

The effect of urbanization on protected areas

The impact of urban growth on a wildlife protected area: a case study
of Nairobi National Park

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Abstract

The world is becoming progressively more urbanized; urbanization rates are increasing at an unprecedented rate in the developing world, particularly in Africa and Asia. While the growth of cities has reflected man's advancement and achievement, there have also been some negative effects, especially on the natural environment. The problems stem from the fact that urban expansion has been sometimes haphazard and unplanned; the result has been habitat fragmentation and biodiversity loss.

This paper examines how protected areas are under threat and subject to pressure due to urbanization. The underlying problem is a lack of integrated planning, because urban planners and park managers are divorced from each other's work. A case study of a protected area in Kenya, Nairobi National Park, is undertaken for this paper. The park, which is located in the city, faces important challenges – these may lead to its demise. Space for wild animals is being taken over by human settlements; the economic and environmental ramifications of this are identified in the paper.

Worryingly, current national policies propagate urbanization without giving due consideration to the impact on protected areas and the environment in general. There are initiatives in place to counteract the impact of urban sprawl on Nairobi National Park; these measures are rooted in collaborative efforts that have resulted in instrumental partnerships to lobby and work for the park's survival.

Executive Summary

Introduction

Unprecedented urban growth is occurring throughout the world, particularly in developing countries. In the 1950s, the proportion of people worldwide living in urban areas was only 30%, but by 2030 it is projected that 61% of the world's population may be urban. The rate of urbanization is high in Africa and Asia, regions that have in the past been largely rural. The rate of urbanization in developed countries is lower, due to the fact that most of these countries are already highly urbanised.

Urbanization results in dramatic transformation of land use. Cities are places of great growth and opportunity; on the other hand, cities are places of major pollution and high consumption of natural resources. Generally, cities exert tremendous pressure on the surrounding environment; whereas cities occupy only about 2% of the land surface, they consume 75% of the earth's resources.

Urban growth has had an adverse effect on nature. Population increase and expansion of human settlements and infrastructure has resulted in the degradation of ecologically valuable areas – for instance protected areas. The impacts of urbanization on protected areas are: fragmentation of habitats, loss of rare species, edge effects, introduction of alien species, decreased water quality and quantity, shrinking of wetlands, air and water pollution, solid waste, noise, and human-wildlife conflicts.

Expansion of urban areas has been in a lot of cases unplanned and haphazard – a phenomenon referred to as urban sprawl. Urban sprawl is alarming, since more land is taken up for urban areas, which may result in encroachment into protected areas. Studies have shown that the distance between protected areas and cities is shrinking rapidly. For example, in Eastern Asia, the median distance from a protected area to a city is expected to fall from 43 km to 23 km by 2030.

Problem statement

Urban sprawl presents a threat to protected areas; if unaddressed, the consequences are not only environmental, but also social and economic. These are for example: degradation of the environment, loss of indigenous species, reduced tourism potential and the loss of ecosystems services essential for the wellbeing and health of urban residents.

Whereas urban sprawl is a global problem, most current studies have focussed on developed countries, especially North America and Europe. There is a gap in the study of urbanization in developing countries. Accordingly, this paper will study the problem in the context of a developing country: a case study of Nairobi National Park in Kenya will be undertaken, to examine how urbanization is affecting the park.

Purpose of study

The primary purpose of this study is to demonstrate the adverse effects that urbanization can have on protected areas. The disconnect between urban planning and management of protected areas is a complex problem, as a result of competing and often conflicting interests.

Research questions

The main research question is: *How has urbanization affected protected areas?*

Four sub-questions were derived from the main research question:

1. What is the linkage between cities/ urban areas and protected areas?
2. How does urbanization endanger the viability and survival of Nairobi National Park?
3. How can the integrity of Nairobi National Park be maintained?
4. What generic knowledge may be extracted from the case of Nairobi National Park?

Case study

Protected Areas are vital to Kenya. About 8% of the country's landmass consists of areas protected for wildlife conservation. Wildlife is crucial to Kenya's economy: it is a major source of employment and foreign exchange, contributes greatly to the socio-economic development of the country, and is thus necessary for poverty alleviation. Tourism is Kenya's second largest industry, contributing about 12% to the country's GDP, and 21% of foreign exchange earnings. In addition, 70% of the tourism industry is dependent on wildlife as an attraction.

As the Kenyan population rises there is increasing pressure on protected areas due to demand for land. The protected areas in or near urban areas are particularly vulnerable to this growing threat. A case study of Nairobi National Park reveals the problems it faces.

Nairobi National Park (NNP) was the first national park established in Kenya, in 1946. The Park covers 117 km². The park has given Nairobi a unique status, as it is touted to be the only capital city in the world that has a wildlife national park within it. The park is unique, as it is inhabited by large herbivores and carnivores, whilst being situated very close to a large metropolitan city: it is only about 10 kilometres from the city centre.

The park itself is quite small; however, it is part of a larger ecosystem that is important to the survival of the park. The larger ecosystem is referred to as the Athi-Kapiti ecosystem; this ecosystem is a migratory corridor for animals to move in and out of the park.

Main Findings

The park is literally besieged by the developments surrounding it: there are commercial and residential developments right up to the park boundary. Even more disturbing is the presence of industries that pollute the air and water in the park. The animal migratory corridor, which is on private land, is diminishing in size as people sell, subdivide and fence off the land. Wild animals are losing habitat, as human beings are competing for the same land. Consequently, the populations of wildlife species in the park are being reduced.

The future of the park remains uncertain, particularly because current policies seem to propagate urbanization with scarce regard for its environmental implications.

Recommendations

1. Integrated planning: the future of the park is dependent on the city's local authorities working together.
2. Partnerships between different stakeholders are essential to ensure broad-based support to maintain the integrity of the park.
3. Policy reform and political support: current problems are made worse by weak and conflicting policies. Policies that enhance the protection of the park are necessary and political support will also be required for this to happen.

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1 Introduction

Cities are a symbol of mans progress and what he is able to achieve. They symbolize power, history, culture, and industry, as Ling (2005) points out cities are engines of rapid economic growth. However the process of urbanization has certain implications on the environment. Tryzna (2007) gives a basic definition of urbanization; he says that it is “the process by which rural areas take on urban characteristics” (Tryzna, 2007, p. 7)

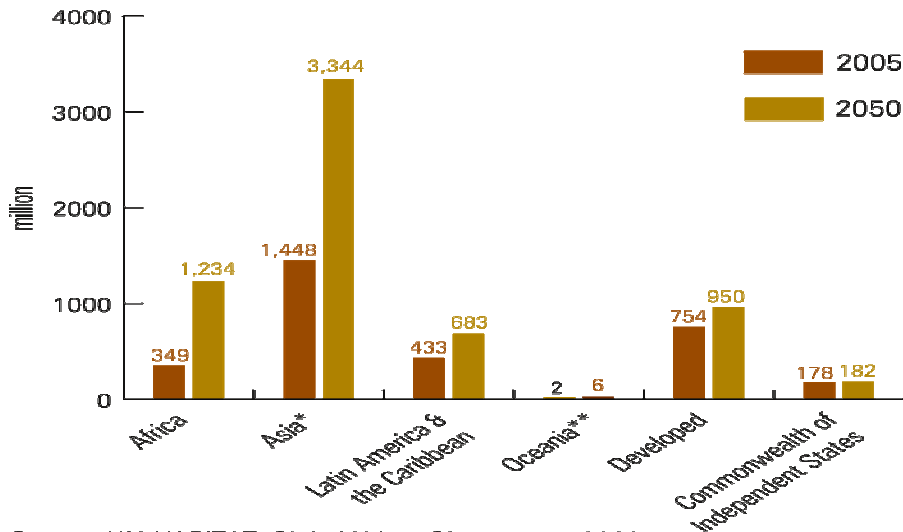
The world is becoming more and more urbanized as time goes by. The majority of people in the world today are urban residents (Mc Donald, Kareiva & Forman, 2008) Future projections indicate most, if not all people will be living in cities by 2030. (Ling, 2005) In the past majority of people who lived in the rural areas engaged in largely agricultural activities. As Tryzna (2005) notes, in the 1950s the proportion of people in the world who were living in cities was only 30%, but by 2030 it is estimated that the number will have grown to 61% (Tryzna, 2005).

According to figures from international organizations like UNEP (United Nations Environmental Programme) and ICLEI (International Council for Local Environmental Initiatives), Africa has the fastest rate of urbanization worldwide and it is projected that unprecedented urban growth will take place in the developing countries in the coming years (United Nations Enviroment Programme [UNEP], 2007). What makes the situation gloomy is the realization that, most of the increasing urban residents will be living in dismal and overcrowded slums, in marginal lands with no accessibility to basic services like sanitation and clean water (Tryzna, 2007). In general the reason why the world is becoming more and more urbanized is due to: rural to urban migration, international migration, increasing human population.

Whereas the rate of urbanization has been rapid and tremendous, it is crucial to note that however, the growth of urban areas is not uniform worldwide. According to the United Nations figures: in the Americas, Europe and Oceania about 70% of the population live in urban areas whereas in Asia and Africa it is estimated to be about 39% and 37% respectively (Tryzna, 2007). In actual fact most of the developed countries are already urbanized while the developing countries are in the process of becoming urbanized. Another interesting trend to pay attention to is that 4% of the world’s population lives in megacities. Megacities are urban areas of 10 million inhabitants and more. Most of the urban residents actually live cities that have 1 to 5 million people (Tryzna, 2007).

Growth of urban areas in developed countries has stabilized or is in some cases decreasing; these cities place emphasis now on having more compact or concentrated urban areas. However urbanization in the developing countries in Asia and Africa is increasing rapidly thus there is major significant transformation of areas that have previously been rural.

FIGURE 1.1.3: URBAN POPULATION (MILLIONS) BY REGION, 2005 AND 2050



Source: UN-HABITAT, Global Urban Observatory, 2008.
 Data from UN Population Division, World Urbanization Prospects, 2007 revision.
 Note: *Asia doesn't include Japan. ** Oceania doesn't include Australia and New Zealand.

Figure 1-1 Urban population 2005 and 2050

Source: UN-Habitat, 2008

The growth of cities is a concern because of the effect of urban development processes. Ling (2005) explains that cities are not only places of great growth and change but are at the same time major sites of pollution. Thus cities pose a certain complexity, that: cities represent both opportunities and challenges. On the positive side, cities enhance economies of scale, that is, relieve pressure on the natural environment by concentrating human populations, in the process enable better use and management of energy, housing, transportation and other services. On the other hand cities encourage increased consumption, depletion of natural resources and degradation of the surrounding environment through pollution and urban sprawl (Tryzna, 2007)

By and large, urban populations exert tremendous and ever increasing pressure on the surrounding environment. (Esbah, Deniz & Kara, 2007; Ling, 2005). To show the pressures that originate from cities, consider that although cities occupy only 2% of the land surface on earth, they use 75% of the natural resources on the earth (UNEP, 2007). In essence cities need more space than they literally occupy in order to survive, this is what is referred to as the urban ecological footprint (UNEP, 2007).

It is important to note that most cities are strategically located. They are located where there is availability of adequate natural resources and essential ecosystems. In most cases city growth results in diminished natural resources in addition to compromising the integrity and health of the ecosystem services provided (UNEP, 2006, September). A major and significant

impact of urbanization is habitat loss, which is a threat to biodiversity (Beatley, 1994; Pauchard, Aguayo, Pena & Urruita, 2006). Habitat loss can be attributed to the dramatic increase in human population and the expansion of human settlements, but the problem is not merely the growth and the increase of people living in the cities but also in the manner in which they grow (Beatley, 1994; Jowsey & Kellet, 1996). Beatley (1994) gives an example of the United States, he explains that, there problem is not simple population growth but more so the inefficient and wasteful use of land.

The effect of urbanization on biodiversity differs in world regions, as Pauchard et al. (2006) argues, in the developed countries there is fragmentation of large areas whereas in the developing countries the rate of transformation is slower. Hence the difference in developing countries is that the scale of urbanization is less at present as compared to the developed countries but this is likely to change as urban areas are growing faster in the developing countries.

What is especially worrying today is the impact of urbanization on ecologically valuable areas (Esbah et al. 2007). Such areas are for instance Protected Areas. The impacts on protected areas are: fragmentation of habitats, loss of rare species, edge effects, introduction of alien species decreased water quality and quantity, shrinking of wetlands, air and water pollution, solid waste, noise, and human-wildlife conflicts (Tryzna, 2007; Esbah et al. 2007; Wang, 2007).

The threat to protected areas jeopardizes in particular the conservation of rare, endangered and vulnerable species. As Mc Donald et al. (2008) explains, 8% of the terrestrial vertebrate species listed on the IUCN red list are under threat due to urban development. Moreover 80 % of the protected areas likely to be affected by urbanization are in the developing countries, where resources are limited (Mc Donald et al. 2008).

Urbanization has harmfully affected protected areas particularly as a result of urban sprawl. As urban areas expand they take up more land including that of protected areas. Mc Donald et al (2008) enlightens that, the distance between protected areas and cities is shrinking dramatically in some of the world regions. Giving an example of Eastern Asia he points out that: “the median distance from a protected area to a city is predicted to fall from 43 km to 23 km by 2030.” (Mc Donald et al. 2008, p. 1700). The consequence of urban sprawl has been: habitat loss and fragmentation, loss of indigenous species and the introduction of invasive species (Wang, 2007; Haroldo, Alves & Oliveira, 2007)

Definition of urban sprawl

- The Environmental Literacy Council (ELC) defines it to be the expansion of widely dispersed development outside of an urban city center (ELC, 2008).
- The United States Environmental Protection Agency describes urban sprawl as: low density, automobile dependent development that is beyond a city’s service and employment areas (USEPA, 2001).
- Frumpkin (2002) refers to it as the rapid expansion of metropolitan areas. (Frumpkin, 2002)

1.1 Problem statement

The rate of urbanization is increasing rapidly particularly in the developing countries of Africa and Asia. In many instances this growth has been uncontrolled, unplanned and has led to many problems unique to cities globally. A manifestation of this problem is the urban sprawl phenomenon. The effect has been habitat fragmentation due to the spread of urban developments. This has become a threat particularly to protected areas in or near urban areas as the space essential for these ecologically valuable areas is being encroached into to cater for urban growth. This has several grave implications for example: degradation of the environment, the loss of indigenous species, reduced tourism potential and the loss of ecosystems services essential for the wellbeing and health of urban residents.

Whereas urban sprawl is a worldwide problem most of the studies have actually focused on the developed countries (Pauchard et al. 2006). A lot of work has been done in North America and Europe. There is need for studies that will address the gap concerning what is going on in the developing world. Such studies will be essential to create awareness on the situation, improve understanding and allow for solutions to the issues. This paper is part of the endeavour to contribute towards this filling this gap and will focus on how urban sprawl has affected Nairobi National Park in Kenya.

1.2 Purpose of study

The purpose of this study is to primarily demonstrate the adverse effects that urbanization can have on protected areas. The disconnect between urban planning and management of protected areas is a complex problem as a result of competing and often conflicting interests. Using Nairobi National Park as a case study this research aims at showing how urbanization affects protected areas.

1.3 Research questions

The study aims to answer the following main question. *How has urbanization affected protected areas?*

The main research question will be subdivided into four sub-questions:

- What is the linkage between cities/ urban areas and protected areas?
- How does urbanization endanger the viability and survival of Nairobi National Park?
- How can the integrity of Nairobi National Park be maintained?
- What generic knowledge may be extracted from the case of Nairobi National Park?

1.4 Scope of the study and limitation

Scope

This paper addresses the issue of how urbanization can affect biodiversity. The scope narrows down to one particular problem: urban sprawl and its subsequent impact on protected areas. A case study of Nairobi National Park is undertaken to give a realistic and practical picture of the problem. The study also seeks focus on the problem from the perspective of developing countries.

Limitations

The scope of the study is limited to showing the linkage between cities and protected areas. Justifying then that the conservation agenda needs to be mainstreamed into the wider city planning thus making it an issue for all city authorities and citizens not just the conservationists. Hence the study will look at the problem, the impacts and how it is being tackled. It is not aim for this study to find the solution to the issue as such but more to highlight the issue by focussing on the problem, its extent and implications. That said a brief look will be taken at the measures in place to deal with or minimise negative impact. Detailed and comprehensive solutions to the problem would be an appropriate topic for later studies.

1.5 Methodology

The research was done as a master’s thesis project from February to May 2008 and was carried out by the author. This paper is based on qualitative research methods. The research design was guided by Kothari (2004) as an exploratory / formulative research project. He defines the objective of exploratory research as the type of research done gain familiarity with a phenomenon or to achieve new insights into it (Kothari, 2004). In this regard this paper addresses how urbanization affects protected areas and more insight is sought on the situation in developing countries, an area that has been largely ignored.

The rationale of choosing an exploratory research design is because of its flexibility for the researcher to consider different aspects of the problem under study. The basic features an exploratory research project are highlighted in the table below.

Table 1-1 Features of an exploratory research

| Research design | Exploratory / Formulative study |
|------------------------|--|
| Overall design | Flexible design (design must provide opportunity for considering different aspects of the problem) |
| Sampling design | Non-probability sampling design (purposive or judgment sampling) |
| Statistical design | No pre-planned design for analysis |
| Observational design | Unstructured instruments for collection of data |
| Operational design | No fixed decisions about the operational procedures |

Source: Kothari, 2004.

Regarding the components of an exploratory research design, Kothari (2004) explains that there are three research methods used, i.e. survey of concerning literature, the experience survey and analysis of insight stimulating examples.

Survey of concerning literature

This is a survey of the work done by others. For this paper this entailed a literature review of secondary data from varied sources. These sources were journals, books, articles, conference proceedings and pamphlets from international organizations like UNEP. The library books were mainly from the Lund University libraries. Articles were mainly from ELIN, the electronic database of Lund University. The Internet was used extensively for this study, the

searches were often on sustainable cities, protected areas and cities and urban sprawl. Brochures and pamphlets were useful in providing current information on initiatives being undertaken by international organizations. Conference proceedings were important to give an indication of the ongoing debate in this area worldwide. The variety of material was intended to give a balanced and objective point of view. Generally the main subject areas of interest in the literature review: urbanization trends, the threats to biodiversity and the relationship between protected areas and cities.

The experience survey

This entails interviewing people who have had practical experience with the problem to be studied. This section covers primary data collection. This will be mainly done through personal interviews to gain a clear picture of the issue. To gain a deeper understanding of the problem and to allow as much flexibility as possible the interviews will be of an unstructured nature. For the people to be interviewed non-probability sampling will be used. This kind of sampling is also referred to as purposive or judgment sampling. Basically the researcher has the discretion to deliberately select the sample thought to be suitable or appropriate. In this case the sample size will be only experts from the protected areas, local authorities and government agencies.

The analysis of insight stimulating examples

According to Kothari (2004) the analysis of insight stimulating examples is an “*intensive study of selected instances of the phenomenon*” (Kothari, 2004, p. 36) in this regard a case study will be done. Kothari describes a case study as “a form of qualitative analysis where in careful and complete observation of an individual or a situation or an institution is done” (Kothari, 2004, p. 113). The advantage of case studies is that they enable the study of an issue in depth. Subsequently, a case study of Nairobi National Park in Kenya will be done to strengthen the arguments made in the paper.

Limitations of the methodology

The research design selected allows flexibility. However on the other hand it does increase the likelihood of personal bias. The danger therein is that the study may yield results, which are favourable to the researcher’s point of view (Kothari, 2004).

1.6 Outline of the study

Chapter one: The introduction to the study area: background information on urbanization trends and impacts on protected areas is provided.

Chapter two: Is a discussion on some initiatives that are useful in the debate on urbanization and protected areas.

Chapter three: The conceptual framework; the concepts of sustainable development, protected areas and partnerships are discussed

Chapter four: Kenyan case study on Nairobi National Park: introduction, background information and the problem description

Chapter five: Is a discussion on the findings on the case study

Chapter six: A discussion on programmes, plans and initiatives currently being undertaken to safeguard the park

Chapter seven: Conclusions and Recommendations

2 Cities and protected areas: relevant initiatives.

This section takes a look at some initiatives and programmes related to protected area and cities. These initiatives are important, as they have enabled the framing and debate of this issue. The work being done by various organisations has contributed greatly towards highlighting the issue of urbanization and biodiversity loss.

2.1 Biodiversity 2010 target

Biodiversity 2010 is an initiative by the international community to make a significant reduction in biodiversity loss by the year 2010. Originally this initiative was an idea of the European Union (EU) in 2001. The concern of the EU heads of state was the continued loss of biodiversity even after the implementation of the Convention of Biological Diversity (CBD). Consequently they made an ambitious commitment to halt biodiversity loss by 2010. (IUCN countdown 2010, 2006 November)

During the UN World Summit on Sustainable Development held in Johannesburg, South Africa in 2005, the biodiversity 2010 target became a global commitment; therefore all the parties to the CBD are obliged to meet the goal of significantly reducing the current rate of biodiversity reduction. Recognizing the importance of curbing biodiversity loss, in 2007, the UN secretary General announced that the 2010 biodiversity target had been integrated into the Millennium Development Goals (MDGs). This was a result of the recognition of the role that biodiversity plays in achievement of the MDGs, particularly the targets to halve poverty and hunger by 2015 (CBD, n.d.).

Meeting this target remains a challenge. Considering the main reason for biodiversity loss is habitat loss, protected areas are thus instrumental to conserve valuable and unique habitats. To achieve the biodiversity 2010 target requires the working together of governments and other stakeholders like NGOs, International Organizations and communities. Local authorities are especially well placed to play a crucial role in the achievement of this challenging goal.

2.2 IUCN taskforce on cities and protected areas

IUCN taskforce on cities and protected areas falls under the World Commission on Protected Areas (WCPA). The WCPA is part of the International Union for Conservation of Nature (IUCN). The idea to set up the taskforce originated within the IUCN in 2000 (California Institute of Public Affairs [CIPA], n.d.). The concern was that the global conservation debate ignored the urban dimension. To address this gap taskforce's aim was thus to focus on the links between human settlements, the environment and the special role of protected areas.

The work being undertaken by the taskforce is critical, because it addresses an area that has largely been ignored particularly in the developing countries. The taskforce has published several reports that would be a valuable resource to the protected area managers, urban planners and local authorities.

2.3 The Millennium Development Goals (MDGs)

The Millennium Development Goals (MDGs) are development goals that have been internationally accepted as benchmarks to measure real development. In total there are eight MDGs. Of particular significance is the seventh goal on environmental sustainability. This goal addresses the mainstreaming of the environment in policy and programmes, reversing the loss of environmental resources as well as improving access to environmental services (Hens & Nath, 2005)

In Africa, 72% of the population lives in slums or informal settlements. To make it worse 60% of this population lives well below the poverty line. (Hens and Nath 2005) Poor people depend more on the environment for their basic needs as compared to others who can afford to purchase these services in the market. Hence poverty alleviation and environmental protection are interdependent. Recognizing then that biodiversity is the wealth of the poor, taking care of the environment is thus essential to alleviate poverty. Developing countries in particular cannot achieve any significant development if they do not prioritize biodiversity protection.

The Eight Millennium development goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. **Ensure environmental sustainability**
 - *Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.*
 - *Halve, by 2015, the proportion of people without sustainable access to safe drinking water.*
 - *Achieve, by 2020, a significant improvement to the lives of at least 100 million slum dwellers*
8. Develop a global partnership for development

Source: Hens & Nath, 2005.

2.4 ICLEI- Local governments for sustainability

ICLEI is an international association made up primarily of local governments committed to sustainable development. ICLEI was established in 1990 as the International Council for Local Environment Initiatives (ICLEI). The organization has a membership of associations from over 1074 cities, towns and counties worldwide. ICLEI provides training, information sharing, networking and support to local governments. (International Council for Local Environmental Initiatives [ICLEI], n.d.).

ICLEI is a critical partner when addressing the environmental issues. It essentially provides a forum whereby member local authorities are encouraged to incorporate sustainable development principles in their planning. Within the context of cities and protected areas, Tryzna (2005) notes that local authorities often do not take protected areas into their planning. However ICLEI is working to change this tendency, for instance in 2006 the organization started a biodiversity initiative to involve local governments in biodiversity conservation. The aim is to provide a framework for ICLEI members to integrate

biodiversity conservation in their planning, policy making and decision making. (ICLEI, n.d.). In addition ICLEI has another initiative of building sustainable cities and communities by working with other stakeholders to address issues on poverty and sustainability.

3 The conceptual framework

This section is a discussion on how cities can develop in a sustainable manner without jeopardizing their valuable biodiversity and ensuring that protected areas thrive and meet their goals of conservation. This section also gives an answer to the following research question:

What is the linkage between cities/ urban areas and protected areas?

3.1 Sustainable development

The World Commission on Environment and Development (WCED) defined sustainable development as: the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (World Commission on Environment Development [WCED], 1987). The concept of sustainability has been accepted globally as one that deals essentially with the question of balancing development and conservation interests thereby creating a unified platform where these issues could be discussed (Ling, 2005).

History of the sustainable development concept can be traced to the UN conference on the Human Environment held in Stockholm, Sweden in 1972. The conference then focused on how environmental problems could be dealt with using science and technology. Ten years after the Stockholm conference, another meeting Stockholm +10 conference was held in Nairobi, Kenya. The conference in Nairobi conference made recognition of the social and economic drivers of environmental problems. This led to the establishment of the World Commission on Environment and Development (WCED). In 1987 the WCED published a report that popularized and placed the concept of sustainable development in the global spotlight. The report not only addressed the relationship between environment, economy and society, but it also emphasized on the need for interdisciplinary approaches and solutions to tackling man made environmental problems (Hens & Nath 2005).

Whereas Sustainable development seems to be the ideal approach to protecting the environment and improving the quality of human life, the reality is however not so straight forward. The challenge can be better understood by looking at Maslow's hierarchy of human needs.

3.1.1 Maslow's hierarchy of needs

Maslow's 1954 model on the hierarchy of human needs identifies five levels of needs: physiological, safety, belongingness, esteem and self-actualization (Amine, 2003).

Maslow's concept on the hierarchical prioritization of human needs is useful in shedding light on the debate concerning development and environmental conservation. According to Maslow, the physiological needs are the primary needs that have to be realized before one can move to the next level. This is the dilemma that confronts decision makers, what is the priority? To encourage development to ensure that the basic needs are provided or to protect the natural environment that is the source of most of the physiological needs? Unfortunately tendency has been more on growing economies without giving due consideration to safeguarding the environment which is the backbone of development in any sense.

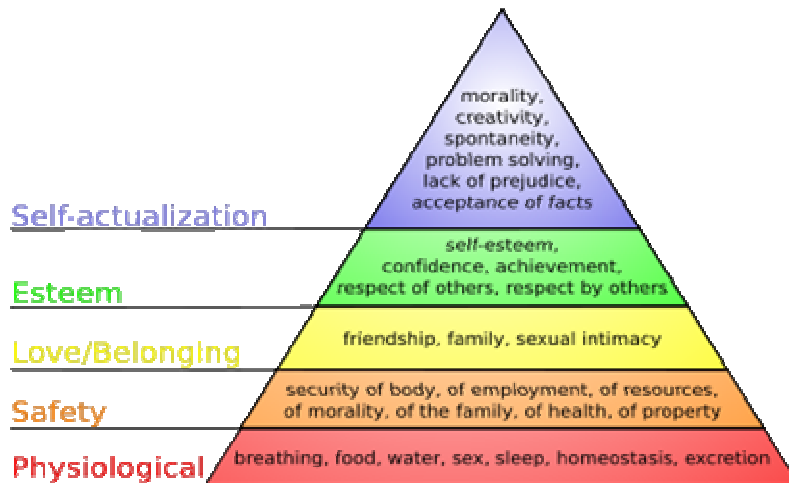


Figure 3-1 Maslow's hierarchy of needs

Source: image by Finkelstein, 2006.

Narrowing down the debate on actualization of needs and conservation, this dilemma can be further demonstrated when it comes to urbanization and protected areas.

3.2 Cities and protected areas: the inherent conflict

Focusing on the relationship between conservation and urbanization, a problem that is apparent is the disconnection between cities and protected areas (Tryzna, 2005). Two arguments that could explain this situation are: the conflict between conservation and development (Beatley, 2004; Mitlin & Satterthwaite, 1996) and the second argument is the alienation of urban residents from nature (Tryzna, 2007; Wang, 2007)

Beatley (2004) explains that there are conflicts between species protection and urban development. The protection of biodiversity will often conflict with demands for housing and economic development. These conflicts are more frequent and intensive where there are a greater number of rare and endangered species or where population and development pressures are most severe. Mitlin and Satterthwaite (1996) also agree with this view and they talk of the large gulf between those whose primary concern is conservation and those whose primary concern is meeting the human needs. This implies that to deal with issues on protected areas one of the main strategies would be how to create a bridge between interests of conservation and those of development.

Second issue is the alienation of urban residents from nature (Wang, 2007); they have less and less contact with nature. There are different reasons for this: the urban poor might not have access or opportunity whereas the affluent people choose other leisure activities or entertainment driven by electronic technology (Tryzna, 2007). This is a drawback to conservation because it is essential to have broad public support. It is imperative that people have an understanding of what is at stake and that they get involved as well (Tryzna, 2005). Public support will thus be achieved only when urban residents recognize the crucial role that protected areas play.

3.2.1 Protected Areas (PAs)

Protected areas may mean different things to different people. As Dudley (2008) explains, there are variety of protected areas in terms of size, location, management approaches and objectives. Therefore the term denoting a protected area encompasses a range of definitions.

World Conservation Union (IUCN) has a standard definition of PAs that has been internationally accepted, which is, “an area of land and / or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means” (Shadie & Epps, 2008, p.9). This definition is the one often used and quoted in literature, however, IUCN also has a more recent definition of a protected areas as, “a clearly defined geographical space, recognized, dedicated and managed through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values” (Dudley, 2008, p.8). Both of these definitions are more or less the same except the second is more specific.

Protected areas are essential tools to conserve biodiversity. As Dudley (2008) notes, they are the cornerstones of virtually all national and international conservation strategies. According to 2007 figures from the World Database on Protected Areas (WDPA), there are 106, 926 Protected Areas worldwide. These PAs cover 19.6 million km² or 12% of the earths surface area (Shadie & Epps, 2008).

The IUCN has categorized protected areas into six management categories depending on the degree of human intervention (Dudley, 2008) these categories are:

- Strict protection: strict nature reserve / wilderness areas,
- Ecosystem protection: national parks,
- Conservation of natural features: natural monument,
- Conservation through active management: habitat / species management areas,
- Landscape / seascape conservation and recreation: protected landscape / seascape
- Sustainable use of natural resources: managed resource protected areas.

The management of protected areas is varied: they could be managed by government agencies solely, jointly managed by government and non governmental actors, managed by private entities or managed by indigenous peoples and local communities (Dudley, 2008)

Protected Areas are vital in biodiversity conservation; however their role is endangered due to threats from human activities. Shadie and Epps (2008) identify the global threats that protected areas face. These threats are; encroachment, habitat fragmentation, poaching, inappropriate development, invasive species, climate change & sea level rise, mining and over use from tourism.

In the developing countries PAs face numerous challenges and threats due to the increasing demands placed on their governments to provide for housing, transport, food and other needs. In addition these governments have limited resources thus economic growth is given more priority than conservation. This is the reason why urbanization seems to be growing at the expense of the natural environment. However this does not have to be so, it is possible sustainably develop our cities without posing a threat to our protected areas.

3.2.2 Sustainable development of cities

As a solution to the conflict between conservation of biodiversity and the development of urban areas, sustainable development is deemed to be the panacea. The rationale is “sustainable development has been used to stress the simultaneous achievement of development and environmental goals” (Mitlin & Satterthwaite, 1996).

For cities to develop sustainably it is necessary to first recognize the interdependence between protected areas and cities. Protected areas provide significant benefits to cities: ecosystem services such as natural regulation of water flow, water quality, modification of microclimates, and assimilation of wastes. This is in addition to economic benefits such as tourism, employment and income for businesses and social benefits such as good health, recreation, education, and preservation of historical and cultural heritage. On the other hand protected areas depend on cities for political support, financial support and for visitors; hence it is a mutually dependent relationship (Tryzna, 2005; Connor, 2005). To emphasize this interdependence Menezes (2005) states that, “the battle for conservation will be won in the cities” This is in recognition that the opinion makers, politicians, the lobbyists and key organizations are more likely to be based in the urban areas.

An important question then is how sustainable development can be applied to cities and protected areas. First, city planners need to recognize the importance and value of protected areas. Jowsey and Kellet (1996) point out that while city planners’ maybe sensitive to environmental concerns this does not ensure that the policies that are formulated and implemented are effective towards protecting the environment. The barriers as Tryzna (2005) explains are largely political, more so when one considers that the responsibility on environmental issues is split between various government agencies.

To overcome the challenges mentioned institutional solutions are necessary. The responsibility is not merely for the conservationists but for all the city planners. The 1992 Rio Declaration on Environment and Development recognizes the central role of local authorities in achieving sustainable development. For a city to be sustainable then, sustainability has to be deliberately incorporated into the development agenda (Ling, 2005). To accomplish this many cities have undertaken initiatives whereby the concept of sustainable development is translated into practice in their policies and development programmes.

These initiatives are both international and local. An example of an international one is the International Council for Local Environment Initiatives (ICLEI) formed in 1990. This is an association of local governments that advocates for the work of local governments in environmental protection. It serves as a forum for both international cooperation and information sharing (Ling, 2005).

In essence these efforts indicate that collaborative efforts are crucial in dealing with issues on protected areas and cities. To elaborate further, considering the problem of urban sprawl this stems from policies on land use, the land market values, public policies on transport, housing and energy (Haroldo et al. 2007). Hence only a holistic approach to the problem will suffice. The collaborative approach needed to handle issues on protected areas and cities call for strategic partnerships between various stakeholders.

3.3 Partnerships

Shadie and Epps (2008) point out that with regard to urbanization and protected areas the issues are largely political. This complicates the matter because most of the PA managers will be prevented from intervening in political matters (Tryzna, 2007). This is where partnerships become crucial, as PA managers can affiliate themselves with actors who will take up the political challenge on their behalf. In addition partnerships instill a sense of ownership, responsibility and accountability amongst those actively involved. The use of local / indigenous knowledge is another benefit likely to be achieved through the participation of a wide diversity of stakeholders.

Regarding protected areas and urbanization, partnerships between local authorities and park managers, enhances integrated city planning. Partnerships vary from temporary coalitions, formal partnerships and umbrella bodies (Shadie & Epps 2008).

Another critical point in favor of partnerships is the fact that protected areas may straddle more than one local authority. This may bring about the need of some sort of partnership between different government agencies and local authorities.

4 Kenyan case study

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

JOMO KENYATTA, *Prime minister of Kenya*, 1963

4.1 Introduction to protected areas in Kenya

The first national park in Kenya was established in 1946. About 8% or 44,359 km² of Kenya's land mass is protected area for wildlife conservation (Kenya Wildlife Service [KWS], 2006). Before the establishment of a protected area system, ordinances and royal decrees were used to designate hunting in areas where there was a high concentration of wildlife, at this time Kenya was under the British colonial rule. Later the establishment of conservation areas resulted in the displacement of the indigenous people and the loss of their ancestral land as well as the loss of access to the resources in these lands. The result was resentment towards protected areas amongst a number of local communities that were adjacent to protected areas.

Currently, the Protected Areas are managed by a State Corporation i.e. Kenya Wildlife Service (KWS). KWS was established in 1990 and manages protected areas within the mandate defined by the Wildlife Conservation and Management Act Cap 376 of 1979. The protected areas comprise of 22 terrestrial national parks, 28 terrestrial national reserves, 4 marine national parks, 6 marine national reserves and 5 national sanctuaries. In as much as Kenya has been able to set up a number of protected areas, wildlife survival remains in a precarious position. This is because most of the wildlife estimated to be about 65% to 85% is actually found outside protected area (KWS, 2006) as a result wildlife is vulnerable to human activities

Wildlife is crucial to Kenya's economy. It is a major source of employment, foreign exchange and contributes greatly to the socio-economic development of the country, and is thus necessary for poverty alleviation. Tourism is Kenya's second largest industry contributing about 12% to the country's GDP and 21% to foreign exchange earnings. In addition, 70% of the tourism industry is dependent wildlife as an attraction (KWS, 2005). Notwithstanding the immense contribution of wildlife to Kenya's economy, the continued existence of wildlife is increasingly being hampered by inappropriate land use and conflicting government policies that undermine conservation efforts.

Protected Areas in Kenya are facing a lot of pressure as a result of the growing population. The current population is estimated to be about 34.7 million and projections indicate that this population may grow to 64.8 million by 2050. Of the current population about 36% of it is urban (Tryzna, 2007). Kenya is largely an agricultural country so most of the threats to the parks are associated with agricultural industry both small scale and large scale. However the country's main cities i.e. Nairobi, Nakuru and Mombasa have important parks within their boundaries. These parks are: Nairobi National Park, Lake Nakuru National Park and Mombasa Marine Park and Reserve. For this study Nairobi National Park will be used to exemplify the threats and pressures facing protected area.

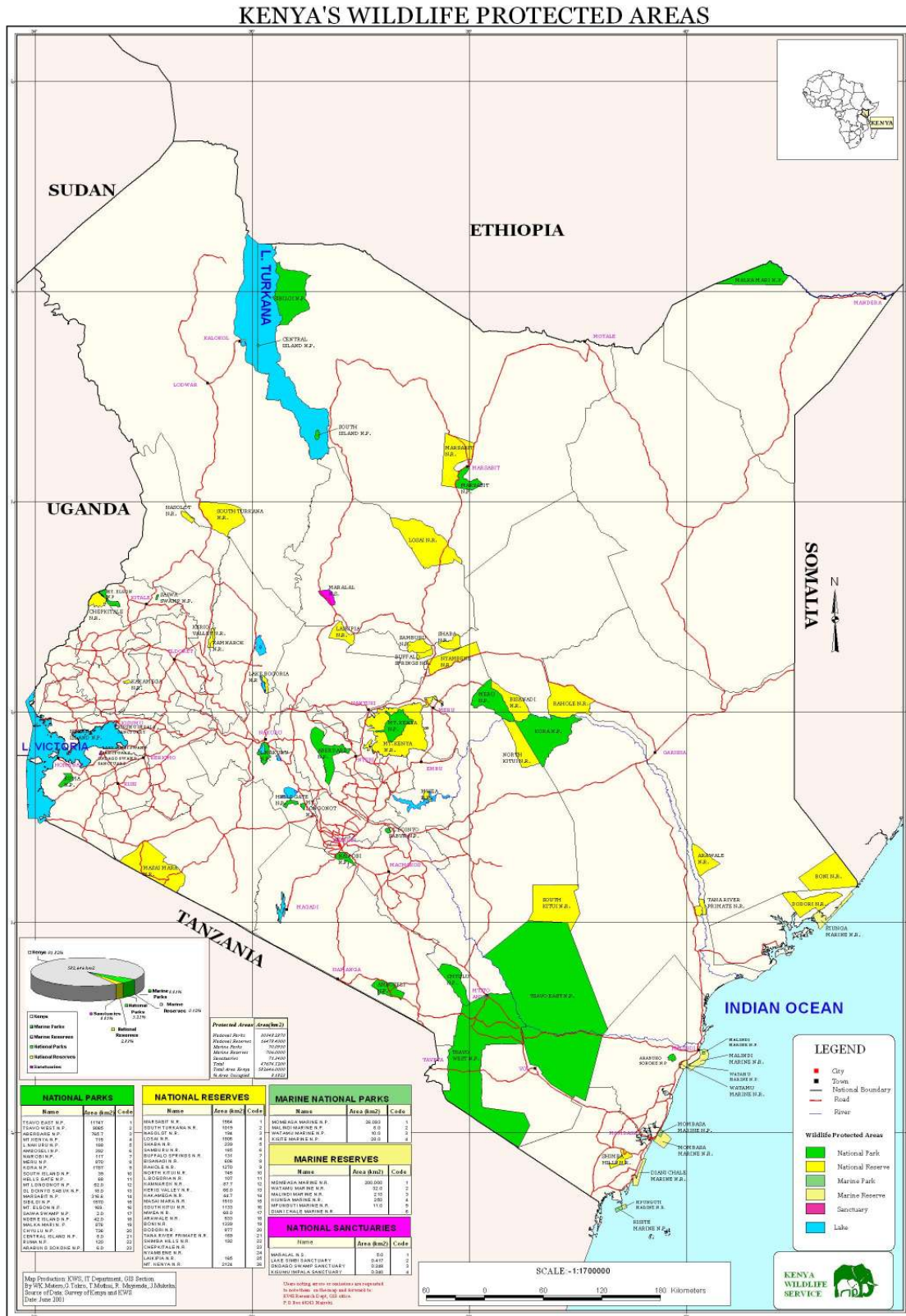


Figure 4-1 Map of Kenya's protected areas

Source: Kenya Wildlife Service, 2006.

4.2 Nairobi National Park (NNP)

Nairobi National Park was established in 1946 and it was the first national park to be gazetted in Kenya. As the name suggests, the park is located within the capital city of Kenya, Nairobi. The name Nairobi means ‘a place of cool waters’ in the local *Maa* language spoken by the Maasai ethnic community. The Park covers 117 km². The park has given Nairobi a unique status as it is touted to be the only capital city in the world that has a wildlife national park within it (Tryzna, 2007). This all the more exceptional taking into consideration that the park is inhabited by large herbivores and carnivores whilst, situated very close to a large metropolitan city. It is only about 10 kilometres from the city centre (KWS, 2003). The Park has on average about 100,000 visitors annually. The table below summarizes a few facts about the park.

Table 4-1 Facts about Nairobi National Park

| | |
|------------------|--|
| Area | 117 km ² |
| Date established | 1946 |
| Visitors | 100,000 (approximately) |
| Employees | <ul style="list-style-type: none"> • Over 120 permanent employees • 20 weekly temporary staff |
| Income | About 45, 000,000 Kenya shilling (450,000 Euros) |
| Value | <ul style="list-style-type: none"> • Education, recreation and aesthetics • Rhino sanctuary • Carbon sink for Nairobi |
| Threats | <ul style="list-style-type: none"> • Urban sprawl • Pollution • Human- wildlife conflict |

Source: KWS, 2006

4.2.1 General Description

Location

Located at 2°18’-2°20’ South and 36°23’-36°28’ East. Lies at an altitude of 1780 m above sea level. The park is part of the wider 2000km² of Athi-Kapiti plains (Bett, Kingoo & Muli, 2006).

Climate

The area has a bimodal rainfall pattern and receives a mean annual rainfall of between 762 mm on the east side to 911 mm on the west side. The long rains occur from March to May and the short rains from October to December (Bett et al. 2006). The Maximum number of rain days is 85 (KWS, 2005). For the temperatures: NNP has an annual mean temp of 19.6⁰ C. The Maximum is 25.3⁰ C and the minimum is 13.6⁰ C (Ngene & Kyale, 2002).

Vegetation

The ecosystem of the park is open grass plains with scattered acacia bush. Vegetation in the park has been identified to be of eight categories i.e. closed dwarf tree grasslands, open low

grasslands, grassland, scattered low-tall tree grassland, open dwarf tree grassland, open tall riverine woodland, forest glades and dense tall forest (Ngene & Kyale, 2002).

Hydrology and water sources

A series of drainage tributaries on the upper part of the park form the Mokoiyet drainage system, which channels its water into Mbagathi River. This river is the major water source for wildlife in the area. Most of the other rivers in the park are seasonal and additional water sources are boreholes and dams.

Animals

NNP is home to abundant animal species that include over 100 mammal species, birds, reptiles, amphibians and numerous invertebrates. The park hosts the country's largest black rhino sanctuary for the critically endangered black rhino. Four of Kenya's big five wild animals are found in this park, i.e. lion, leopard, buffalo and rhino. Only elephants are not represented.

The animals in the park are as follows:

- Mammals:
 - Plain game: wildebeests, buffaloes, zebras, impalas and cokes hartebeests.
 - Carnivores: lions, leopards, cheetahs, and the serval cats.
 - Others: Rhino, hippopotamus, baboons and vervet monkeys in the forested and riverine areas.
- Reptiles: crocodiles and snakes.
- Birds: a diverse birdlife with 400 species recorded
- Threatened species; black rhino, cheetah and leopard

The population number of animals in the park fluctuates due to migration. Notably there is a spectacular wildebeest and Zebra migration (KWS, 2005).





Figure 4-2 photos of wildlife in Nairobi National Park

Source: Mutuga, 2009

4.2.2 The park and the larger ecosystem

The park itself is small, however it is part of what is referred to as the Athi-Kapiti ecosystem. The park plays a vital role within the whole Athi-Kapiti plain ecosystem since it is the only part that has water and pasture during the dry season. The park attracts the migration into it during the dry season and the rest of the plains act as a dispersal area. *A dispersal area is what is commonly referred to as an animal corridor, an area in which animals move in* (KWS, 2003)

The park is separated from the city by a fence in the northern, eastern and western part. The southern border is open to allow migration in and out of the park through Kitengela and Athi-Kapiti plains (Bett et al. 2006). The park borders Nairobi city on the eastern side. The western and northeast parts border industrial area of Nairobi.

The Southern area of the park is the dispersal area (Athi- Kapiti plains and Kitengela). This is an area vital for the migration of herbivores during the rainy and dry seasons. One of the major attractions happens to be the annual wildebeest migration in July –August, this happens to be the second largest annual migration of large herbivores in Kenya, the first is the wildebeest migration in the famous Maasai Mara-Serengeti ecosystem.

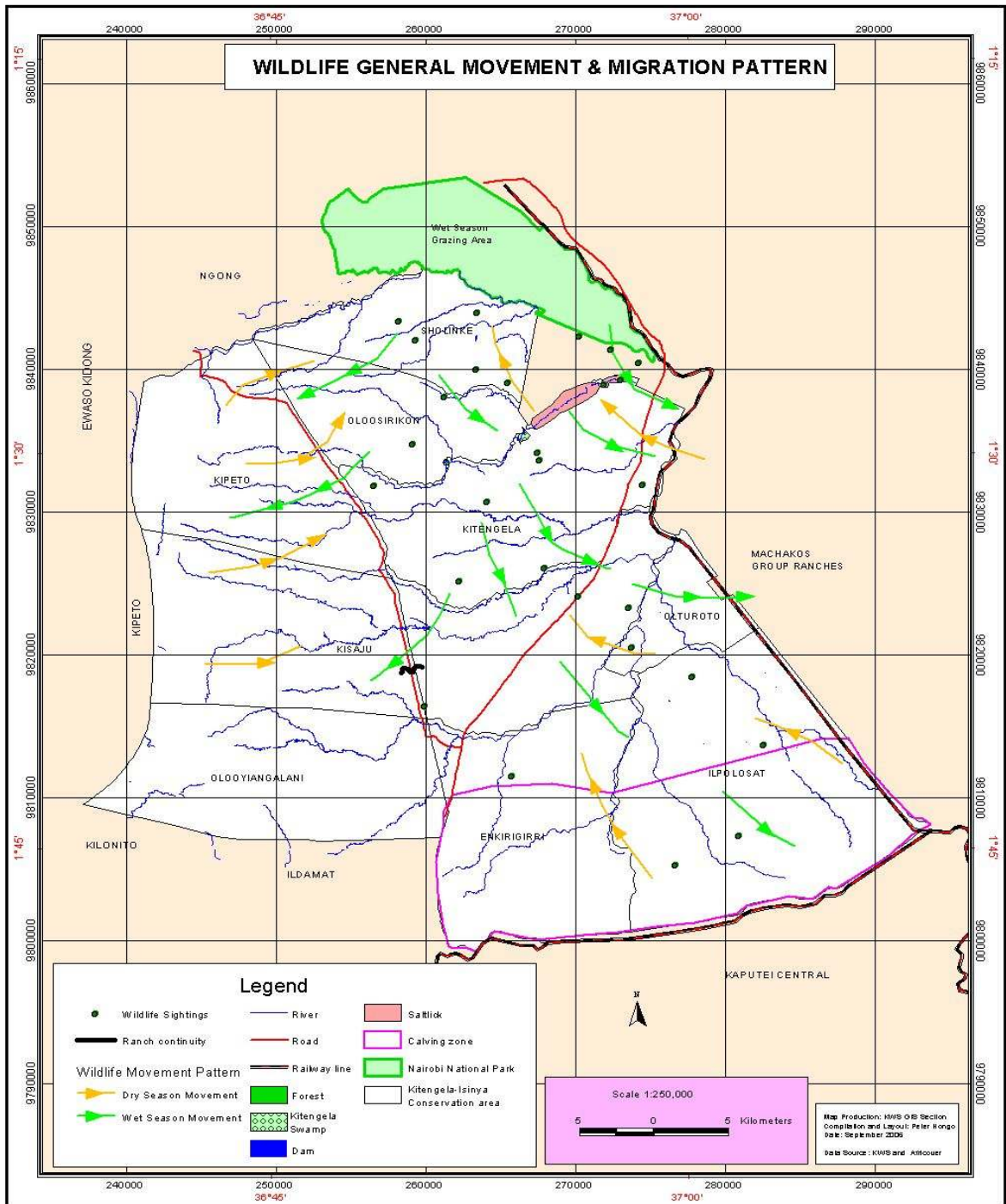


Figure 4-3 A map showing wildlife general movement & migration pattern

Source: State Kenya Wildlife Service, 2006

4.2.3 The park significance

Nairobi National Park is of special significance. It well located and placed to serve as the gateway to Kenya's protected areas. Its accessibility attracts both foreign and domestic tourists. For a lot of tourists this is the first park they visit after arriving in Kenya. Another important reason why the park is very important is that, it is one of the few parks in Kenya that generates substantial revenue. In fact the park is ranked fifth in terms of revenue generation.

Out of the 50 or so national parks in Kenya only about ten generate considerable revenue. The implication of this is the contribution the park makes to support conservation in the country. Essentially money raised from parks like Nairobi National Park fund the management of other rural parks that are not accessible or which do not make as much money but need to be managed just as well to take care of the wildlife therein

4.2.3.1 Management objectives

The management objectives of NNP as listed in 2005-2010-ecosystem management plan (KWS, 2005), are as follows:

- To conserve the unique flora, fauna, natural processes and significant values of the NNP ecosystem
- To provide opportunities and information for visitors to experience the park without impairing its resources
- To Maintain wildlife migration and dispersal areas
- To Protect wildlife though; patrols, enforcement of the law and community policing



Figure 4-4 Kenya Wildlife Service rangers patrolling the park

Source: Kenya Wildlife Service

4.3 Statement of the problem

The close proximity of Nairobi National Park ecosystem to a capital city has attracted land prospecting, settlements, urbanization and industrialization. The combined effect of the

increasing human urban population, the associated infrastructure development, and the overall rapid establishment & expansion of unplanned and uncontrolled urban centres has lead to: encroachment and decline in wildlife habitat, increased poaching, loss of biodiversity, an increase in environmental pollution, an upsurge in human-wildlife conflicts, mushrooming of slums, and rising poverty. All this has had a cumulative effect leading loss of wildlife habitats.



Figure 4-5 pictures showing of the park with the city in the back ground

Source: Mutuga, 2009

5 Findings

This section is regarding the findings from secondary and primary data sources, observation in the field and interviews carried out. In addition the research question addressed here is:

How does urbanization endanger the viability and survival of Nairobi National Park?

The Nairobi National Park ecosystem has in the recent past witnessed a rapid demographic transition due migration of human beings into this area. The movement of people into the area is because of its proximity to Nairobi city and the rising demand for residential development thus accelerating land use changes in the ecosystem. Consequently, the main threat to the park with regards to urbanization is urban sprawl. The city population has grown tremendously. Census figures in 1948 gave the city population to be 119, 000, in 1999 it was 2.14 million and at present it is estimated to about 3 to 4 million. Future projections estimate that the city population will be about 10 million by 2020 (Tryzna, 2007; KWS, 2006).

Heavy industry, residential and commercial developments extend right up to the park fence. In the northern section of the park there are tanneries, steel works, a cement plant and a chemical factory. The southern section of the park is the dispersal area / animal corridor, crucial to animal migration. This area, which is outside the park boundaries, is being subdivided and fenced off into small plots; slums and affluent neighbourhoods are being developed in these areas. In addition there are now livestock farms, eucalyptus plantations and plastic green houses have been set up for flower production (Tryzna, 2007). The effect of all these land uses is landscape transformation and habitat fragmentation.

The increasing human population in the ecosystem is of particular concern because this is semi-arid savannah grassland. It's a vulnerable environment, which may not be able to support the increasing human pressure due its limited water resources.

The main identified threats are as follows:

- Fencing in the dispersal area
- Commercial and residential developments
- Pollution from industries

From interviews carried out with park officials, the problem is not inside the park but is beyond the park boundaries and jurisdiction and the identified threats attest to this.

5.1 Threats

5.1.1 Fencing in the dispersal area

The lifeline of the park is the southern dispersal area. Essentially maintenance of the park's ecological integrity depends on wildlife access to the Kitengela-Athi Kapiti dispersal area (KWS, 2005). The southern rangeland serves as a wet season dispersal area for an estimated 20,000 large herbivores (Khisa, 2001). The current problem is that a significant fraction of NNP's dispersal area has been lost to urbanization, industrialization, human settlements and agriculture (Khisa, 2001).

Historically, pastoralists mainly the Maasai owned the land in the southern dispersal area; their way of life allowed a mutual coexistence with wildlife for ages. The land tenure practiced under this system was public or communal ownership of land. Co-existence with wildlife was possible because the large tracts of land were left unfenced and animals could move in and out. However due to land use changes this is no longer the case. The changes have been gradual from pastoralism to subsistence farming and to the development of human settlements. These changes have been driven by the increase in human population and the availability of prime but not very expensive land near to Nairobi city centre. The land tenure system has transformed from community ownership to one of private individuals. Consequently fences have now being erected in the traditional migratory routes. In addition this land that is naturally appropriate to support pastoralism is now being used for other unsustainable uses like cultivation agriculture and intensive human settlement.

The park in itself is too small to keep a viable population of migratory species. Migration is essential to the survival of the park as a diverse, viable and healthy ecosystem. The fences coming up in the southern rangelands are literally choking off the life of the park. The map below shows the fencing in the dispersal area.

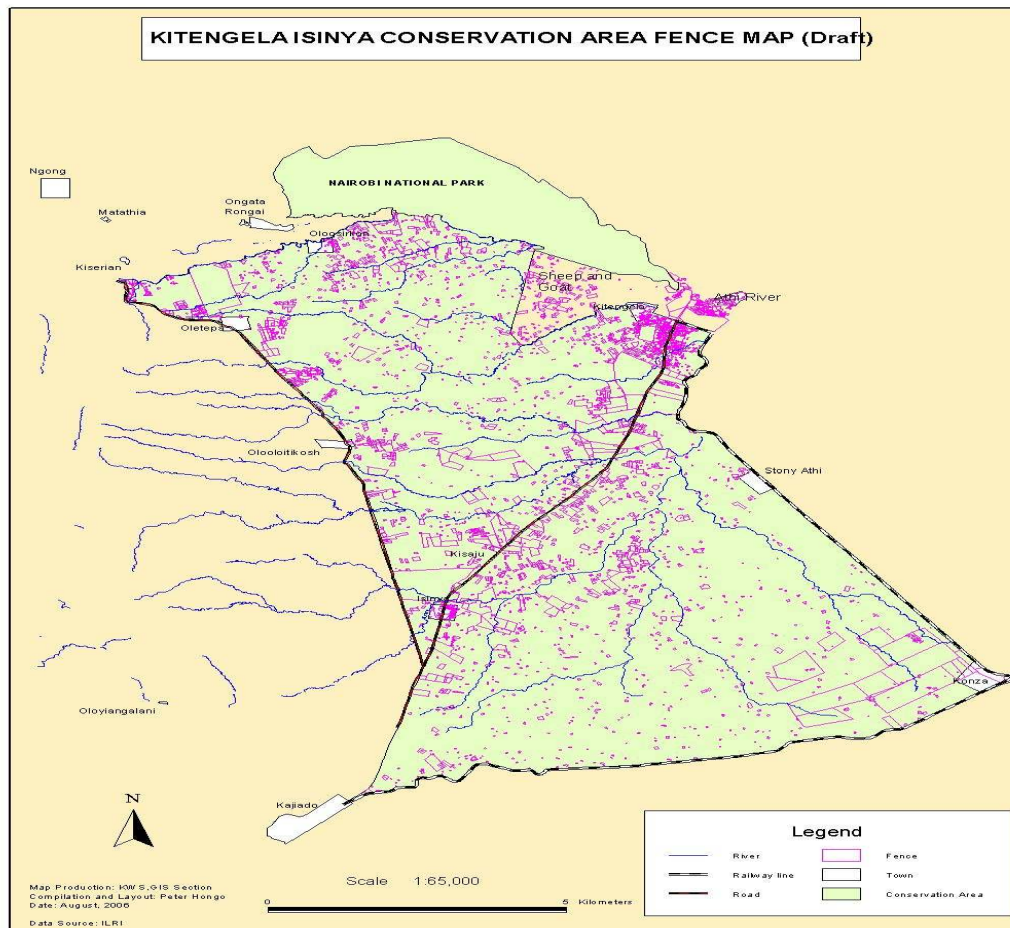


Figure 5-1 a map showing fencing in the wildlife dispersal area

Source: Kenya Wildlife Service, 2006

Next map portrays developments in the animal migratory corridor. All these developments are barriers to free movement of animals. See map below

Developments in the dispersal area

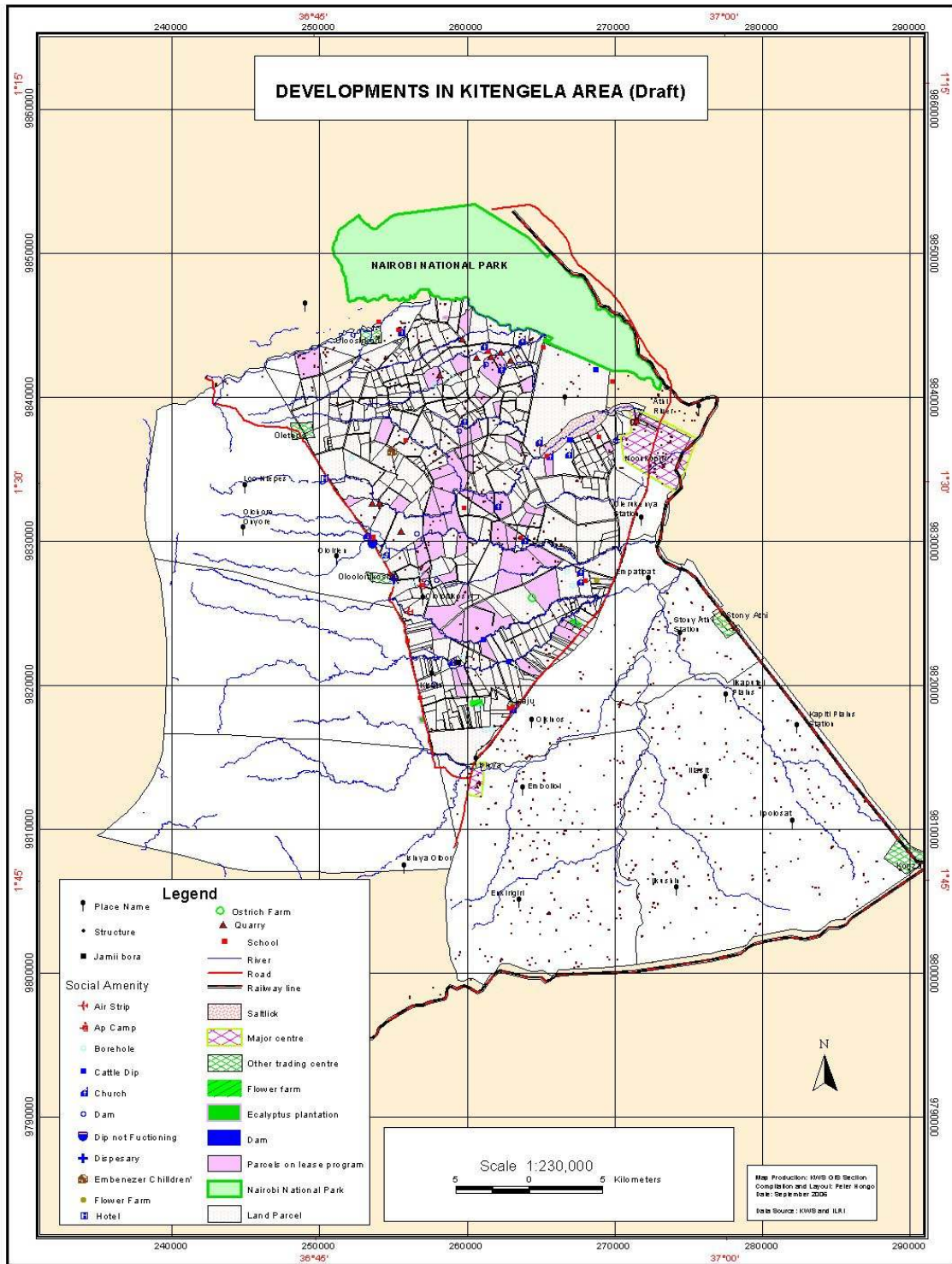


Figure 5-2 A map of developments in the Kitengela dispersal area.

Source: Kenya Wildlife Service, 2006

5.1.2 Commercial and residential developments

The expansion of Nairobi city is currently towards the Nairobi National Park ecosystem as it has open areas for settlement and urban development. A KWS technical report done in 2006 indicates that settlement is growing in three distinct areas of Ngong-Kiserian-Rongai, Embakasi-Mulolongo-Athi River and Kiserian-Isinya- Kitengela. These settlements are largely smallholdings of land and residential areas of narrow strips along the major highways linking the urban nucleus. This settlement pattern has virtually encircled the Nairobi National Park (KWS, 2006)

During a drive around the park it was observed that residential buildings are currently under construction right up to the fence of the park particularly in the north and north east side of the park.



Houses being constructed



A hotel construction

Figure 5-3 Residential and commercial developments along the fence of Nairobi National Park

Source: Mutuga 2009

In addition slums are also mushrooming in the park vicinity and one is able to see garbage and waste from the slums ends up in the park as well. All these developments are simply reducing the aesthetic value of the park in addition to waste such as plastic bags posing a danger if ingested by wild animals.



Figure 5-4 slums mushrooming on the boundary of NNP

Source: Mutuga 2009

5.1.3 Pollution from industries

Pollution from industries located near the park is becoming a concern. These industries are located in the eastern and northeastern side of the park. The major alarm is exposure of wildlife to chemical pollution. The park drainage system receives industrial, agro-industrial effluents, agricultural runoff and domestic sewage from its western and northeastern borders (KWS, 2003)

These Industries include a steel industry, a tanning factory, a cement factory, an oil refinery and a detergents and chemicals company. A report done in 2006 records that most of these industries discharged untreated wastes into the Athi Kapiti Dam, which is one of the water sources. For instance, wastewater from Kapa oil refinery was released without treatment, it had a strong pungent smell and the grass surrounding this pool of water had completely dried off. Water samples collected from some of the dams and water inlets to the park indicate that the Chemical Oxygen demand is very high, an indicator of high organic wastes in the water (Bett et al. 2006)

The impact of pollution: Cheetah gate

The danger posed by the industries is not only to the wildlife but the employees working in the park and the residents living in the area. At the moment one of the sites inside the park is now off limits as a result of a neighbouring leather tanning industry. This site which is referred to as Cheetah gate was previously one of the entry gates into the park. However it is now closed. In addition there was a base camp nearby where staff lived. This base camp was important as the staff could monitor and patrol wildlife as well as ensure visitor security.

The tanning industry made life unbearable at this site for both the staff and visitors. The immediate impact that one experiences is the foul smell and noise. From an interview with the park manager it was learnt that the most of the staff living and working at cheetah gate started having health problems. Most had noticeably red eyes and respiratory problems. Tourists also complained of the smell and noise and this soured their visit experience. Therefore the park management decided that the area would no longer be used as an entry point or a base camp. There could be worse effects on the health of human beings and animals though this is yet to be established. A physical visit to this site gave proof of the disturbing foul smell in the air.

The park managers feel powerless to address the problem of the tanning industry, which has been licensed by the Nairobi local authority to operate in the area, more over the industries argue they are on land allocated for industrial use.

5.2 Additional threats: upcoming development projects

This are current projects that signify the conflict of interest with those concerned with the conservation of Nairobi National Park and on the other hand those pushing for development of Nairobi. These projects are in essence threats as well. These projects can be aptly be defined as signifying the battle between conservation versus urban development.

5.2.1 Jamii Bora Trust

Jamii Bora is a registered microfinance institution, which in 2002 acquired 293 hectares of land to build houses for the poor people in Nairobi. Their plan was to construct an urban centre to be known as Kaputei. The project is essentially a slum resettlement project. The

place where the trust bought the land is two kilometres from the park and happens to be close to the Athi- Kapiti migratory corridor. The plans for the site including putting up 2000 three and two bed roomed houses, a market, a school, a hospital and a dairy factory. This project will create a new town of about 10, 000 residents.

Jamii Bora is a Kiswahili word meaning Good families; Ingrid Munro a Swedish architect formed the organisation in 1999. The first members were 50 women who were former street beggars. Most members of the organization are among the poorest in Nairobi, they live in deplorable conditions in Nairobi's slums. Thus the members' ambition was to live in better conditions and this was the driving force of coming up with the project to build an urban centre where the poor could be resettled. The project is dubbed as 'affordable and sustainable housing for urban slum dwellers' (Christensen 2008).

The construction of the project is currently underway but it has been dogged by a lot of controversy and opposition. The local Maasai community has vehemently protested against the project. They fear that the project might have adverse effectson their lives: their way of life as pastoralists will be threatened and they feel that they will be disenfranchised. Their fears are based on the fact that the land where the town will be built on was formerly used for grazing. Secondly the sudden influx of outsiders who are from different communities will dilute the Maasai culture in the area. Environmental groups also joined the local community in resisting the project. They argue the development is too close to the Park and migratory corridor. They are troubled by the possible pressure and threat that the project poses to the wildlife in the area. Foreseeable threats include increased poaching / illegal hunting, pollution, increased water demand and demand for infrastructure like roads.



Figure 5-5 The Jamii Bora Housing Development currently under construction

Source: Kenya Wildlife Service

Resistance to the project became a legal tussle. This started when the National Environmental Management Authority (NEMA) denied them the permits to go ahead with the project calling the project a 'mega-environmental catastrophe'. This resulted in a court battle from January 2005 that pitted the trust versus the environmental groups and Maasai community. After 13 months of hearings and appeals, the high court of Kenya ruled in favour of Jamii Bora trust in March 2007. Construction began later in 2007.

While there is no denying the noble goal of this project, it does represent the dilemma conservationists are likely to face in the face of a growing urban population and the pressures arising out of that. This is more because availability of housing is one of the biggest problems facing the urban population in Nairobi. Housing for the low-income group is sorely needed because investors focus on providing housing mainly for the high and middle-income groups, as they are sure to make profitable returns. In actual fact the housing demand in the country is estimated to be 150, 000 units annually however the annual supply is 35,000 housing units annually (GOK, 2008). The approval of the Jamii Bora indicates the policy weaknesses of environmental protection and wildlife conservation.

5.2.2 Road bypass

As the Nairobi population grows rapidly, the traffic congestion has become a daily nightmare and an impediment to the comfort and convenience of the city residents. To alleviate the traffic problem the government is in the process of improving the road infrastructure by creating more roads and expanding the existing ones to allow a smooth flow of traffic.

In this regard the government plans to construct a road bypass that will pass through the park. Despite the opposition from Kenya Wildlife Service the government is set to go ahead with this project. Details on this project were gathered from minutes of a meeting held on 9th September between park officials, government officials from the ministry of roads and consultants. As records indicate the park will lose 40 hectares of land as well one of the water springs which feeds one of the major dams. The incision of the road will be about 200 meters deep into the park.

For the park management this is not a favourable project considering once the road is constructed more development and settlement is likely to follow due to the increased accessibility. However it is a foregone conclusion that the road construction will go ahead. The government has insisted that the project must go ahead with or without the approval of the park management. What is being addressed now is how to minimize the damage to the park ecosystem and an Environmental Impact Assessment is currently being undertaken.

5.2.3 Dam

Water is becoming a key issue for example in 2006 there was a controversial proposal to build a dam in the park to cater for the water needs of the growing suburbs in Mavoko, Kitengela and Athi River. Athi River is one of Kenya's Export Processing Zones. The proposal was brought forward and pushed by industries and the Mavoko municipal council where the dam was to be located. However the conservationists opposed this development not only because it would encourage more development but also because it would affect the availability of water. Plans to construct the dam were later shelved (Mulama, 2006). From unconfirmed sources the plans to construct the dam are under discussion and the possibility

that the dam will one day be constructed remains very much a possibility. This proposed development does indicate the pressure the park is coming under as the city grows and the suburbs spread.

5.3 Consequences of the threats facing the park

Implications

Consequences of these activities are: ***the population of wildlife species in the park is reducing***, in comparison to the 1970s it is estimated that there has been about 70% decline in wildlife (KWS 2006). This is primarily as a result of loss of space and habitat for wildlife. Migration of animals in and out of the park is becoming more restricted year after year as private landowners' fence off more land.

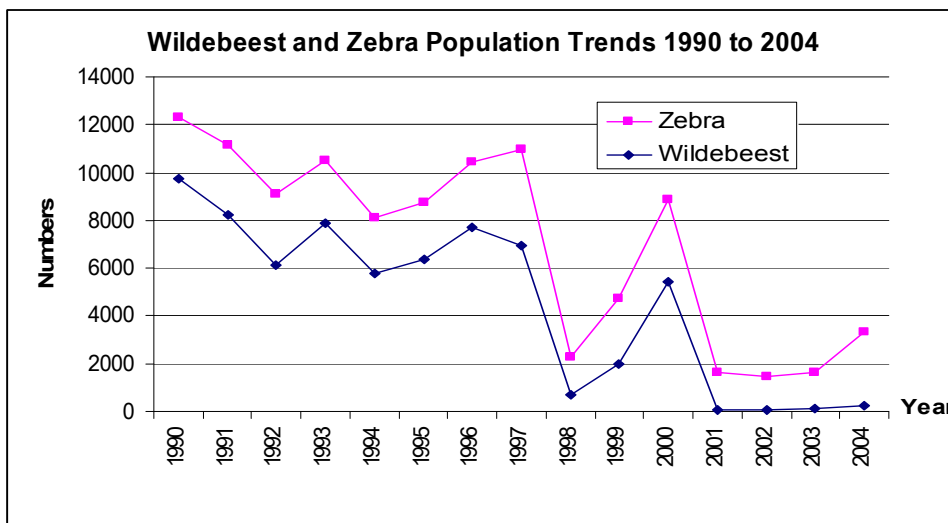


Figure 5-6 Wildebeest and Zebra population trends 1990-2004

Source: Kenya Wildlife Service

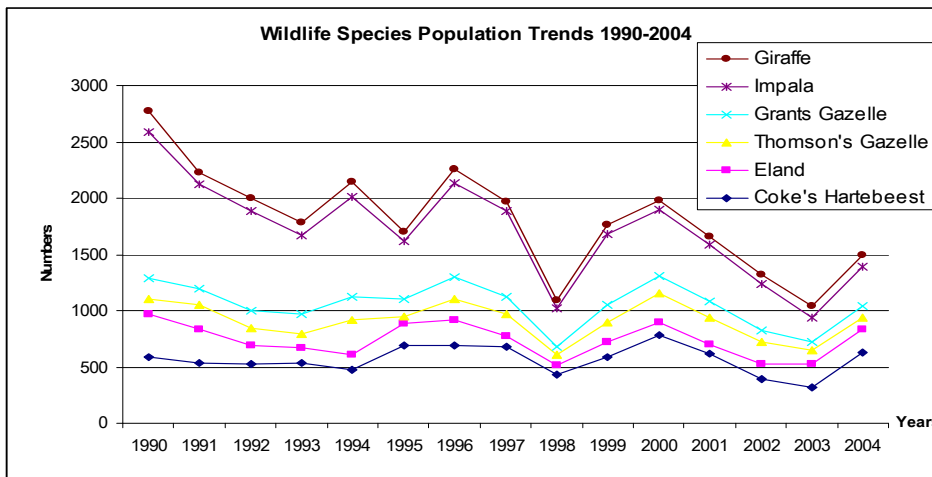


Figure 5-7 Wildlife population trends 1990-2004

Source: Kenya Wildlife Service Database

If Migration stops this will lead to the death of the park, it will become more of a zoo than a wildlife park and thus lose its ecological and tourism potential. To expound this further, if the park becomes fully fenced its survival will be dependent on having to restock the park occasionally with wild animals, these are a lot of implications, and the first being financial as it is an expensive process. Secondly, the migration of the large herbivores will cease and this will reduce the variety of species found in the park as well as the touristic attraction.

Encroachment of people near to the park has led to human wildlife conflicts. For instance lions and other predators follow herbivores moving through the migratory corridor. The wild predators also attack livestock and human beings in the area. This has led to retaliatory attacks whereby people kill lions for the loss of life. Currently in Kenya there is compensation given by the government for the loss of human life as result of wildlife attacks however this does not cover the loss of livestock. In the period 1998 to 2002, 51 threats to human life were reported. The animals that attacked were mainly rhinos, buffaloes and lions. The table below shows the attacks on livestock in the same period.

Table 5-1 the number of livestock killed by predators (1998-2003)

| Predator | Type of livestock killed | | | |
|--------------|--------------------------|------------|------------|------------|
| | Cattle | Sheep | Goat | Total |
| Lion | 64 | 102 | 80 | 246 |
| Leopard | 0 | 66 | 90 | 156 |
| Cheetah | 0 | 16 | 5 | 21 |
| Hyena | 1 (calf) | 1 | 3 | 5 |
| Total | 65 | 185 | 178 | 428 |

Source: Kenya Wildlife Service Database

Water available for the park is gradually being degraded and decreasing as the users increase. These users include the industries, quarries, flower farms, residents in the suburbs and slums. To make it worse some of the industries like the cement factory, chemical factory, tannery and steel works dump their waste into the river, which passes into and through the park. The river is an important watering point for the animals and the pollution is becoming a problem.

Another effect of urbanization has been the increase of **exotic and invasive species like *lantana*, *eucalyptus* and *kei apple* into the park ecosystem.** This endangers the indigenous the park biodiversity. For example kei apple is a plant used as hedge by a lot homesteads and as people build homes closer to the park this plant is now creeping into the park.

5.4 Identifying the cause of the threats; a look at the policy framework

While identifying the threats that the park is currently experiencing it becomes evident that the cause of the problem is a policy one as well as a political one. Weak policies have

undermined the effective management of Nairobi National Park. It is also a political problem because there is no political will to address the problem but this is rather a less critical issue than that of the policy problem. The reason is that the policy underpins all the efforts regarding both wildlife conservation and urban development. In essence this means that strength or weakness of policy will dictate the relationship between conservation and development.

The sectoral wildlife policy is relatively sufficient for the purpose of establishing and managing protected areas. This law is referred to as the Wildlife Conservation and Management Act Cap 376 of 1979. The current policy does have a major setback because it fundamentally spells out a strong top down approach to wildlife conservation. This has become a problem as communities and other stakeholders want to be more involved in conservation as well as to be beneficiaries as well. However in the context of this research the wildlife policy is more or less adequate the problem is that of conflicting sectoral policies.

To understand this problem further it is important to examine overall national policy direction and what this entails for Nairobi Park. The current national policy document is referred to as the Vision 2030 strategy, which signifies a national goal to develop further by the year 2030.

5.4.1 Vision 2030

Kenya as a nation has so far had two long-term growth strategies. The first strategy was when she was a newly independent country this strategy was the Sessional paper No. 10 of 1965. The document was titled as ‘African Socialism and its application to development. This strategy was targeted towards eradicating poverty, disease and ignorance in the young nation. The implementation of the strategy had mixed results and the goals were not fully achieved.

Kenya’s second long term growth strategy is Vision 2030. This vision was unveiled in 2007 and will be implemented in through five-year medium term rolling plans. The first of these plans covers the period 2008-2012. With this strategy Kenya aims to pursue a vigorous export led growth strategy. Accordingly it is anticipated that the economy will grow at a sustained rate of 10% per annum over a period of 22 years (Government Of Kenya [GOK], 2007). For all intents and purposes the vision is geared towards accelerating the transformation of Kenya into an industrializing middle-income country by 2030.

Vision 2030 strategy is anchored on three main pillars i.e. economic, social and political (GOK, 2007)

- The economic pillar is aimed towards the achievement of a 10% economic growth rate every year
- The social pillar is geared towards realizing just, cohesive and equitable development
- The political pillar seeks to enable an issue based, people-centred, result-oriented and accountable democratic system.

Coming to the relevance of this strategy with regards to this study, the role of Kenyan cities has increasingly been emphasized in the achievement of the 2030 Vision throughout the whole document. As it is states, “there is a positive correlation between levels of urbanization and national economic development.” (GOK 2007, p. 143) urban growth is thus counted as a measure of indicating how developed the country is and will be. This simply ensures that national policy direction will be that of encouraging urban development.

However vision 2030 has its redeeming factors. One, it draw attention to the fact that a national land use policy is lacking. This is the main problem when it comes to land issues in Kenya in whatever sector one dealing with, be it wildlife, agriculture, mining, housing, infrastructure among others. As a matter of fact this is a critical issue of national concern which is also very political. The political undertones in regard to land issues in Kenya have been a major obstacle to coming up with a comprehensive land use policy. The lack of national land use policy has resulted in: the proliferation of informal settlements, insufficient infrastructural services, congestion, environmental degradation, unplanned urban structures and conflicts in land usage.

Secondly, vision 2030 does point outs that urban growth has had a negative impact on protected areas. As it states, “although the country has approved 221 local physical development plans, 12 regional development plans and 1 structure plan in the last four decades, proliferation of informal settlements, urban sprawl and encroachment into protected land remain fundamental challenges” (GOK 2007, p. 22). The major drawback is that planning regarding urban development has more or less reacted to urban development rather than directing it. The result has been environmental degradation due to haphazard urban growth as experienced by Nairobi today. What this means is that Nairobi National Park remains very vulnerable due to the inadequate planning for future urban expansion. Thus this is a gap that has to be addressed to safeguard the future and survival of Nairobi National Park.

5.4.2 Nairobi Metropolitan Strategy 2030

In line with the national vision of 2030 are other sectoral and local strategies; a key one is the Nairobi Metro strategy 2030. The National vision 2030 under its social pillar emphasizes the importance of urbanization, towards this end the government is seeking to establish six metropolises in the country beginning with Nairobi. *What does this mean? That if the problems that are affecting Nairobi National Park are not addressed, similar issues will be replicated country wide to affect most of the other existing protected areas as more urban areas grow or are established.*

The government of Kenya is committed to seeing the Nairobi metropolitan vision becoming a reality. This is to the extent that a ministry of Nairobi Metropolitan Development was formed on 13th April 2008. This is the ministry, which has developed the Nairobi Metro strategy. Recognition is given that, Nairobi as a city and region is strategically positioned to achieve the goals of Kenya’s grand economic blue print, vision 2030 (GOK, 2008). The strategic position of Nairobi is due to its significant international, regional and international importance. That is,

- International: Nairobi hosts two U.N bodies UNEP and UN-Habitat. Other U.N bodies like UNICEF, UNDP and UNCRD have offices in Nairobi. The city also hosts number of international organizations, financial institutions, international research institutions and multinational corporations
- Regional: the country is an important gateway to East and Central Africa in terms of trade and international relations.
- National; Nairobi as the capital city is the seat of government. As a result it is country’s biggest financial, commercial and industrial centre. According to figures from the Central Bureau for 2003: Nairobi contributes over 50% to the country’s Gross Domestic Product (GDP). In addition the city accounts for the largest proportion of country’s wage employment at 44.3% (GOK, 2008). All these factors

ensure the city remains a magnet for migration of people from the rural areas as well as national from the neighbouring countries.

The Nairobi Metro strategy has become a well-publicized document featured in national forums and in the media. Hence it was surprising to realize one of the glaring omissions in the strategy is the issue of wildlife conservation. This has become a controversial issue considering that the Nairobi Metropolitan region is comprised of 15 local authorities, a couple of which have significant numbers of wildlife in addition to Nairobi National Park being in the region. An interview with an official from the Nairobi Metropolitan Development Ministry confirmed this omission. The preparation of the Metro strategy involved experts and professionals working in the urban landscape and for some strange reasons this did not include conservationists. The ministry gave explanation for this omission as being the fault of private consultants who were hired to guide the process.

The park managers of Nairobi Park and other interested parties are quite concerned that the metropolitan plan does not include the national park. To them this reflects the lack of appreciation of the valuable natural resource by city planners and economists. It is however not just the wildlife conservationists who are wary of this plan, the pastoralists communities are not happy with the current metro plan as it is. In a television interview on one of the National Television stations, Citizen TV on 16th April 2009 at 9 am a debate was held between those who were proponents and opponents of the metro strategy. Those who oppose the strategy argued that the blueprint plan from the ministry is only about urbanization. The plan ignores the existence pastoralist communities and undermines the survival of wildlife because conservation areas are not taken into consideration as unique areas of special importance. The proponents of the plan argued that is all about strategic planning that is focused and that is geared towards benefitting all Kenyans. The question of how wildlife will be taken care of within the plan was left unanswered.

It is to be hoped that current debate on the Nairobi Metro Strategy will lead to a plan that can be satisfactory to all parties including conservationists and local communities. In the strategy document it is acknowledged that the process of building an internationally competitive metropolis should be one of achieving social, environmental and economic objectives. This process should not be one of competing priorities. In addition the document also emphasizes on the need of improving the city residents' quality of life without burdening the future generations with adverse outcomes (GOK, 2008).

6 What is being done to save Nairobi National Park

This section will address the efforts and initiatives that exist and are being carried out to ensure that the park is not lost. The following research question will also be addressed

How can the integrity of Nairobi National Park be maintained?

6.1 Opinions on the future of the park

The views about the park appear to be three fold:

1. Conservationists who believe that the park can still be saved as an open ecosystem. The strategy is to lease land from the local community and keep the migratory corridor open. This group advocates for strong action from the government to compulsorily acquire the land in the migration corridor, compensate the private landowners or give them alternatives elsewhere. This is the view of Kenya Wildlife Service (KWS) and Friends of Nairobi National Park.
2. Conservationists who believe that the park is destined to become a closed ecosystem. They call for the entire park to be fenced. Their arguments for this move are; fencing will reduce human-wildlife conflicts, as the animals will be contained in the park, thus protecting human beings and wild animals as well. They also argue that this will curb poaching, as people will be unable to enter and illegally hunt animals in the park.
3. The third are more radical mainly composed of economists. They are calling for the degazettement of the park. They are of the view that the park should be completely done away with and the space be used to accommodate the future expansion of Nairobi.

6.2 The initiatives to save the park

6.2.1 Friends Of Nairobi National Park (FONNAP)

The Friends of Nairobi National Park (FONNAP) is a voluntary non-profit association of corporate and individual members. Their key goal is to safeguard the future of Nairobi National Park by sensitizing the public on the importance of the park. The organization was formed in 1995 and has two key schemes: a leasing scheme: farmers are paid to not fence their land and leave it open for wildlife. Secondly they have a compensation scheme to compensate for damages caused by wildlife (Khisa, 2001). Both of these efforts are under a programme referred to as the Wildlife Consolation and Lease Programme (WCLP) initiated in 2000.

The conservation lease programme has primarily been set up to preserve the migratory corridor in Kitengela. Conservation leases are as Khisa (2001) describes “the granting of interest on land by a proprietor to another for the protection and utilization of biodiversity in a sustainable way for a fixed period” (Khisa, 2001). Basically the landowners are paid to do without any development or subdivision of their land that would interfere with wildlife migration.

The Wildlife Conservation Lease Programme (WCLP) has a target to lease and conserve 60,000 acres of land, which would be enough to allow the seasonal migration of animals in and out of Nairobi National Park. The programme pays participating landowners US \$ 4 per acre per year. Participation in the programme is voluntary and families that participate are allowed to continue grazing their livestock, but they have to agree not to fence, develop, subdivide or sell their land. Initially the lease programme began with only two landowners who had a total of 214 acres. Today there are 117 families in the programme with a total acreage of 8,500 acres. The lease programme is increasingly becoming popular such that 118 more families with more than 17, 000 acres are waiting to join the programme. (International Livestock Research Institute [ILRI], n.d.).

The lease programme operates through a foundation referred to as the Wildlife Foundation. The programme has attracted both private individuals and corporate sponsors from within and beyond Kenya thus creating vital partnerships. Operationally the foundation makes payments to community members three times year coinciding with beginning of a new school term, thus for the participating communities the lease programme has become a source of school fees for their children.



Figure 6-1 a picture of a board displaying partners of FONNAP

Source: Kenya Wildlife Service

The achievements of the Lease programme are: it has opened up more land for both wildlife dispersal and grazing area for livestock; there is reduced human-wildlife conflict as the land is

opened up and in allowing free range movement of livestock and wildlife the grazing pressure is also reduced allowing the previously degraded land to start recovering.

The lease programme has also had socio-economic benefits: it has resulted in considerably increased household incomes for the participating families, and literacy has grown due to the increased enrolment in higher education for the children whose families are paid through the leasing programme. What is more is the increased empowerment of women since it mostly the women who receive the lease income and they are able to manage it in a way to benefit their entire families. Another additional fact is that the lease programme has increased cooperation within the community as well as fostered a favourable attitude with regards to wildlife conservation due to the direct benefits that the community is able to enjoy.

Commendably, the lease programme, which was the brainchild of FONNAP, is growing to include many organisations and had enabled the creation of partnerships necessary to safeguard Nairobi Park. Despite the wonderful work wildlife in Nairobi National Park continues declining and this will only be reversed if the programme grows to cover the whole 60,000 acres.

The lease programme is not without critics who are unconvinced of its longterm success. Their fears are that the programme will not be self-sustaining in the long run since it entirely reliant on good will and donations. As the land value also increases in this area some of the landowners may still opt to sell their land thus defeating efforts to have 60,000 acres of land open for wildlife dispersal.

A map of the land under the lease programme

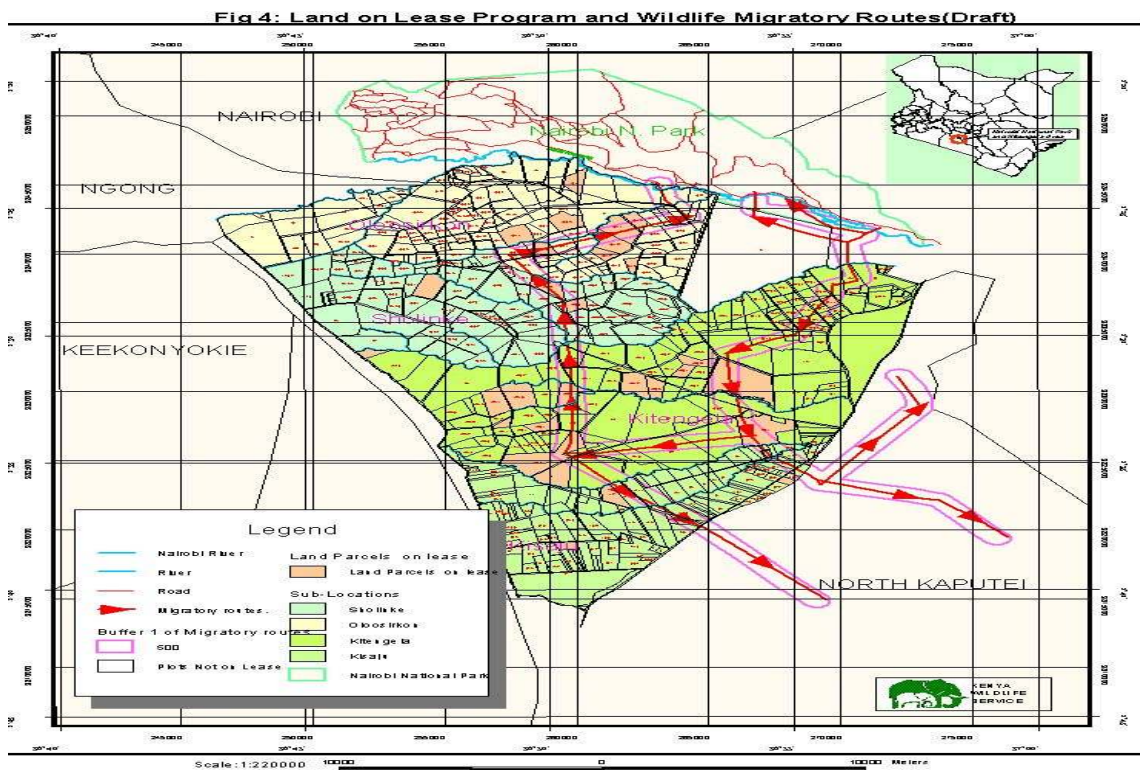


Figure 6-2 A map of the land under the lease programme

Source: Kenya Wildlife Service

6.2.2 Community enterprises

A critical aspect of safeguarding the future of Nairobi Park has been to do with gaining the support of the local community particularly that of communities living adjacent to the park and those living within the migratory corridor. This was easier said than done, for one, the community long considered wildlife to be a nuisance due to the damage and death caused by wildlife to them and their livestock. They resented wildlife even more so because they bore the costs of conservation without seemingly being able to reap any benefits. Thus some of the initiatives have been focussed on changing these situations by ensuring communities are able to reap direct benefits from wildlife conservation. The solution to this predicament had two options: one was to share a percentage of the revenue generated from the park with community and the other one develop the community through provision of services (Mungai, 2003). The government and international donor organisations were in favour of the second option so programmes geared to improving the livelihoods of the community were established

In Nairobi National Park one of the earliest initiatives to help communities benefit from wildlife was funded by the United States Agency for International Development (USAID) in 1992. The programme was known as Conservation of Biodiversity Resource Areas (COBRA). Through this programme the Kenya Wildlife Service (KWS) was able to construct schools / class rooms, cattle dips, water dams and boreholes for the pastoralist communities living in the dispersal area. This programme was not just limited to Nairobi National Park but included five other National Parks in the country and these communities had the opportunity to have exchange tours as a learning experience. The COBRA programme was thus instrumental in sharing benefits gained from wildlife conservation with the local communities and in the process helping them to appreciate the value of conservation (Mungai, 2003).

Second phase of community programmes was aimed at capacity building and encouraging more involvement of the local communities. This was made possible through a programme called CORE (Conservation of Resources through Enterprise). CORE replaced COBRA in 2000 (Mungai, 2003). CORE'S focus was business oriented, aimed at helping and empowering communities to establish enterprises that wildlife related. Some of these businesses included building campsites, establishing wildlife sanctuaries in the big ranches, curio and handicraft businesses and cultural centres.

Both programmes have helped to turn around the community's attitude from one that was indifferent and antagonistic toward wildlife conservation to one that is more supportive and accommodative to wildlife conservation. Working with the communities is an ongoing process that is being undertaken through a number of other programmes including the leasing programme, but the COBRA and CORE programmes were the pioneer initiatives that enhanced community participation in wildlife conservation.

For these programmes (COBRA, CORE and Land leasing) and other subsequent efforts to be implemented, the communities were encouraged to form and register wildlife associations. (KWS, 2005) For instance in the dispersal area there are five registered wildlife associations: Kitengela Ilparauko Landowners Association (KILA) (700 members), Isinya Community

Wildlife Association (73 members), Kisaju Landowners Association (40 members), Empunyiankat wildlife group and Olkinos Wildlife Group (20 members).

In summary the community programmes have helped to reduce human wildlife conflicts, to secure the wildlife dispersal area, to ensure the security of wildlife outside the protected areas and lastly to economically and socially empower and better the lives of the local community (KWS, 2005)

6.2.3 Nairobi Master plan

Whilst the two first identified initiatives have been concerned with garnering community support preserving the migratory corridor, the latest efforts are concerned with developing policy on land use in the area surrounding the park. The land use policy is currently in the process of being developed and the first priority action has been to design a draft master plan for the area. (ILRI, n.d.). The proposed draft master plan has been developed through the collaboration of government officials from different ministries, landowners, research institutions and other relevant stakeholders.

The current proposed master plan is a zoning plan for the Kitengela-Isinya-Kipeto area; within which is the wildlife dispersal area is located. The Physical planning department in the ministry of lands and settlement has prepared the zoning plan and some of the objectives are:

- To provide a framework to guide urban development and minimise environmental degradation
- To stem the run away urban sprawl in Kitengela
- To provide a basis for participation of all stakeholders in planning
- To provide a basis for conservation and promotion of local economy particularly the wildlife – livestock economy

The area under consideration for this plan covers an area of 1,668.246,138 acres. The plan period will be for 20 years. The problems that the master plan seeks to address include: urban sprawl, uncoordinated subdivision of land, encroachment into wildlife habitats and environmental degradation (Ministry of lands, 2008).

The plan recognises that wildlife migration is prevalent in this region and that rapid human settlement has resulted in land subdivision and sedentary settlements. The consequences of the rising human population has been increasing competition between people and wildlife over natural resources such as water and pasture resulting in conflict.

The proposed master plan has five possible development models: a natural resource and wildlife intervention strategy, human settlement development strategy, a livestock and agriculture development strategy, an urban containment strategy and an integrated model.

To highlight each of them: the natural resource and wildlife model adopts a conservation approach favourable to wildlife whilst limiting development. The agricultural model promotes livestock and wildlife as the mainstay of the local economy. The urban settlement model seeks to address the existing and emerging settlement trends and to set an urban expansion threshold. The urban containment model also a land use conflict model came from superimposing three land use maps of: natural resources and wildlife, human settlement and agriculture & livestock development. From the superimposed maps where land uses overlap and conflict was identified. Following this analysis four planning zones were identified. Finally, the integrated model takes into consideration all the issues identified

by the other models. The integrated model seeks to promote a regional land use balance in resource utilization and minimise conflicts amongst users. All these models are proposals and it is yet to be established which one will be implemented (Ministry of lands, 2008).

Of interest is the recommended action for the Nairobi National Park Region. It recommends that there should be a total ban on further subdivisions in the immediate areas surrounding the park and the minimum plot sizes should be set at 7 acres. In addition an Environmental Impact Assessment (EIA) must precede all developments in these areas. In the larger dispersal area they recommend the acquisition of land where necessary in collaboration with landowners, discouraging fencing and having lease agreements with owners. The salient recommendation is to restrict subdivision of land to a certain minimum so that speculators will be forced to buy large parcels of land in the region and maintain in a state still favourable to wildlife dispersal and livestock grazing (Ministry of lands, 2008).

The zoning plan is yet to be implemented; however it is a step towards strengthening the policy framework to secure Nairobi National Park. Only time will tell how successful the plan will be, it is entirely reliant on political goodwill, good governance and local community support.

7 Recommendation and conclusions

This section is a looks at the lessons learnt from this study that maybe in other similar cases and what should be done to address the adverse effects that urbanization has on protected areas. This final section also addresses the last research question, that is,

What generic knowledge may be extracted from the case of Nairobi National Park?

7.1 Recommendations

From the study three key points emerged:

- Paradigm shift is necessary to address issues on city planning and protected areas. Integrated planning would be the recommended approach.
- Partnerships are crucial and useful.
- Policy and political support is essential as this will eventually determine the degree of success or failure of any effort at the end of the day

From these key points the recommendations that follow are:

7.1.1 Integrated planning

For Nairobi National Park to survive, all stakeholders must have a mutual goal to safeguard the park. Key stakeholders include the national government, local authorities and local communities. Integrated planning will require a holistic and multi-sectoral approach not only in planning but also in management and decisionmaking.

Conservationists will not save the park solely conserve the park. The challenges that face the park are from multiple surces, for instance, policies on land use, transpport, housing, energy and water are among the policies that might complicate and even intensify the urban sprawl problem. City planning cannot there be divorced from protected area management if competing and conflicting policies are to be avoided

This is where the paradigm shift is necessary; conservatinists need to work with the planners, economists, politicians and other government agencies. It easier said than done though since separate sectors and agencies can be quite territorial over their mandates and interests. Howver a meaningful working relationship between park managers and Nairobi City authorities is imperative. This will ensure that future developmental plans of Nairobi are not an impediment to wildlife conservation.

The process of inculcating integrated planning with regard to Nairobi National Park has been facilitated by the development of the Nairobi Masterplan, which brought the various stakeholders together. This is what should be encouraged so that it is not a one off or occasional activity but it should become the norm

7.1.2 Collaborative approach: partnerships

Tryzna (2007) makes an important point that, protected managers should realise when dealing with problems related to urbanization the answers are more likely to be political than

technical. This is to say that while tools such as land use planning are absolutely useful, the priority would be to first forge alliances, in other words form partnerships. (Tryzna, 2007)

Nairobi National Park is has received a lot of support from individuals, corporations, and NGOs. Notable has been Friends of Nairobi National Park (FONNAP). FONNAP has admirably marshalled support in terms of funds and rallied champions to take up the cause of ensuring the park will continue to thrive.

The collaborative approach needs to be further enhanced with for example research organisations and the media. Information on what is happening in the park remains sketchy and informal. Research done by reputable organisations would yield information that could be used to persuade the Kenyan policymakers and public on why urgent action is necessary. The media has extensive coverage and their support will be necessary to change the hearts and minds of Kenyans with regard to conservation.

Collaborative approaches call for the engagement of relevant stakeholders and this engagement can only be as a result of ensuring that it is a win-win situation from which all parties benefit. The community entrepreneurship programmes have worked well to win the support of local communities similar creative initiatives will ensure broadbased participation and support

7.1.3 Policy and political support

Efforts to protect Nairobi National Park have been undermined by policies that have been: weak, inadequate and conflicting. This has resulted in the increasing degradation of the park and as well encroachment into the park and the animal migratory corridor.

Nevertheless the problem is not the lack of policy but implementation and political support. Kenya has one idiosyncrasy concerning policy and that is the drafting of excellent policies that never come to be. This is the concern regarding the proposed masterplan that it may actually never be implemented or it may be awhile before it is. The difference is when there is political support implementation is more smoothsailing. Thus political support has to be garnered from the highest office and from the grassroots to ensure that there is commitment to save the park.

7.2 Reflections

Kenya's national policy blueprint, Vision 2030 propagates urbanization. This is due to the idea that urbanization is equals to development. While the policy makers appear grudgingly to admit that urbanization has adverse effects, the plans are still full steam ahead to urbanize the country as much as possible and deal with the consequences later.

Development is absolutely necessary for betterment of Kenyan citizens but destroying the environment and protected areas is pretty much a shot in the foot. What is happening in Nairobi National Park is a precursor of what may happen to the other protected areas as urban areas are created and expanded.

It is indeed worrying not only from an environmental perspective but also from an economic one; Kenya is a country that is dependent on its wildlife resources as the major touristic attraction. In addition the same forces that are encroaching into protected areas are the same ones eating into agricultural land, which is the backbone of the country. Hence it is essential

to disabuse the notion that urbanization is always equal to development so that Kenya does not lose one of its prized resources.

7.3 Conclusions

What is the way forward? According to Menezes (2005) “an urban protected area must be managed as a huge open classroom for environmental education” This is an opportunity Nairobi National Park has, because it is well placed in terms of location and status that problems affecting it cannot be ignored. Furthermore strategies to address the problems facing Nairobi Park have to include aggressive public awareness campaigns that are targeted to the key stakeholders. This will include the policy makers, schools, the media, international organizations, NGOs and the community at large. This is important because broad based support is necessary in order to engage the relevant stakeholders (Wang, 2007). In the long run measures that are taken to inform and solve the problems being experienced will not only benefit Nairobi Park but also other protected areas as well in the country.

It is imperative that biodiversity protection be mainstreamed into the city agenda. The implication of this is that whatever plans or projects the city undertakes, this is done with the understanding that the integrity and value of the park should not be compromised. In this regard a case can therefore be made that the city should adopt a sustainable approach to policy making. Emphasis needs to be placed on the benefits of the park to the city in terms of the health of residents, economic benefits that are spread out to various businesses as a result of the tourists and the cultural heritage value.

The problems that Nairobi National Park is facing need a multi-sectoral solution. The collaborative efforts of conservationists, government agencies, the local authority, Non Governmental Organisations and the local community are essential. This is the strategy that the park management has undertaken: they are working on building partnerships to counter the threats that jeopardize the parks future (KWS, 2006).

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Abbreviations

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|--------|---|
| CBD | Convention on Biological Diversity |
| CIPA | California Institute of Public Affairs |
| COBRA | Conservation of Biodiversity Resource Areas |
| CORE | Conservation of Resources through Enterprise |
| EIA | Enviromental Impact Assessment |
| ELC | Environmental Literacy Council |
| ELIN | Electronic Library Information Navigator |
| EU | European Union |
| FONNAP | Friends of Nairobi National Park |
| GOK | Government of Kenya |
| ICLEI | International Council for Local Environment Initiatives |
| ILRI | International Livestock Research Institute |
| IUCN | International Union for Conservation of Nature |
| KWS | Kenya Wildlife Service |
| MDGs | Millenium Development Goals |
| NGO | Non Governmental Organisation |
| NNP | Nairobi National Park |
| PA | Protected Areas |
| UNEP | United Nations Environment Programme |
| USAID | United States Agency for International Development |

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|-------|---|
| USEPA | United States Environmental Protection Agency |
| WCED | World Commission on Environment and Development |
| WCLP | Wildlife Conservation Lease Programme |
| WCPA | World Commission on Protected Areas |