED FROM KARANJA JOSEPH MUIRURI

KENYA SHILLINGS One thousand two hundred only

ACCOUNT OF Research Fees

SHS 1200 CTS

A/C NO.

Signature of Officer Receiving Remittance

~~CASH~~/CHEQUE No.

Appendix 2 Questions asked by the Taskforce on Sustainable Consumptive Wildlife Utilization

1. Do you support the consumptive use of wildlife (plants and animals)?
   Yes or No? if yes, why?
2. What species would you recommend for wildlife farming, ranching, culling, cropping, research involving off-take or other forms involving consumptive utilization?
3. Which statutory institutional and regulatory regimes should govern consumptive wildlife utilization?
4. Who should enforce the regulations and guidance for sustainable wildlife utilization? (Government) (NGO) (a dedicated independent authority) (Local communities) (KWCA), (other)……..
5. What do you see as the cost and benefits of consumptive use to your members?
6. Which institution(s) should be mandated with conducting monitoring wildlife populations and their utilization and how should it be financed?
7. Should regulation of consumptive utilization of wildlife be the same for fenced and non-fenced lands? Yes or No?
8. Will sustainable consumptive wildlife utilization contribute to:
   a) Local food security? If Yes, how?
   b) Local job creation? If Yes, how?
   c) Other local livelihood? If Yes, how?
   d) Wildlife conservation? If Yes, how?
9. Traditionally, rural communities in Kenya engaged in consumptive utilization of wildlife; how was this done? How was it regulated? Was it sustainable?
10. What role should KWS be expected to play in the development of Consumptive Wildlife Utilization?
11. What are the most burning issues regarding Consumptive Wildlife use?