



# Governance and Challenges of Wildlife Conservation and Management in Kenya

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## Abstract

Wildlife in Kenya is both a national resource and a key source of revenue for the government. Wildlife and tourism are interdependent and essential sectors in Kenya's socio-economic development agenda. This chapter reviews the contribution of wildlife to tourism, wildlife management approaches, policy and legal framework, stakeholder involvement, as well as the challenges facing wildlife conservation and management. The insights and approaches illustrated may be used to formulate and implement solutions to enhance wildlife conservation and management for the benefit of all stakeholders. Kenya is at a crossroads with wildlife management. It is recommended that Kenya embrace a more holistic management approach that integrates effective political and related governance

frameworks. This chapter proposes a novel vision of conservation in Kenya that includes additional space for wildlife, the adoption of a zero-tolerance policy on corruption and wildlife crime, substantial stakeholder participation, and a community-based approach to conservation.

## Keywords

Governance · Challenges · Wildlife · Conservation · Management · Tourism · Kenya

## Introduction

Kenya lies on the eastern coast of the African continent with the equator bisecting the country into two nearly equal parts. Kenya is bordered by the Indian Ocean, Uganda, Tanzania, Ethiopia, South Sudan, and Somalia. It has a total area mass of 582,646 km<sup>2</sup> with a land mass of 571,466 km<sup>2</sup>. Approximately 20% of this mass is arable land, while 80% consists of arid and semi-arid lands (ASAL). Kenya has 7 unique ecosystems, including savannah, forest, woodland, mountain, fresh water, marine-coastal, and urban-cropland, and ranks among the world's richest biodiversity nations with over 25,000 species of animals and 7004 species of plants (Groombridge 1992; Rathbun 2009). Each ecosystem supports a diverse array of biodiversity that is of significant scientific, intrinsic, and

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economic value and has a considerable extent of wildlife habitat, with 10%–12% designated for biodiversity conservation (Government of Kenya 2009; Ojwang et al. 2017). Wildlife is currently hosted and managed in a variety of conservation areas through a landownership tenure system. Land in Kenya, according to Article 61 (2) of the Constitution 2010, is classified as public, or reserved for public use or environmental protection; community, or held by communities on basis of ethnicity, culture, or similar community interest; and private, or held by natural or legal persons (Republic of Kenya 2010a). Wildlife inhabit all categories, with the majority of wildlife inhabiting community and private lands (Waithaka and Western 2005; Western et al. 2009).

Wildlife tourism is a key contributor to Kenya's socio-economic development. Its contribution to Kenya's gross domestic product (GDP) and employment, together with other tourism-related sectors, will be discussed in later sections of this chapter. Wildlife and tourism are, by design, interlinked, with policies and legislative frameworks developed along cohesive lines. This cohesive approach promotes a strategy of connectivity between stakeholders, which are critical in ensuring that wildlife development does not go to naught due to social, economic, or political entanglements.

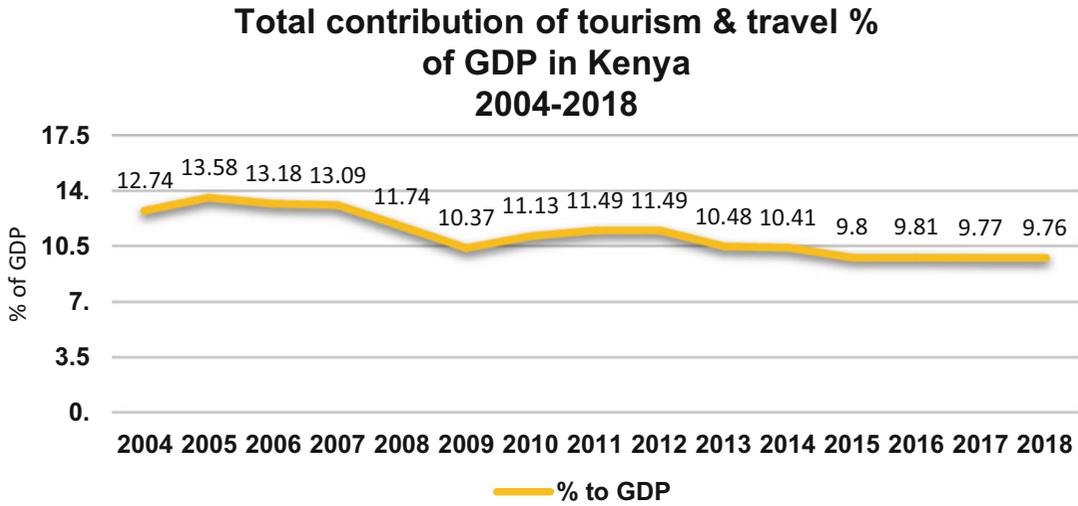
Wildlife and its habitat in Kenya face a suite of chronic and emerging threats, including human population pressure and associated pressure on resources, land use and land cover changes (LULCCs), poverty, climate change impacts, insufficient policies, and political influence or interference. The resulting impact of such threats on wildlife and their habitats includes habitat loss, land degradation, over-utilization of natural resources, poaching and illegal wildlife trade, pollution and invasive species, siltation and over-abstraction of water bodies, and human-wildlife conflict. Over the last four decades, significant negative impacts on wildlife species have resulted in a decline in wildlife populations, as

well as a severe degradation of native habitat Grunblatt et al. 1996; Ottichilo et al. 2000; Ottichilo et al. 2001; Reid et al. 2008; Nyamasyo 2016; Ogutu et al 2016).

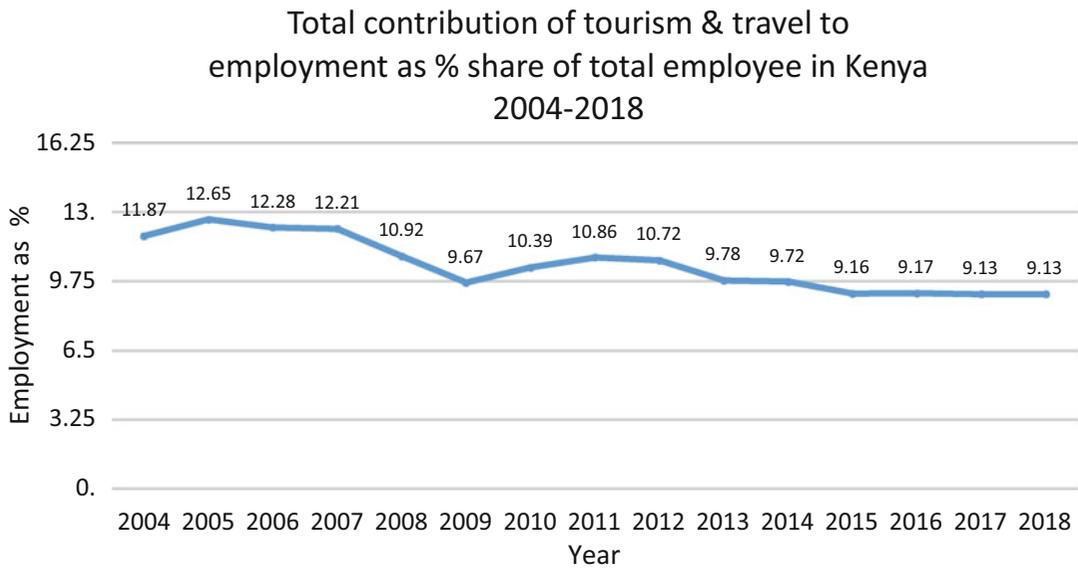
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## Significance of Tourism and Wildlife Sectors in Kenya

Tourism and wildlife sectors are closely interlinked in Kenya, as the tourism industry is primarily wildlife-based, with terrestrial wildlife as the primary draw. Over the past 15 years, tourism has contributed an average of 10.51%–11.26% toward Kenya's national gross domestic product (GDP). Kenya's Vision 2030 is the official developmental blueprint and recognizes tourism as an important sector in attaining the anticipated national GDP growth of 10% per annum (Government of Republic of Kenya 2007). As depicted in Fig. 1, the total contribution to GDP from tourism and travel has been fluctuating for the past 15 years. The sector's share of GDP has steadily declined from 13.84% in 2005 to 9.96% in 2018, although the contribution to socio-economic development in Kenya continues to remain significant. This trend appears to be replicated in the percentage share of total employees in Kenya (Fig. 2). The percentage contributions to the GDP and total workforce are mostly attributed to the numbers and earnings received, as depicted in Fig. 3. Despite the declining GDP contribution, the tourist numbers and earnings have been growing, with fluctuation occurring in 2007–2008. The key cause for the fluctuations in 2007–2008 was the post-election violence, with subsequent security concerns and negative travel advisories from some European source markets that may have influenced tourism to shift elsewhere. However, even with such figures, tourism continues to remain the second largest source of foreign exchange revenue in Kenya following agriculture. In 2018, 2.027 million people visited Kenya, with a revenue of 157.4 billion shillings generated, and tourism



**Fig. 1** Total contribution of tourism and travel % of GDP in Kenya 2004–2018 (Developed from data in Price, R.A. 2017)

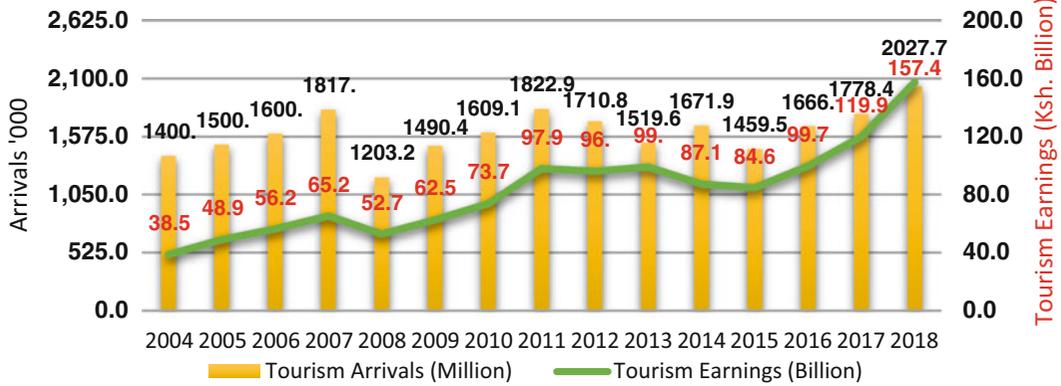


**Fig. 2** Total contribution of tourism and travel to employment as % share of total employees in Kenya 2004–2018 (Developed from data in Price, R.A. 2017)

contributed 9.76% to the country’s GDP. The United Kingdom has been the leading source market for Kenyan tourism, followed by the United States, India, Germany, the United Arab Emirates (UAE), Italy, China, Canada, France,

and the Netherlands (Okello 2014; Price 2017). In Vision 2030, Kenya aims to be among the top ten long-haul tourist destinations in the world offering a high-end, diverse, and distinctive visitor experience (Government of Republic of

## Trends in visitor arrivals & tourism earnings 2004 - 2018



**Fig. 3** International visitor arrivals and tourism earnings from 2004 to 2018 (Developed from Economic Survey Reports 2004–2018)

Kenya 2007; Ministry of Tourism and Wildlife 2018).

### Conservation Management and Approaches in Kenya

This section looks at the development of different strategies of wildlife conservation and management in Kenya and examines some of the factors or conditions that lead to emergence and subsequent adoption of various management approaches. Wildlife conservation in Kenya still bears the scars of the colonial era, when colonialists deliberately excluded indigenous people from their land and hunting rights, utilizing wildlife exclusively for exploitation and recreation. As wildlife resources dwindled, colonial bureaucrats liberally employed statecraft, in which policies of social control for safeguarding flora and fauna that favored a neocolonial premise centered on conquest and land acquisition for government, the elites, and their hobbies. These included the exertion of draconian retribution for locals caught flouting conservation laws and regulations, as well as practices that limited indigenous access to land, wildlife, and other key commercial and subsistence resources, effectively

exerting political and societal control over the indigenous people of Kenya (Neumann 2001; Neumann 2004a; Neumann 2004b; Waitthaka 2012; Mwaura 2016; Kamau and Sluyter 2018; Cockerill and Hagerman 2020).

Kenya has been slow in adapting to the changing models of conservation and management of wildlife that is practiced in other parts of the world. After gaining independence in 1963, the Government of Kenya continued the legacy of its colonial masters by retaining game reserves or converting conservation areas into fully protected national parks, as a means of income generation for the central government and those with political influence. There are three wildlife conservation and management models which have been used in Kenya, namely, the informal conservation and management model; the protected area model, combined with an outreach approach; and the community-based conservation or community wildlife conservancy model. These models are discussed below.

### Informal Conservation Model

Kenyan communities in pre-colonial times (prior to 1800) lived among and utilized wildlife

resources without formally recognized policies and legislation, during which time wildlife thrived in abundance and diversity. Local communities ensured conservation of wildlife resources through proven cultural and social bonds, traditional customs, rules, taboos, beliefs, and practices. This model was used by various ethnic groups, and it enabled them to derive income and livelihoods from wildlife and natural resources, thus offering an important mechanism for maintaining balance in the ecosystem. Sacred beliefs were often tied to wildlife species, thus ensuring conservation principles as a way of life. Those who broke the law were punished by the ancestral spirits. In addition, recreational sport hunting was an abomination in most ethnic groups in Kenya and was disrespectful to the gods who provided the resource. This type of indigenous conservation practice persisted until the advent of colonialism. During colonization, this model was viewed as sub-standard, and western models were adopted. Western laws prohibited local communities from venturing into game reserves, as wildlife and their protected habitats were viewed as property of the white settlers (Neumann 2004a; Neumann 2004b; Waithaka 2012; Kamau and Sluyter 2018).

### Protected Area (PA) Model

The PA model is a fortress conservation model adopted from the Yellowstone National Park model in the United States and forms the cornerstones of virtually all national and international conservation approaches in many countries of the world (Borrini-Feyerabend 1996; Mburu 2004; Jones 2006). It is considered as a top-down, “fence and fines approach,” which is at times punitive to local human populations and was introduced during the colonial era. In Kenya, like in most parts of the developing world, the justification for the creation of PAs during the colonial era was often based on the grounds of preserving wildlife resources, including marine species and their habitats, for the benefit of

those in power and/or the wealthy and privileged of society. Such policies of preservation resulted in a form of social control and spatial segregation between indigenous populations and wildlife, with fixed boundaries between nature, culture, and ultimately society, i.e., to “civilize the local population.” The state protected areas currently stand at approximately 12.34% of the country’s area, all of which have a focus on wildlife conservation. The areas are comprised of 23 national parks, 29,357 km<sup>2</sup> (5.2%); 28 national reserves, 18,042 km<sup>2</sup> (2.8%); 4 national sanctuaries, 37 km<sup>2</sup> (0.01%); 6 marine national reserves, 1063 km<sup>2</sup> (0.12%); 4 marine national parks, 76.3 km<sup>2</sup> (0.01%); and forest reserves, 18,979 (3.33%) (Republic of Kenya 1976; Ministry of Tourism and Wildlife 2018). These are administered as conservation areas (Fig. 4). This system has been posited as arguably one of the best in Africa. However, it must be stated that in setting up the PAs, the colonialist and post-independence government actions of annexation of land were associated with a prodigious number of displacements of local communities, the most controversial being the Tsavo National Park (Kassam and Bashuna 2004; Kamau and Sluyter 2018). Although at the moment this model appears to be one of hope for managing wildlife, in particular for threatened species, it has been considered by some scientists as a “conservation against the people” approach.

Tsavo National Park was carved out from an area of land considered unsuitable for agriculture or domestic livestock farming and unlikely to be required for any other form of land use in the foreseeable future in 1949. The colonial government deemed it viable land for elephant conservation, and as a result, human inhabitation was banned (Sheldrick 1973; Ayeni 1974; Schauer 2015). Local communities were forcibly evicted and further prevented from using the land as a livelihood resource. All hunting, livestock grazing, and land utilization were forbidden. Over the next few decades, displaced ethnic groups, whose livelihoods were closely tied to sustainable land use, suffered a loss of cultural

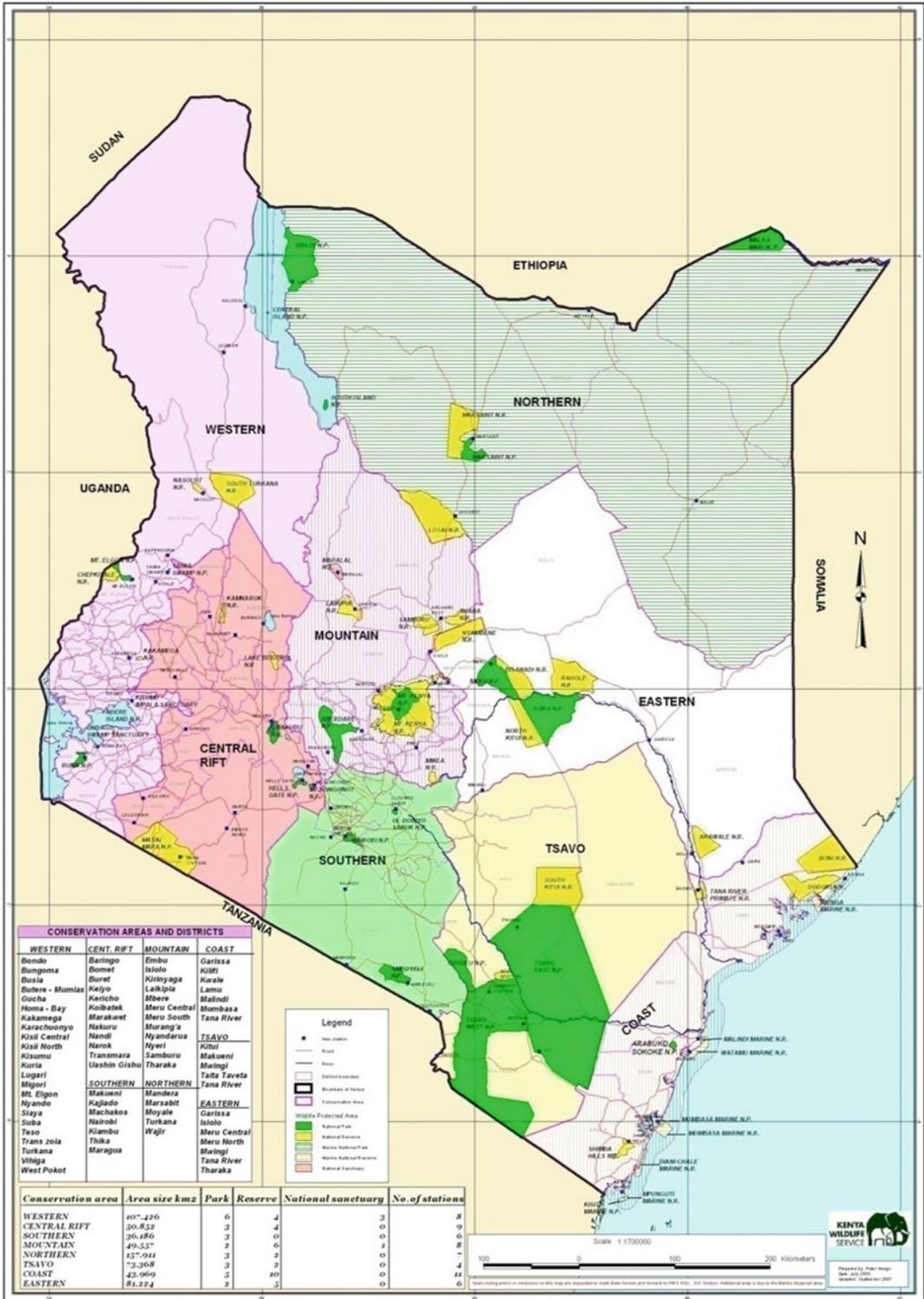


Fig. 4 Kenya Wildlife Service conservation areas (Source: KWS)

identity and became largely assimilated into the greater culture of Kenya (Bashuna 1993; Kassam and Bashuna 2004; Kamau and Sluyter 2018).

In order to enhance the biological integrity of the parks, a modified PA model was introduced in some areas, adding a more community-based approach through the provision of amenities, such as dispensaries, schools, water, and roads, for communities at the interface with the parks. In turn, this community focus helps to increase local support for conservation.

### **Community-Based Conservation Approach (CBCA)**

The long-term goals of the CBCA are to empower local communities to be the overseers and beneficiaries of their diverse environments, whether that be through tourism, payment for ecosystem services, or revenue-sharing schemes, as they create space for wildlife and other components of biodiversity. In Kenya, it is estimated that approximately 65–75% of Kenya's wildlife is found outside of protected areas at any given time. With this realization in the early 1990s, the Kenya Wildlife Service adopted a form of CBCA in areas adjacent to PAs and adopted the philosophy “when wildlife pays, wildlife stays.” CBCAs require that any derived benefits must be non-consumptive. Arising from this conceptual framework, landowners formed associations that would address key wildlife conservation challenges outside national parks. Some of the well-known associations include the Northern Rangelands Trust (NRT), the Laikipia Wildlife Forum, the South Rift Association of Landowners (SORALO), the Maasai Mara Management Association, and the Amboseli Ecosystem Trust. NRT appears to be the largest and currently works with 39 community conservancies across northern and coastal Kenya, managing an area just over 45,000 km<sup>2</sup> (Ministry of Tourism and Wildlife 2018). At the time of publication, there are 160 conservancies covering an area of over 63,600 km<sup>2</sup>, with numbers expected to rise (King 2014; King et al. 2015; Ministry of Tourism and Wildlife 2018).

It is apparent that most CBCAs involve public-private or private-community partnership (PPPs/PCPs) (Godfrey 2016). In these arrangements, communities partner with local, national, or external groups and organizations, including hospitality and tourism operators. Such groups take the form of partnership facilitators, managerial bodies, or direct investors. Only a few have complete community ownership and management. Opinions as to the success of this model are divided, with some promoting their success and pointing to an increase in the number of conservancies as a testimony of local community engagement (Thompson and Homewood 2002; African Wildlife Foundation 2016). However, others contend that some CBCAs are riddled with complications related to equitable benefit-sharing, pastoralist rights, favoritism, sustainability, and unfair partnership deals from governments (national/county) or foreign investors (Sibanda 1995; Rutten 2002; Mburu et al. 2003; Ondicho 2012; Godfrey 2016; Cockerill and Hagerman 2020).

Land managed under this model constitutes approximately 11% of the total country land mass, more than the total land area contained in Kenya's national parks, and is still expanding (African Wildlife Foundation 2016; KWS, personal communication 2017). This enables and promotes bridging the gap between the protected area and local stakeholders. It is a governance system that combines state/county control with local, decentralized decision-making and accountability.

In general, these models appear to be practiced in different areas of the country and in most situations run in tandem or alongside each other (Mburu et al. 2003; Mburu 2004). While all these conservation models have made a remarkable contribution to wildlife conservation management, more remains to be done to consolidate their efforts into a coherent, inclusive, and practical approach that would promote sustainable conservation in terms of biodiversity, ecosystem services, and socio-economic integrity. It is also important to mention that the creation of community wildlife areas and the empowering of local communities to sustainably manage natural

resources are most often reliant on, or even established by, external support from either the government, non-governmental organizations (NGOs), or financial donors.

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### **Stakeholder Analysis and Involvement in Wildlife Conservation and Management in Kenya**

There is significant conflict in Kenya between various stakeholders on the issues of management and ownership of wildlife. In Kenya, wildlife is considered to be a government-owned resource, whether on public or private lands. This has created tension between stakeholders who desire greater autonomy and more benefits for keeping wildlife on their lands. In recent years, the government has made compromises in order to reach agreements among stakeholders, communities, landowners, businesses, international agencies, and non-governmental organizations. International agencies often play a key role in influencing which species to prioritize. This section will therefore look at the various stakeholders involved in the decision-making process.

### **Stakeholder Analysis and Involvement**

There are a variety of stakeholders in Kenyan wildlife conservation and management, which have been placed into four categories, shown in Table 1.

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### **Policy and Legal Framework of Wildlife Conservation and Management in Kenya**

This section provides an overview of the policies and legislative framework that supports wildlife conservation and management in the country. It begins by providing an overview of evolution of wildlife policies and legislation in Kenya from pre-colonial, colonial, and post-colonial periods. It further highlights the different national and sectoral policies that have relevance to wildlife.

Kenya's wildlife policy follows the theory of conservation through protection, where the conservation and management of wildlife are administered through a system of PAs that excludes local communities from active participation in their management. This is because the Government of Kenya, as is the case with most developing countries, follows western guidelines and philosophies of nature conservation. In this regard, wildlife conservation in Kenya thus continues to emphasize law enforcement to protect the wildlife resources.

### **Evolution of Wildlife Policies and Legislation**

Policy and legislation regarding wildlife dates to 1898, after Kenya became a British protectorate and laws were enacted to control hunting and the trade of wildlife. In 1900, the East African Game Regulations were enacted, followed by the establishment of the Kenya Game Department in 1907 to manage game reserves. In 1945, the Royal National Parks of Kenya Ordinance was promulgated to provide for the establishment of national parks, which led to the creation of Nairobi and Tsavo National Parks. The Ordinance was further altered to become the National Park of Kenya Act. This Act led to the establishment of 56 protected areas (26 national parks and 30 reserves) (Republic of Kenya 1976). The Act created two institutions to administer wildlife policies, namely, the Kenya National Park organization and the Game Department.

The first wildlife policy in Kenya is the Sessional Paper No. 3 of 1975, entitled *A Statement on Future Wildlife Management Policy in Kenya* (Republic of Kenya 1975). Its role was to optimize the returns from this resource, taking into account the returns from other forms of land use. This policy focused on direct negotiations between the newly created Wildlife Conservation and Management Department (WCMD) and local communities on the future of wildlife in dispersal areas. It also led to the establishment of the Kenya Wildlife Service Training Institute (KWSTI) to train manpower for the wildlife industry.

**Table 1** Key stakeholders involved in wildlife conservation and management in Kenya

Stakeholder	Level of action	Roles
Ministry of Tourism and Wildlife	National	<ul style="list-style-type: none"> <li>• Policy formulation</li> <li>• Facilitation of good governance for tourism and conservation of wildlife</li> <li>• Marketing of Kenya as wildlife-based tourism destination</li> </ul>
Kenya Wildlife Service (KWS)	National	<ul style="list-style-type: none"> <li>• Conservation and management of wildlife resources in Kenya within and outside protected area</li> <li>• Establishment of networks and support for wildlife conservation with stakeholders/ communities</li> </ul>
The Judiciary	National	<ul style="list-style-type: none"> <li>• Administer justice to all</li> <li>• Hearing and determination of wildlife-related cases</li> </ul>
Ministry of Environment and Natural Resources, including the National Environmental Management Authority (NEMA) and Kenya Forest Service	National	<ul style="list-style-type: none"> <li>• Policy formulation on environmental matters</li> <li>• Conserve, develop, and sustainably manage environmental resources including forest resources and environmental impact assessment and audit</li> </ul>
County government	National	<ul style="list-style-type: none"> <li>• Conservation of wildlife at county level</li> <li>• Enforcement of wildlife regulation</li> </ul>
Kenya Tourist Board (KTB)	National	<ul style="list-style-type: none"> <li>• Marketing Kenya as a tourist destination both locally and internationally</li> </ul>
National Environmental Management Authority (NEMA)	National	<ul style="list-style-type: none"> <li>• Environmental impact assessment and auditing</li> </ul>
National Museum of Kenya (NMK)	National	<ul style="list-style-type: none"> <li>• Conservation of wildlife specimens</li> <li>• Development of a wildlife database</li> <li>• Coordination of research and monitoring of wildlife</li> </ul>
United States Agency for International Development (USAID)	International	<ul style="list-style-type: none"> <li>• Funding conservation and management of wildlife</li> <li>• Combating wildlife trafficking</li> </ul>
World Wide Fund	International	<ul style="list-style-type: none"> <li>• Protecting the future of nature</li> <li>• Funding, lobbying, and advocacy</li> </ul>
Wetlands International	International	<ul style="list-style-type: none"> <li>• Protection of wetland and wetland resources</li> <li>• Funding, lobbying, and advocacy</li> </ul>
Nature Kenya	International	<ul style="list-style-type: none"> <li>• Conservation of birds and their habitats</li> <li>• Mapping of important bird areas (IBAs)</li> </ul>
International Union for Conservation and Nature	International	<ul style="list-style-type: none"> <li>• Conservation status of wildlife species</li> <li>• Protecting the future of nature</li> </ul>
African Wildlife Foundation	Regional	<ul style="list-style-type: none"> <li>• Conserving land, protecting species, and empowering people</li> </ul>
International Fund for Animal Welfare (IFAW)	International	<ul style="list-style-type: none"> <li>• Rescue of individual animals, safeguarding of populations, preservation of habitat, and advocacy for greater protections</li> </ul>
BirdLife International	Regional	<ul style="list-style-type: none"> <li>• Conservation of birds</li> </ul>
African Conservation Centre (ACC)	Local	<ul style="list-style-type: none"> <li>• Integration of knowledge, environment, and livelihoods in resolving problems facing biodiversity conservation in East Africa</li> </ul>
Laikipia Wildlife Forum (LWF)	Local	<ul style="list-style-type: none"> <li>• Forest management, conservation enterprise, human-wildlife conflict management, and environmental education</li> </ul>

(continued)

**Table 1** (continued)

Stakeholder	Level of action	Roles
Northern Rangeland Trust	Local	<ul style="list-style-type: none"> <li>• Improving security for people and wildlife</li> <li>• Promoting trade and tourism</li> <li>• Conservation of wildlife</li> </ul>
Save the Elephants	Local	<ul style="list-style-type: none"> <li>• Elephant research</li> </ul>
Kenya Wildlife Conservancies Association (KWCA)	National	<ul style="list-style-type: none"> <li>• Wildlife governance</li> <li>• Lobbying and advocacy</li> <li>• Conservation of wildlife</li> </ul>
Local communities	Local	<ul style="list-style-type: none"> <li>• Establishment of community conservancies</li> <li>• Provision of more land for conservation</li> </ul>
Community Forest Associations	Local	<ul style="list-style-type: none"> <li>• Conservation of forest as wildlife habitats</li> <li>• Anti-poaching operations</li> </ul>
Coastal Beach Management Unit (BMU)	Local	<ul style="list-style-type: none"> <li>• Conservation of marine ecosystems</li> <li>• Beach operations</li> <li>• Cleaning of the beach</li> </ul>
Academic and research institutions (universities, colleges)	National	<ul style="list-style-type: none"> <li>• Provision of information for conservation</li> <li>• Education and awareness</li> <li>• Research</li> </ul>
Wildlife Clubs of Kenya (WCK)	National	<ul style="list-style-type: none"> <li>• Education and awareness</li> </ul>
Media	National and local	<ul style="list-style-type: none"> <li>• Marketing</li> <li>• Education and awareness</li> </ul>
Private ranches and conservancies	Local	<ul style="list-style-type: none"> <li>• Hold a significant percentage of wildlife on their land</li> <li>• Provide land for conservation of wildlife</li> <li>• Promote and invest in wildlife conservation</li> </ul>

In 1976, the Wildlife (Conservation and Management) Act was enacted. This Act amalgamated the Game Department and the Kenya National Parks to form a single agency, the WCMD. Despite its positive impacts, there were concerns of corruption and inefficiency within the department, resulting in a reduction of relative effectiveness of national park management operations in PAs and beyond. Both the Wildlife Policy and the Act failed to tackle poaching, human-wildlife conflict (HWC), and loss of biodiversity, due to inadequate legal framework, political and bureaucratic interference, and massive corruption. Further, local communities had no access to wildlife benefits, despite coexisting with wildlife on communal lands (Honey 1999; Waithaka 2012).

In 1989, the Wildlife (Conservation and Management) Act was amended (Act No. 16 of 1989) to create the Kenya Wildlife Service (KWS), which would replace the WCMD. The legislative establishment of KWS was followed in 1990 by the elaboration of a comprehensive framework of

policy and implementation strategies known informally as the “Zebra Books” and more formally as “KWS Policy Framework and Development Programme 1991–1996.” Through this framework, the Community Wildlife Service (CWS) was created to forge co-management or partnerships with communities outside the PAs, which enabled them to derive direct cash benefits from wildlife on their land, as well as a reduction in poaching and human-wildlife conflict (KWS 1995; KWS 1996; Rutten 2002; Mburu 2004; Waithaka 2012).

The Wildlife Conservation and Management Act of 2013 became operational on 10 January 2014, after the repealing of the Wildlife Conservation and Management Act Cap 376. The implementation of the Act was guided by the principles of devolution on conservation and management of wildlife to landowners and managers in areas where wildlife occurs, the recognition of wildlife conservation as a form of land use, better access to benefits from wildlife conservation, and

adherence to the principles of sustainable utilization. The new Act has also enhanced penalties for wildlife crimes and reviewed wildlife compensation, which has been a thorn to those living with wildlife. However, the Statute Law (Miscellaneous Amendments) Act No. 18 of 2018 substantially amended the Wildlife Conservation and Management Act of 2013. This amendment introduced new offenses, higher penalties and expansion of some offenses, and no compensation for death and injury caused by poisonous snakes, sharks, stonefish, whales, stingrays, and wild pigs, as well as damage to crops, livestock, and property caused by snakes, zebras, wildebeest, wild dogs, and eland.

### **Current Legal Frameworks Supporting Wildlife Conservation and Management in Kenya**

Over the years, Kenya, like most African countries, has struggled to find and implement appropriate legal and policy instruments that can protect as well as allow sustainable management of its natural resources, especially wildlife and its habitats. This section highlights the diverse legal and policy frameworks currently employed in Kenya to manage and conserve its biological resource with a focus on wildlife (see Table 2).

### **Challenges of Wildlife Conservation and Management in Kenya**

Wildlife conservation management in Kenya faces several drivers and threats/pressures, namely, a rapidly expanding human population, land use changes, poverty, climate change, poaching, limited human expertise, inadequate financial resources, conflicting policies, land transformation, and encroachment of wildlife habitats, leading to a decline in wildlife numbers. As outlined earlier in the introduction, Kenya's wildlife numbers for both fauna and flora have declined in the past few decades. This decline in terms of wildlife numbers can be attributed mostly to numerous anthropogenic activities,

including climate change (Grunblatt et al. 1996; Noe 2003; Lamprey and Reid 2004; Reid et al. 2008; Norton-Griffiths and Said 2010; Okello and Kioko 2010; Ogutu et al. 2011, 2014, 2016; Ojwang et al. 2017). Studies and reports including the Economic Survey of 2005–2018 demonstrate that the population of popular wildlife species such as zebras have declined by 21%, giraffes (25%), elands (32%), and buffaloes (27%) between 2005 and 2018 (Ogutu et al. 2014, 2016; Economic Survey Report 2018; Aduma et al. 2018). This rapid decline has affected carnivore species (leopards, cheetahs, lions, hyenas, and wild dogs) that depend on such herbivores. However, the numbers of charismatic species like elephants and rhino have increased, and this can be attributed to the level of protection conferred to them. Currently, 325 wildlife species (including fish and plants) in Kenya are listed as threatened. Of these, 34 are classified as critically endangered, 93 are endangered, and 198 are vulnerable (Weru 2016).

The problems of managing wildlife are in many ways akin to the problems of managing any common-pooled resources. The distinctive features of wildlife as a common-pooled resource are comprised of low ownership, mobility of the resource, non-recognition of user rights, criminalization of its use, difficulty of monitoring the resource, and low barriers to its entry in the exploitation of the resource. All of these features imbue wildlife with the characteristics of common-pooled resources and usually encourage “free rider” behavior (free access situation without any restriction or control), whereas those who exploit the resource have little ability or incentive to manage it sustainably. With these factors in mind, the challenges facing wildlife conservation and management potentially compromise the sustainability (and to an extent viability) of wildlife in Kenya. The multifaceted challenges are comprised of diverse drivers that change with time. The survival of Kenya's wildlife is a race against these drivers and pressures. With the passage of each decade, the task of protecting wildlife and its habitats becomes increasingly difficult, as drivers and various pressures acting

**Table 2** The current legal frameworks supporting wildlife conservation and management in Kenya Modified from Government of Kenya 2007; 2012; 2013; 2015; Republic of Kenya, 1976; 1989; 2009; 2010a; 2010b; 2010c; 2012; 2017)

Legal framework	Type of framework	Objective
The Constitution of Kenya 2010	Constitution	<ul style="list-style-type: none"> <li>• Provides grounds for the formulation of wildlife management legislation, policies, and strategies on sustainable management of the environment and natural resources. Article 69 emphasizes the duties of state organs and its people to protect and conserve the environment and natural resources including wildlife</li> </ul>
Tourism Act No. 28 of 2011	Act of Parliament	<ul style="list-style-type: none"> <li>• Enacted to provide for the development, management, marketing, and regulation of sustainable tourism and tourism-related services, in concert with relevant stakeholders (lead agencies and communities), and realization of the economic blueprint, as laid out in Vision 2030</li> </ul>
National Policy on Arid and Semi-Arid Lands ( <i>Sessional Paper No. 8 of 2012</i> )	Sectoral Policy 1	<ul style="list-style-type: none"> <li>• This is a Sessional Paper No. 8 of 2012 on the National Policy for the Sustainable Development of Northern Kenya and other Arid Lands. Policy acknowledges pastoralism as a legitimate and productive livelihood and gives attention to wildlife, which is one of the drivers of pastoral livelihoods, through tourism and employment</li> </ul>
National Water Policy of 2012 (NWP, 2012)	Sectorial Policy	<ul style="list-style-type: none"> <li>• Developed in line with the mandate, vision, and mission of the ministry responsible for water affairs in Kenya</li> </ul>
Wildlife Conservation and Management Act, 2013	Act of Parliament	<ul style="list-style-type: none"> <li>• Provides for protection, conservation, and management of wildlife and related matters in Kenya. It applies to all wildlife resources on public, community, and private land and Kenya territorial waters</li> </ul>
Environmental Management and Coordination Act, 2009, and Environmental Management Coordination (Amendment) Act 2015	Act of Parliament	<ul style="list-style-type: none"> <li>• This is the principal instrument of government for the management of the environment and provides for the relevant institutional framework for the coordination of environmental management</li> <li>• Imposes restrictions necessary for protection from environmental degradation and guarantees to all citizens the right to a clean and healthy environment</li> </ul>
National Spatial Plan—2015–2045	Strategy	<ul style="list-style-type: none"> <li>• This plan provides a national spatial structure that defines how the national space is utilized to ensure optimal and sustainable use of land, including wildlife conservation</li> <li>• Environmental protection and conservation zones with major environmentally sensitive areas included water towers, flood plains, indigenous forests, marine parks, wetlands, and national parks/reserves/conservancies</li> </ul>
Water Act 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Provides for the regulation, management, and development of water resources (lakes, aquifers, and rivers) and water and sewerage services in line with the Constitution</li> </ul>
Forest Conservation and Management Act of 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Makes provision for the conservation and management of public, community, and private</li> </ul>

(continued)

Table 2 (continued)

Legal framework	Type of framework	Objective
		forests and areas of forest land that require special protection, defines the rights in forests, and prescribes rules for the use of forest land, including the protection of wildlife and flora populations
Land Act of 2012 and Land Amendment Act of 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Governs the management and administration of public, private, and community land, as outlined in the Constitution</li> <li>• Conservation of land-based natural resources, especially where land is situated within a PA</li> <li>• The Amendment Act of 2016 has outlined the role the National Land Commission (NLC) responsible for managing public land on behalf of national and county governments, in which a number of conservation areas lie</li> </ul>
Fisheries Management and Development Act of 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Provides for the conservation, management, and development of fisheries and other aquatic resources to enhance the livelihood of communities dependent on fishing and key fisheries institutions</li> <li>• It also implements obligations under international law concerning fisheries</li> </ul>
Mining Act 12 of 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Provide for prospecting, mining, processing, refining, treatment, transport, and any dealings in minerals, as well as for related purposes, including the rights to mining required in land falling with protected conservation areas</li> </ul>
Community Land Act of 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Deals with the recognition, protection, and registration of community land rights and the management and administration of community land, including the special rights and entitlements associated with community land</li> </ul>
Natural Resources (Classes of Transactions Subject to Ratification), Act of 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Involves the grant of a right or concession for the exploitation of any natural resource in Kenya subject to ratification by Parliament</li> <li>• Classes are set out in the Schedule to this Act and include among others wildlife (export and re-export of endangered wildlife species, as well as the extraction of oil, gas, and minerals within a wildlife protection area)</li> </ul>
Protection of Traditional Knowledge and Traditional Cultural Expressions Act of 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Provide a framework for the protection and promotion of traditional knowledge and cultural expressions, including intellectual property right (IPR), held by community</li> </ul>
Climate Change Act of 2016	Act of Parliament	<ul style="list-style-type: none"> <li>• Provides a regulatory framework for enhanced response to climate change and offers mechanisms and measures to improve resilience to climate change and promote low-carbon development</li> </ul>
National Land Use Policy of 2017 ( <i>Sessional Paper No. 1 of 2017</i> )	Sectoral Policy	<ul style="list-style-type: none"> <li>• Provides legal, administrative, institutional, and technological framework for optimal utilization and productivity of land-related resources in a sustainable and desirable manner at national, county, and community levels</li> </ul>

(continued)

**Table 2** (continued)

Legal framework	Type of framework	Objective
		<ul style="list-style-type: none"> <li>• The Policy focuses on conservation and sustainable management of land-based natural resources, mapping, identification, and gazettement of biodiversity areas. In addition, it provides incentives for community participation in conservation of natural resources and the environment</li> </ul>
Vision 2030	Strategy	<ul style="list-style-type: none"> <li>• This is the country's developmental blueprint which aims to achieve a clean, secure, and sustainable environment by 2030</li> <li>• Wildlife conservation management and tourism is expected to contribute to the economic and social pillars of Vision 2030</li> </ul>
National Wildlife Strategy 2030	Strategy	<ul style="list-style-type: none"> <li>• Provides a mechanism to coordinate the wildlife sector and implement the Wildlife Conservation and Management Act (2013), as well as to bring Kenyans together through a shared vision for wildlife as a cornerstone of our social, cultural, environmental, and economic development</li> </ul>
National Wildlife Conservation and Management Policy of 2017	<p><i>This document is still in progress, with annual updates. Kenya's wildlife policy is still embodied in the Sessional Paper No 3 of 1975</i></p> <p>National Wildlife Conservation and Management Policy of 2017 Sessional Paper No. 01 of 2020 on Wildlife Policy - June 2020 is currently in circulated for Stakeholders contribution</p>	

on the resources build up and become more complicated. This section reviews drivers/threats/pressures that have led to the decline of wildlife population and its habitats.

The strategic approach to wildlife conservation shows that the main causes of wildlife decline in Kenya, as in most parts of modern Africa, can be categorized into three drivers or threats, namely, *proximate*, *ultimate*, and *social* (see Table 3). The *proximate drivers* are those threats that account immediately for wildlife decline; they can be addressed effectively by a combination of national investment, conservation-development projects, and international agreements and action. *Ultimate drivers* refer to the wider changes in society that ultimately bring about the proximate threats; however, not much can be done to address these drivers. The last category is the *social drivers*, encompassing the socio-economic, political, and

institutional weaknesses within society that undermine conservation efforts.

Looking at the various drivers and threats facing wildlife conservation and management in Kenya as outlined in Table 3, it can be gathered that they are varied and dependent upon the conservation area or wild species being reviewed. The task of managing existing wildlife habitats and establishing new natural areas has become increasingly difficult. The key drivers that make it difficult are variable, but the outcomes include a plethora of negative consequences, decline in wildlife numbers, reduction and modification of wildlife areas or habitats, and conflicts. Numerous studies have examined the causes of decline of wildlife populations in different parts of Kenya, with the biggest threats being centered mostly on human population growth, land tenure reforms and policies, severe economic stress and rising poverty, conflict, and climate change.

**Table 3** Drivers of wildlife and habitat loss

Category of threat	Drivers of wildlife and habitat loss
Proximate drivers	<ul style="list-style-type: none"> <li>• Demand-driven illegal and unsustainable off-take of wildlife (poaching)—elephant, rhino, and bushmeat trade of other wild species</li> <li>• Settlement and accompanied development lead to fragmentation and loss of habitat and species' range through alteration and conversion of natural ecosystems</li> <li>• Functional failure in protected and other non-protected areas (inadequate coverage, lack of investment in management, encroachment/excision, insecure tenure to land and illegal allocation, poaching)</li> <li>• Livestock incursion</li> <li>• Failure in governance of wildlife industry</li> <li>• Human-wildlife conflict in the wider sense (pesticides, pollution, roadkill, farm-wildlife conflicts)</li> <li>• Invasive alien species-ASALs and aquatic ecosystems</li> </ul>
Ultimate drivers	<ul style="list-style-type: none"> <li>• Human population growth in Kenya</li> <li>• Rising demand for land and natural resources leading to loss of habitat and increased poaching</li> <li>• Climate change</li> </ul>
Social drivers	<ul style="list-style-type: none"> <li>• Political indifference to wildlife issues and conflicts</li> <li>• Economic stress and poverty</li> <li>• Legal and policy frameworks that promote “fortress management” of protected areas</li> <li>• Competition with livestock</li> <li>• Financial constraints and underfunding of parks and reserves</li> <li>• Lack of conservation policy that is embedded in African society and alienation or inadequate involvement of locals</li> <li>• Inadequate incentives (for communities and landowners) to adopt land use practices compatible with wildlife conservation and management</li> </ul>

Source: Modified from EU (2014)

## Causes of Loss and Fragmentation of Wildlife Habitat in Kenya

### Human Population Growth

As of 2019, the total population of Kenya stands at 47.6 million people and has exponentially increased over the last 57 years from 8.6 million people in 1962 (KNBS 2019). Kenya's current population growth rate, at 2.2% per annum, is one of the highest in the world (UN 2017; KNBS 2019). It is expected to reach nearly 55–60 million in 2030 and 77 million by 2050 (NCPD 2013). The recent population growth saturation in urban areas of Kenya, together with escalating poverty, has forced immigration of humans into more arid lands with lower potential for sustainable agriculture. In the last 15 years, pastoralists have been transforming to more sedentary lifestyles in the ASALs of Kenya. The transformation from pastoralist to agrarian society has placed additional pressure at the human-wildlife

interface. There are numerous examples where ASALs have been converted to settlement and metropolis cities. To date, population growth around the parks and reserves has continued to be a major setback to wildlife conservation and management (Western et al. 2009; Elliot et al. 2013; Bhandari 2014; Ogutu et al. 2014).

The rapid rise in human population has increased demand and competition for resources, resulting in an augmented exploitation of resources at the highest level, beyond the capacity of available resources (Scholte 2011; Kideghesho et al. 2013; Nyamasyo 2016). The demands are associated with wildlife and habitat destruction, including land for settlements, cultivation and livestock grazing, wood products, and water points for livestock and domestic use (Kideghesho et al. 2013). Settlements are expanding more rapidly nearer to the PAs and associated wildlife dispersal areas and migratory corridors as a result of enhanced anthropogenic

activities (Lamprey and Reid 2004; Western et al. 2009; Kideghesho et al. 2013; Ojwang et al. 2017; Mukenka et al. 2018). Human population growth is driving requirements for more food, hence expanding agricultural activities. Expansion of agriculture destroys natural habitats, alters landscapes and ecosystem services, and fuels human-wildlife conflicts and subsequently reduces local support for conservation. Increased agriculture results in fencing off farms, thereby disrupting wildlife movement and migration, causing a loss of tourism due to decreased aesthetic appeal (Reid et al. 2008; Elliot et al. 2013; Bhandari 2014; Ogutu et al. 2014, 2016).

The role of human population growth and the changing lifestyles for those living adjacent to protected areas generates conflicts that can be summarized in three categories: (i) disruption of ecological processes and functions that are essential in maintaining wildlife and related biodiversity, (ii) increased illegal and unsustainable off-take of wildlife and their products, and (iii) increased pressure from local people to open protected lands for community use, some of which may not be compatible with wildlife management. The latter may include regular uncontrolled burning (which sometimes emanates from areas outside of the park boundaries) and arbitrary extension of boundaries (Kideghesho et al. 2013).

## Land Tenure Reforms and Policies

Tenure systems may contain many categories of rights (e.g., rights to ownership, right to use, right to access, right to control, and right to transfer), and in Kenya, it has been a source of conflict and political debate (Kameri-Mbote and Kindiki 2008; Doshi et al. 2014). The new Constitution of Kenya has given a clear direction on matters related to landownership, use, and management. As outlined in Doshi et al. 2014 and Kameri-Mbote (2019), Chapter 5 of the Constitution of Kenya 2010 Article 62 states that “all land in Kenya belongs to the people of Kenya collectively as a nation, as communities, and as individuals.” Thus, land is classified as public land, private land, and community land (Republic

of Kenya 2010a). Land is the most sought-after resource in Kenya. Land has deep cultural importance for Kenyans and, in the current economy, represents the only livelihood option for many.

Several case studies have shown that land use changes are driven by a combination of resource scarcity, changing opportunities created by markets, inappropriate policy intervention, loss of adaptive capacity and increased vulnerability, and changes in social organization, resource access, and attitudes (Lambin et al. 2003). Land use and land cover changes (LULCCs) are manifested through conversion and modification, which are caused by interactions between climatic and anthropogenic forces owing to its inherently complex nature. The main drivers of LULCCs can be divided into seven factors: multiple causes, natural variability, economic and technological, demographic, institutional, cultural, and globalization (Lambin et al. 2003). Land use changes are driven by human actions, and subsequently alterations limit availability of products and services for humans, livestock, and wildlife, and this can further undermine environmental health and biodiversity distribution. All these drivers are present in the Kenyan land system.

With Kenya’s human population at 46.7 million people, and with a prediction of 60 million by 2030, the demand for land is on the rise. For example, ASAL population is ever-increasing, placing more pressure on wildlife habitat. Land is one of the most significant resources in Kenya, as it is the foundation for activities such as agriculture, wildlife conservation, urban development, human settlement, and infrastructure development. Wildlife conservation was historically excluded as a recognized form of land use in Kenya, which was exacerbated by the lack of adequate and effective national land use policy and planning. In recent years, the negative impact of other land use types such as agriculture or rural and urban development on wildlife conservation has been recognized in several ecosystems such as Maasai Mara, Amboseli, and Laikipia (Worden et al. 2003; Georgiadis et al. 2007; Reid et al. 2008; Kioko et al. 2008; Kioko and Okello 2010; Ogutu et al. 2014; Nyamasyo and Kihima 2014). Despite an overall decline of 70% in wildlife

populations in the Maasai Mara System, it remains one of the richest and most diverse landscapes in Africa. It is host to more than 95 species of mammals, over 550 species of birds, and thousands of insect species. The seasonal movements of hundreds of thousands of ungulates, such as zebras, gazelles, and, in particular, wildebeest (known as “the great migration”), contribute to its preference as a spectacular and highly popular tourist attraction (Ottichilo et al. 2000; Ottichilo et al. 2001; Nelson 2012; Elliot et al. 2013).

Land use in Kenya is changing rapidly, as much of the land is being transformed into farmlands, grazing lands, human settlements, and urban centers, at the expense of native ecosystems. The deliberate policy of subdividing land traditionally held as communal, and the provision of unrestricted access to resources by pastoralists, wildlife, and smallholder farmers, contributes to habitat fragmentation and restricted access by key stakeholder groups. Population growth and land use change alter the interactions of people and animals in terms of animal numbers and species diversity (Campbell et al. 2000; Maitima et al. 2009).

As the land use changes in favor of human activities (expansion of agriculture, settlements, fences, infrastructure, and demand for fuel wood), the fragmentation and degradation of natural habitats lower the numbers of large mammals that such spaces can support and further accelerate the local extirpation of wildlife populations (Ogutu et al. 2011, 2014, 2016). Additionally, fragmentation and incompatible land use practices impact ecosystem resilience, reducing support mechanisms for maintaining biodiversity. In some instances, habitat destruction may interfere with wildlife migratory corridors and dispersal areas and thus decrease predator-prey interactions and other ecological factors (Okello and D’Amour 2008; Okello and Kioko 2010; Fynn and Bonyongo 2010; Ojwang et al. 2017).

### **Human-Wildlife Conflict (HWC)**

Human-wildlife conflict (HWC) is frequently defined as conflict that occurs between people

and wildlife (Woodroffe et al. 2005). It encompasses actions by humans or wildlife that have an adverse effect on one another; threats posed by wildlife to human life, economic security, or recreation; or the perception that wildlife threatens human safety, health, food, and property (Treves and Karanth 2003; Peterson et al. 2011; Redpath et al. 2013; Fisher 2016; Nyhus 2016). In Kenya, the primary cause of HWC is competition for finite natural resources and space. Kenya’s HWC can be categorized into two primary areas: (i) true problems between animals and humans and (ii) interpersonal conflicts over wildlife and its habitats that occur between individuals and stakeholders. These types of conflict are evident between communities, landowners, wildlife agencies, and personalities that manage such resources. As in most parts of the world, in Kenya, conflicts between humans and wild animals occur when either the need or behavior of wildlife impacts negatively on human livelihoods or when humans pursue goals that impact negatively on the needs of wildlife.

HWC escalated with the establishment of PAs, which were believed to be the most feasible strategy of maintaining biodiversity. Most of the PAs in Kenya are situated in the rangelands within the ASALs, with a few close to agricultural areas. However, given the multiple uses of the rangelands, decisions to allocate lands for conservation have often faced resistance. This type of land use is perceived as an infringement on the rights of other local communities. Such is the case when the conservation process involves evicting people from these areas and/or denying them access to critical livelihood resources. With regard to policy in Kenya, priority has historically been given to wildlife over local communities. Some examples include the eviction of indigenous communities like the Taitas, Waata, Ndorobos, and Maasai, among others, in order to provide room for wildlife conservation, which has taken place in almost all PAs of Kenya, justified by expansion of national parks and creation of game reserves. The eviction has, over time, worsened the conflicts between these parks and surrounding local communities.

In this section, we shall restrict the discussion to wildlife behavior that is usually perceived to

negatively impact social, economic, or cultural aspects of human life or species of conservation concern, i.e., “human-wildlife impacts” (Redpath et al. 2013; Snijders et al. 2019). Conflict between humans and wildlife is one of the most widespread and intractable issues facing conservation agencies today in Kenya and Africa as a whole. To many who live in Kenya, wildlife is a threat and a liability. Conflicts between humans, livestock, and wildlife in Kenya are heightened by the expansion of human and livestock populations, cultivation, infrastructural developments, barriers, and settlements that reduce space and other resources for wildlife. HWC encompasses a huge diversity of situations and species, from grain-eating rodents, to man-eating lions, and to the largest mammal of terrestrial soil, the elephant. Living alongside such species can impose a variety of significant costs upon local communities. Livestock depredation, crop damage, human attack, disease transmission to livestock, loss of livelihoods, and fueling of poverty are major examples of HWC consequences that communities face (Musyoki et al. 2012; Ogada and Nyingi 2013; Mukeka et al. 2018, 2019). However, for others, wildlife can be a source of income, such as through tourism, which places a priority on areas with higher biodiversity and an abundance of fauna for wildlife viewing (Okello 2014). HWCs are escalating as human resource demands increase. In Kenya, it has become a persistent problem and a major threat to wildlife conservation and management efforts. Each year, it is fueled by the changes in increased human population growth, land use changes (including blockage of wildlife migratory corridors and dispersal areas), high livestock and wildlife population densities, climatic change, and changing perceptions by some communities living with wildlife (Makindi et al. 2014; Ojwang et al. 2017; Ministry of Tourism and Wildlife 2018). Figure 5 depicts the key hotspots of HWC, primarily in the counties of Lamu, Taita-Taveta, Laikipia, Nyeri, Narok, Kajiado, and Baringo. In general, HWC exhibits seasonal and annual fluctuations, reflecting underlying precipitation variations in most areas. Elephants are the most problematic species due to crop damage, property

destruction, and human attacks, some of which result in death. Carnivores lead in livestock depredation in areas where livestock keeping is the main livelihood in these counties.

Crop raiding is most acute where maize, tomatoes, vegetables, beans, and wheat are grown at small and large scales (*personal observation*; KWS, personal communication; Long et al. 2019). Crop raiding species, in order of damage inflicted, are elephants (*Loxodonta africana*), baboons (*Papio* spp.), buffalo (*Syncerus caffer*), hippos (*Hippopotamus amphibius*), vervet monkeys (*Cercopithecus* spp.), and zebras (*Equus quagga*). Birds are a menace where wheat is grown (KWS, personal communication). In most areas, crop raiding usually peaks in the late rainy season when crops have matured. Areas with highest crop destruction by wildlife in the past decade include Lamu, Taita-Taveta, Narok, Laikipia, Meru, and Chyulu areas (*personal observation*; Makindi et al. 2014; Mukeka et al. 2018, 2019; KWS, personal communication). Livestock predation occurrence also varies depending on the area of the country and season, with greater predation occurring when the natural prey density is lowest or where there are a high density of livestock and poor protective measures (Mukeka et al. 2018, 2019). Lions appear to prefer preying on cattle, while leopards and spotted hyena (*Crocuta crocuta*) kill mostly shoats. Attacks on humans are predominantly limited to elephants, buffaloes, lions (*Panthera leo*), hippos, crocodiles (*Crocodylus niloticus*), hyenas, and snakes (Serpentes suborder) (*personal observation*; KWS personal communication 2019; Mukeka et al. 2018, 2019; Long et al. 2019).

### **Illegal and Unsustainable Off-Take of Wildlife and the Bushmeat Trade**

This encompasses poaching and overexploitation (uncontrolled harvesting) of different plant and animal species (bushmeat), both of which are considered to be key contributors to the current conservation crisis and major contributors to the decline of biodiversity in Kenya and other East African savannah areas (Lindsey et al. 2013).



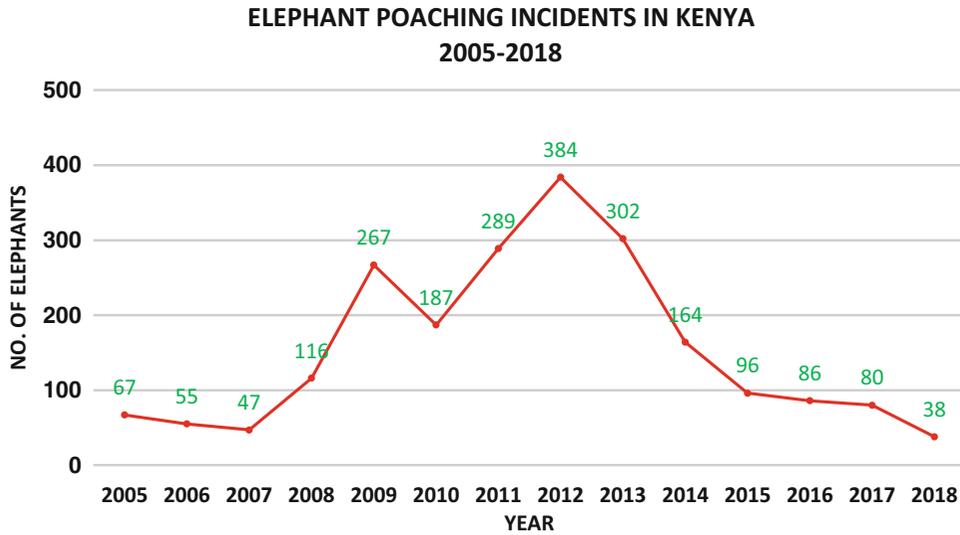
Poaching and overexploitation of natural resources are driven by several factors comprising poverty, availability of lucrative markets, and lack of institutional capacity in implementing anti-poaching laws. Some of the critically endangered species in Kenya that are poached or exploited for bushmeat or trophies include elephant, lion (*Panthera leo*), both black and white rhinos (*Diceros bicornis* and *Ceratotherium simum simum*, respectively), Grévy's zebra (*Equus grevyi*), cheetah (*Acinonyx jubatus*), leopard (*Acinonyx jubatus*), hirola antelope (*Beatragus hunteri*), Eastern red colobus (*Procolobus rufomitratus*), Sokoke scops owl (*Otus ireneae*), roan antelope (*Hippotragus equinus*), Rothschild's giraffe (*Giraffa camelopardalis rothschildi*), and East African sandalwood (*Osyris lanceolata*) (Wildlife & Conservation Act, 2013; Weru, 2016). While biological diversity within some of the PAs remains high, incidents of illegal extraction are common (Weru 2016).

Kenya is a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Poaching was historically a critical issue for elephant conservation in Kenya. In recent years, however, the poaching crisis has declined. KWS efforts to stem poaching through monitoring of charismatic species, increased patrolling of PAs, as well as arresting and prosecuting poachers have been scaled up in the last 6 years. For national reserves managed by county governments, however, there is a need for improvement. Trends in the numbers of the rhino and elephant poached in the last 15 years are depicted in Figs. 6 and 7, respectively.

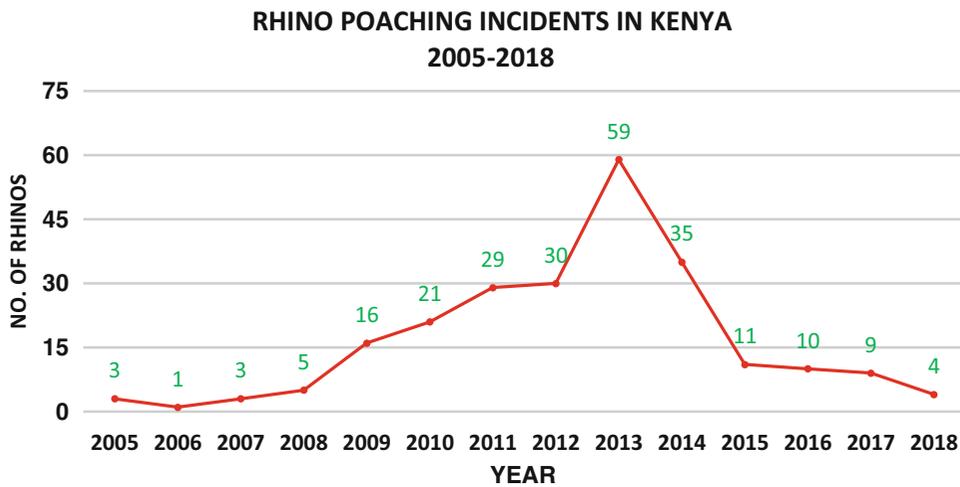
Though the country's rhinos and elephants are kept under close surveillance, poaching remains a serious threat to their survival. In the early 1970s, Kenya's population of black and white rhino numbered around 20,000. Between 1980 and 1999, the numbers greatly declined and have only recently increased from a low of approximately 350 in 1983/1974 to 1367 in 2018, due in part to the efforts of the KWS and support from other government agencies like the National Police Service and National Intelligence Agency

(KWS, personal communication). With regard to elephants, the international ivory trade ban enacted in 1989 has helped in recovering elephant populations across Kenya, and as of 2018, Kenya had 33,136 elephants (KWS, personal communication). Kenya has not suffered the onslaught of ivory poaching as witnessed in other African countries such as Mozambique and Tanzania (Chase et al. 2016; Hauenstein et al. 2019); however, when such incidents occur, interdiction efforts have been mostly successful.

Bushmeat has long been part of local consumption in many parts of Kenya, and recent trends indicate an escalating number of poaching incidents linked to the killing of wildlife for bushmeat (Task Force Report on Wildlife Security 2014). This practice poses a significant challenge to both conservation and ecotourism in Kenya. Subsistence bushmeat poaching has hit unprecedented levels, and the growing commercial bushmeat trade is now a highly lucrative business, emerging as a multimillion dollar industry, although no figures are available in this report. This may well explain the decrease in numbers of wild game, particularly plains game, in major wildlife areas. Poaching for bushmeat is experienced in both protected areas and non-PAs throughout the rangelands. All species of wildlife are harvested indiscriminately using snares, bows and arrows, spears, clubbing, and occasionally firearms. This practice is unsustainable and could lead to the extermination of many species (Task Force Report on Wildlife Security 2014). The drivers of illegal hunting stem directly from local consumption (subsistence) and/or immediate local community trade to commercial trade in urban centers or even international markets. The key drivers of illegal hunting and bushmeat trade are increasing demand for bushmeat in rural and urban areas. However, when one considers studies done in Africa and the results specific to each country or region, illegal hunting for bushmeat was considered to be the most serious threat facing wildlife in protected areas in Botswana, Malawi, Mozambique, Zambia, and West Africa; the second most serious issue in Tanzania, Zimbabwe, and Central Africa; and a less serious



**Fig. 6** Number of elephant poached between 2005 and 2018 (Source: KWS, personal communication)



**Fig. 7** Number of rhinos poached between 2005 and 2018 (Source: KWS, personal communication)

issue in South Africa, Kenya, and Namibia (Lindsey et al. 2015).

Human encroachment into wildlife areas occurs as a result of the following: inadequate enforcement of the penal system and poor law enforcement; lack of alternative livelihoods; insufficient alternative food sources; lack of clear rights over wildlife or land and/or inadequate benefits from legal use of wildlife; political instability, corruption, and poor governance;

demand for wildlife body parts for traditional medicine and ceremonies; and abundant supplies of trapping devices. As a result of these drivers, illegal hunting is a big problem in some parts of Kenya, around Narok, Naivasha, Isiolo, Samburu, Machakos, Kitengela, Namanga, and Tsavo areas, the extent of which is higher than previously estimated (*personal observation*; Task Force Report on Wildlife Security 2014; KWS, *personal communication*).

The illegal acquisition and exchange of wild meat is receiving little attention in Kenya, perhaps due to a misconception that bushmeat hunting is a low-impact subsistence activity when compared to hunting of the large trophy species (Task Force Report on Wildlife Security 2014). Though data on impacts are scarce, indications are that the bushmeat trade is a widespread problem in the country, with severe impacts on wildlife populations. The impacts of the bushmeat trade in Kenya vary from edge effects around protected areas to disproportionate declines of some species, to severe wildlife declines in areas with inadequate anti-poaching operations. The illegal bushmeat trade appears to be increasingly commercialized due to elevated demand in rural areas, urban centers like Nairobi, and even overseas cities (Task Force Report on Wildlife Security 2014). Other drivers for the trade include human encroachment of wildlife areas, poverty and food insecurity, and inadequate legal frameworks enabling communities to benefit legally from wildlife as a food resource (Lindsey et al. 2013; Task Force Report on Wildlife Security 2014; Lindsey et al. 2015).

## Climate Change

Climate change is currently acknowledged as a global crisis threatening human existence and biological resources. Numerous studies, especially those dealing with increasing temperatures, have predicted that there will be significant impacts on the world's physical, biological, and human systems and it is expected to become more severe in the future if not mitigated (Pimm 2009; Sinclair et al. 2010; Monzón et al. 2011; Kideghesho et al. 2013; Sintayehu 2018). Studies suggest that many plants and animals are unlikely to survive the long-term impacts of anthropogenic climate change (Pimm 2009; Román-Palacios and Wiens 2020). By 2050, climate change will lead to the extinction of 15–37% of a total sample of

1103 land plants and animals (Thomas et al. 2004; Pimm 2009; Román-Palacios and Wiens 2020). Changes and variations in climate pose serious threats to biodiversity in Kenya, in both aquatic and terrestrial ecosystems, and the impacts of climate change have been felt in virtually all ecosystems, including rangelands. For example, the severe droughts in the 1990s and 2000s forced pastoralists to shift their herds toward PAs in search of pastures, with devastating effects such as the destruction of habitats, reduced biodiversity, destruction of water sources, and increased human-wildlife conflicts (Lovett et al. 2005; Otiangá-Owiti et al. 2011; Mango et al. 2011; Ongugo et al. 2014; Mbote 2016; Aduma et al. 2018). In the long run, such climate change impacts will affect various tourism destinations, which are major contributors to the nation's economy, as most of them are wildlife-based (Nyamwange 2016).

The rise of temperature and change of rainfall patterns in ASAL areas provide further illustration of the impacts of climate change on biodiversity. Climate change poses a serious threat to wildlife and national security, as it may cause drastic ecosystem changes that could alter the reservoirs for emerging infectious disease, contribute to food and water scarcity, and accelerate conflict between stakeholders over resources in many parts of Kenya (Githeko and Ndegwa 2001; Zhou et al. 2004; Otiangá-Owiti et al. 2011; Aduma et al. 2018). Climate change coupled with poverty may force communities to adopt coping strategies that are destructive to biodiversity, such as encroachment and illegal hunting, both natural and human-induced wildfires, and an increase in human-wildlife conflict (Aduma et al. 2018). Other destructive practices such as the cutting of trees in water catchment areas augment soil erosion and siltation of water bodies that eventually become prone to eutrophication, thereby negatively impacting both aquatic and terrestrial wildlife. Examples of this effect have been found in lakes such as Jipe, Naivasha,

Nakuru, and Baringo (Otianga-Owiti et al. 2011; Mbote 2016).

For example, Lake Naivasha is a wetland of national and international importance. However, it is under constant anthropogenic pressure, including the quest for socio-economic development within the lake ecosystem, as well as other human-related activities within the catchment and basin areas. In addition to climate change effects, the basin is additionally threatened by an increasing reduction of lake levels, deterioration of lake and river water quality, deforestation, increased soil erosion and siltation of rivers, increased lake sedimentation, fish mortality and decreasing fish yields, increased land conversion, encroachment and transformation of the lakeshore riparian zone, encroachment and transformation of the riverine buffer zones in the catchment areas, increasing population and unplanned human settlements, poor waste management in the urban areas, inaccessibility to the lake by pastoralists fishermen and general public, and lake infestation by invasive species (Otiang'a-Owiti and Oswe 2007; Ministry of Environment, Water and Natural Resources 2014).

### Invasive Alien Plant Species

Invasive alien plant species are a major threat to wildlife resources, particularly in ASALs and aquatic ecosystems in Kenya. They have been shown to transform the structure and species composition of ecosystems by repressing or excluding native species, either directly (competition) or indirectly (altering ecosystem nutrient cycles).

Many habitats in Kenya, including national parks and other forms of PAs, are not immune to infestation by invasive species. As a result, invasive species have now been recognized in conservation agendas countrywide. Aquatic and wetland biodiversity is seriously compromised by alien invasive species. The most significant areas infested by invasive species include Lake Nakuru National Park, Tsavo East and West National Parks, Hells Gate National Park, Lake Bogoria National Reserve, and Amboseli National Park. Invasive plant species in Kenya include *Datura*

*stramonium*, *Solanum incanum*, *Lippia javanica*, *Psiadia punctulata*, *Sida tenuicarpa*, *Tagetes minuta*, *Opuntia excelsa*, *Prosopis juliflora* (commonly known as 'mathenge'), *Parthenium hysterophorus*, *Momosa pigra*, *Chromolaena odorata* and *Eichhornia crassipes* (Kedera and Kuria 2003; Kanga et al. 2013). Among the more prevalent species causing havoc in aquatic ecosystems is the water hyacinth, *Eichhornia crassipes*. For terrestrial ecosystems, the most destructive invasive species is the tick berry, *Lantana camara*. The primary impact of invasive species is the general disruption of the ecosystem, which has a ripple effect extending to multiple native species within the ecosystem.

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## Insights into Workable Solutions to Wildlife Conservation and Management in Kenya

### Introduction

The survival of wildlife in Kenya is a race against mounting social and economic development. With the passage of each decade, the task of protecting wildlife and its habitats is becoming increasingly political, challenging, and complex. The future of Kenya's wildlife depends on the ability to conserve wildlife while balancing the needs of the people, including their economic expectations and political affiliations. A conservation crisis is looming in Kenya. Kenya's wildlife policies must address and tackle the root causes of the existing and future conservation problems. These are centered on the rapidly expanding human population in Kenya and a lack of appropriate social support for those living at the interface with wildlife. Policies must ensure effective legal frameworks and deterrents for those harming the environment, among other requirements listed below. These problems must be addressed urgently and aggressively, however "unpalatable" that may be. Wildlife management in Kenya will be best achieved when or if it is combined with the social and economic uplift of local people.

This section focuses on some of the mechanisms that can be used to promote sustainable wildlife conservation in Kenya and takes into consideration the challenges and opportunities for sustainable management of the wildlife industry.

## **Opportunities for Strengthening Wildlife Conservation and Management in Kenya**

### **Create More Space for Wildlife**

Pressure from growing human populations and a commensurate demand for land for development has put open space for wildlife at great risk of being converted to other uses, especially in the ASALs and related areas. Wildlife habitat fragmentation is on the increase, with land being subdivided, fenced, cultivated, or developed for human settlement. This trend is of great concern to the survival of wildlife in Kenya, as PAs alone are not sufficient for wildlife to prosper. Land outside protected areas is essential for large mammals to migrate between protected areas and seasonal grazing areas. Loss of open space, therefore, presents a threat to the survival of wildlife species that are the basis of the tourism industry in the country. Additionally, there is a lack of appropriate tools, mechanisms, and benefits for landowners and communities to encourage them to keep their land open, as they believe wildlife does not pay.

There is a need for the government, players in wildlife industry, and other stakeholders to come up with enabling policies and fiscal resources to ensure that more space is created for wildlife. Currently there are efforts being carried out by the government for acquiring space for wildlife conservation outside protected areas. Such efforts include securing dispersal areas and wildlife migratory corridors, a Vision 2030 flagship project. It aims at the identification and mapping of landscapes and resources used by key species, with a view of connecting wildlife to key resources of pasture, water, breeding sites, and other ecological requirements. These habitats have been severely compromised by human activities, and thus the need exists to restore

them by improving ecosystem resilience and, by extension, wildlife habitat.

Other related and critical initiatives center around the development of community and private wildlife conservancies and the use of environmental easements. Additionally, the human dimensions of conservation such as the livelihoods of local communities must be taken into consideration.

The National Spatial Plan (2015–2045) should complement the above efforts through the implementation of effective land use plans through zones, based on their potential for posterity. Further, this plan should be cognizant of county government needs. Kenyans over the years have developed a mentality that the acquisition of land is a symbol of wealth. This cultural perception must be addressed, as it influences the amount of land available for wildlife. The political elites and their cohorts have capitalized on policy weaknesses in order to take hold of critical wildlife corridors, dispersal areas, or buffer zones.

### **Social Support for Conservation**

Successful environmental conservation depends upon the involvement and participation of local communities. Communities living in and around a protected or conservation area (especially those without barriers or fencing) can determine its fate, either by overexploiting its resources or by supporting its boundaries and laws. Furthermore, there is a direct link between poverty and wildlife conservation, and thus strategies of payment to encourage coexistence must be employed in order to facilitate wildlife conservation and alleviate local poverty.

### **Harness Local Communities' Goodwill**

Most wildlife-related policies and legislation in Kenya have failed to consider the wildlife resource user rights of surrounding communities and pastoralists. The establishment of PAs has been biased to the exclusion of local communities. This controlled environment denies and hampers other land uses for locals and brings tension between community landowners and wildlife conservation. Therefore, sustainable

frameworks that support such groups must be implemented.

### **Participatory or Collaborative Wildlife Management Approach**

The wildlife management and conservation approach adopted by the Government of Kenya emphasizes the protection of ecosystems, with less emphasis on the local communities that rely on these ecosystems for their livelihoods. This implies a general limited involvement and participation of locals in matters of policy formulation, implementation, and evaluation of state conservation programs. It is critical to note that local communities have a right to benefit from the ecosystem as much as the animals. This can only be achieved through a participatory approach in line with a national policy for wildlife conservation and management, which only exists on paper and is rarely effectively implemented. While participatory approaches such as community-based conservation are ripe with potential, the social, economic, and political entanglements of stakeholders in conservation are thus far proving to be barriers to tangible community benefit in Kenya.

### **Socio-economic Empowerment of the Rural Communities**

Local communities, especially pastoralist communities, historically evolved in a harmonious relationship with their natural environment, including wildlife. In more recent times, they have failed to fully benefit from wildlife. Stakeholders, in particular the government, have recognized the impracticality of managing wildlife in PAs alone. It is therefore necessary to ensure that developments on land adjacent to wildlife PAs do not interfere with wildlife conservation and PAs are not managed as islands in a sea of humanity, but rather as an integral part of the national land use process. Presently, the

Community Land Act of 2016 empowers local communities and pastoralists to take control on land use matters and offers great potential for minimization of resource-use conflicts, for a win-win situation.

### **Equitable and Effective Wildlife Benefit-Sharing Mechanisms Among Partners**

Currently there are no well-functioning mechanisms in Kenya for the sharing of wildlife revenue obtained from state PAs among stakeholders, especially local people living around these conservation areas. There is a need to devise an innovative model on the revenue and benefits accruing from wildlife and tourism that can be shared between the government, park authorities, and the local communities. Such benefits will reduce negative attitudes toward wildlife, hence improving conservation and development. Where financial benefits are shared between local communities and park agencies, local communities develop a strong sense of ownership and commitment to wildlife conservation. Recently, in 2018, Kenya's Minister for Tourism and Wildlife established a task force to investigate how wildlife may be used in a way that works for both people and wildlife. The report has been released and in general concluded that Kenya was not yet ready to implement consumptive wildlife utilization (CWU) (Ministry of Tourism and Wildlife 2019). In brief, some of the reasons outlined are as follows:

- Serious challenges such as lack of education and awareness of wildlife matters, especially among the communities that host wildlife on their land.
- Fear that CWU would open up hunting in Kenya, leading to extinction of its wild animals; some understood CWU to mean meat in restaurants.
- Corruption which is still prevalent in Kenya would wipe out our wildlife and that there was

no framework to monitor, regulate, and enforce CWU.

In the report, most stakeholders felt that the government should instead implement some of the options outlined in the WCMA 2013 that offer benefits to communities, including compensation for death, injury, and crop damage. Furthermore, they indicated that the government should develop regulations to implement this Act, the national strategy, and develop a wildlife policy before effecting the CWU.

### **Promotion of Community-Based Wildlife Management Models**

There is a need to promote participation and consultation of communities on wildlife conservation through a bottom-up approach, as opposed to top-down strategies, or the “fortress conservation model.” This primarily entails involving the public in the decision-making process and the overall management of wildlife. The government could create incentives in community-based conservation models which employ sustainable livelihoods and economic development practices. Introduction of economic promise projects, through either ecotourism or other non-consumptive utilization ventures, must be encouraged. A good example is the Rukinga Carbon Project in the coast of Kenya, where PAs provide carbon credit for mitigation of climate change. Providing protection and improvement on wildlife habitats promotes their ability to act as carbon sinks to sequester carbon. In addition, it helps maintain ecosystem integrity, thus promoting provision of ecosystem goods and services. Such models could be replicated in other PAs to diversify livelihood sources in communities adjacent to PAs.

### **Ensuring Public Participation in the Establishment of PAs**

The provisions in Kenya’s legislation regarding the powers of the government to establish PAs

neither oblige the government to consult the local communities nor make provision for public participation. This is an anomaly, as in a democratic state the role of public participation in decision-making, especially on a public resource such as wildlife, need not be overemphasized. The laws should be amended to provide mechanisms for such consultations and negotiations with stakeholders.

### **Ensuring Effective Legal Frameworks and Deterrents**

The Government of Kenya, in partnership with international agencies and donors, must:

- Strengthen the legal framework and facilitate law enforcement to combat poaching and other illegal wildlife trade and assist prosecution and the imposition of penalties that are an effective deterrent
- Strengthen the ability to achieve successful prosecutions and deterrent sanctions by raising awareness in the judicial sector about the seriousness, impact, and potential profits of wildlife crime
- Adopt a zero-tolerance policy on corruption associated with wildlife crime and consider illegal wildlife trade as an economic crime with significant consequences
- Invest in capacity-building to strengthen law enforcement in order to protect key populations of species threatened by poaching and the bushmeat trade
- Improve intelligence by working with local communities and establish monitoring and law enforcement networks in conservation areas where wildlife exists
- Improve capacity-building to strengthen law enforcement, awareness, and education and enhance training in investigative techniques for law enforcement, including identification techniques of wildlife products and the use of forensics
- Strengthen cross-border and regional cooperation through better coordination and through full support for regional wildlife law enforcement networks like Lusaka Task Force and the

newly created Horn of African Wildlife Enforcement Network, among others

- Provide dedicated leadership at high levels as critical for wildlife conservation that can educate local communities and build a shared ethic of conservation across Kenyan society

## Other Opportunities

### Strengthening of the Science-Policy-Practice Interface

There is a need for adequate, accurate, and coherent research to aid in the formulation of policies and legal framework for the conservation and management of wildlife in Kenya. In order to facilitate effective decision-making, KWS and relevant institutions must harmonize research methodologies and tools to allow for monitoring and evaluation over time. It is extremely important to gather the most comprehensive and reliable data on wildlife population trends and habitat status that would allow managers and other relevant stakeholders to make appropriate decisions to the benefit of wildlife conservation and management, even if it may not fully support the hypotheses and theories of those providing funding. It is also imperative that to acquire good and accurate data, we must enhance the capacity of local scientists, practitioners, and communities, particularly in advanced research skills and monitoring techniques of biological resources. Additionally, the requirement to develop and implement conservation and management strategies of specific or key species is critical for the future of wildlife in Kenya.

### Harmonization of Existing Wildlife and Other Relevant Sectoral Policies and Legislation

There have been efforts to harmonize the Wildlife Act and other relevant sectoral policies and legislation. However, the implementation has not occurred because critical intersectoral planning and implementation has been slowed through political interests.

### Decentralization of Wildlife Conservation Operations

Devolution is still in its infant stages, with just 4 years of operation, but already there is recognition of inclusive contribution of county governments to local communities. Even though KWS, an authority in wildlife conservation and management, has stations countrywide, coordination is still centralized at the national level, making service delivery rather slow. Therefore, wildlife conservation should be decentralized to county levels in order to empower communities and other stakeholders to participate effectively in the conservation planning, implementation, and decision-making processes. Effective national-level policies that ensure conservation's benefits and are shared with local people are critical. These policies should clearly define the quantity and the process of benefit-sharing.

### Conservation Education

Transforming wildlife resources from a liability into an asset that communities will value, and thus be motivated to conserve through attitudinal and behavioral change, is a key conservation goal. Local communities must be actively involved in both conservation planning and decision-making. Conservation education for both urban and rural communities should be emphasized. Conservation strategy implementation failures have occurred as a result of limited awareness by the people of their role in biodiversity conservation, ecosystem management, as well as human health implications. Other compounding factors include limited financial and human resources. Transforming communities into conservators requires a clear understanding of the value that nature offers, as well as the consequences of having non-functional ecosystems. Poverty, one of the root causes of wildlife loss, must be tackled through provision of incentives that promote alternative livelihoods to wildlife dependence.

## Climate

Climate change impacts include changes in physical conditions, weather patterns, and ecosystem functioning (WWF 2006; Monzón et al. 2011; Otianga-Owiti et al. 2011; Kideghesho et al. 2013; Muoria et al. 2015; Sintayehu 2018). Wildlife conservation will be severely impacted by the effects of climate change, unless we manage to cope through decisive planning and action. However, it is fair to mention that confronting the climate crisis requires that we address the underlying causes of climate change and simultaneously prepare for and adapt to current and future impacts. There is a need to integrate programs to build resilience to climate change in most parts of the country, and adaptive capacity of vulnerable communities living around conservation areas, and adopt a climate-smart wildlife concept in Kenya. This could entail designing and carrying out conservation in the face of a rapidly changing climate as outlined in Climate-Smart Conservation (Stein et al. 2014), Climate Change Act of 2016, and National Climate Change Action Plan (Government of Kenya 2018).

The whole rationale in these strategies is to ensure the mechanisms and measures to achieve low-carbon climate-resilient development in a manner that prioritizes adaptation, pays particular attention to increasing wildlife habitat cover through reforestation and restoration of habitat, rehabilitates degraded lands, and increases resilience of wildlife. These can be achieved through the following overarching themes:

- Act with intentionality
  - Manage for change, not just persistence
  - Link actions to climate impacts by ensuring that conservation strategies and actions are designed specifically to address the impacts of climate change
  - Embrace forward-thinking conservation goals that look to the future rather than the past
  - Consider ground actions designed in the context of broader geographic scales to account for likely shifts in species distributions, that sustain ecological processes
- Employ agile and informed conservation planning and resource management with dynamic adjustment to accommodate uncertainty, taking advantage of new knowledge, that cope with rapid shifts in climatic, ecological, and socio-economic conditions
  - Minimize carbon footprint with strategies and projects that minimize energy use and greenhouse gas emissions and sustain the natural ability of ecosystems to cycle, sequester, and store carbon
  - Safeguard people and nature by adopting strategies and actions that would enhance the capacity of ecosystems to protect human communities from climate change impacts in ways that also sustain and benefit wildlife
  - Avoid maladaptation by ensuring that actions taken to address climate change impacts on human communities or natural systems do not exacerbate other climate-related vulnerabilities or undermine conservation goals and broader ecosystem sustainability

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## Conclusion

Wildlife conservation in Kenya is at a crossroads, and we must implement strategies that will meet the needs of both people and wildlife among the other requirements of the country's Vision 2030. However, as a country, there must be goodwill from key stakeholders for the implementation and enforcement of relevant legislation and policies that support wildlife conservation. The Government of Kenya must subscribe to a zero-tolerance attitude toward wildlife crime, whereby justice is swift and firm to those involved. We must remember that wildlife conservation is not a business to be compared with other land uses such as farming or real estate development, but must be considered as a social investment that requires adequate subvention from government and external partners, and thus is valued for its posterity. In order for wildlife conservation and management to work, it is important that we "put nature on the balance sheet." However, it is also important to remember that wildlife conservation and

management efforts will still need external partners, as it is a very expensive affair. Kenya's unique diversity and wealth of wildlife species is a heritage, both for Kenya and for the world. Finally, all Kenyans must be decisive and committed, for wildlife's sake.

**Acknowledgments** We acknowledge the support in terms of availing relevant data, reports, and literature from the following: Prof. Charles M. Musyoki, Messrs. Linus Kariuki, Moses Maloba, Asher Odhiambo, James Wachira, and Eric Wamari Owiti of the Kenya Wildlife Service.

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