Creating Sustainable Economic and Ecological Growth in the Congo Basin: Bushmeat Consumption and Biodiversity Protection

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CREATING SUSTAINABLE ECONOMIC AND ECOLOGICAL GROWTH IN THE CONGO BASIN: BUSHMEAT CONSUMPTION AND BIODIVERSITY PROTECTION

by

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A thesis submitted to the Graduate College in partial fulfillment of the requirements for degree of Master of Arts Political Science Western Michigan University April 2013

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CREATING SUSTAINABLE ECONOMIC AND ECOLOGICAL GROWTH IN
THE CONGO BASIN: BUSHMEAT CONSUMPTION
AND BIODIVERSITY PROTECTION

Richelle Lynn Warnock, M.A.
Western Michigan University, 2013

This research examines the economic and ecological sustainability of bushmeat hunting in the Congo Basin, specifically the Democratic Republic of Congo and the Republic of Congo. Although bushmeat hunting has provided short term gain for individuals in the region, long term solutions focusing on micro and macro level interventions may provide community wide benefits, while protecting Congo Basin wildlife. Research shows that a focus on the development of key economic sectors such as agriculture, mineral resources and hydroelectricity, as well as the growth of infrastructure may provide viable economic gain for the Congo Basin. Ecotourism and improvements to forest management address both short term and long term needs for the rural poor.
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CHAPTER I
INTRODUCTION

A high economic value is attached to the subsistence use of, and the commercial trade in wild meat, making it an important source of livelihood for both rural and urban communities trading in bushmeat (Olupot, McNeilage, & Plumptre, 2009; 2). Commonly subsistence hunting is thought of as crucial to food security of the rural poor, whereas commercial hunting is perceived to be predominantly to supply a luxury market (East, Kumpel, Milner-Gulland, & Rowcliffe, 2005; 206). In parts of eastern and southern Africa where commercial hunting is established, the combined output from the formal game meat industry and the non-directed informal game meat production systems in seven countries was estimated at an economic value of US$ 7,698,224 per annum (Olupot, McNeilage, & Plumptre, 2009; 2). Although commercial trade in bushmeat occurs across almost all of tropical Africa, Asia and the neo-tropics, it is thought to be most critical as a threat to wildlife populations in the densely forested regions of Central and West Africa (Olupot, McNeilage, & Plumptre, 2009; 2).

To better understand the dynamics of the commercial growth in bushmeat, and the need for greater biodiversity protection, two questions must be addressed: What economic factors are contributing to the growth of bushmeat consumption and trade in the Congo Basin? And secondly, which macro and micro level interventions can be utilized to promote economic and ecological sustainability? I will argue that it is critical to develop sustainable wildlife practices throughout the area, including an expanded utilization of forest resources (non-bushmeat), and public-private eco-tourism partnerships that will prioritize conservation efforts and aid economic recovery. The
Congo Basin region has a wealth supply of natural resources that can be utilized to promote the welfare of the expanding population, as well as facilitate growing economic success of the entire region.

Findings indicate the need to address several factors within the Democratic Republic of Congo and Republic of Congo. Economic diversification and development of key sectors including agriculture, hydroelectricity, and mining may help grow the regional economy and provide fiscal stability. Although, the demand for bushmeat originally grew as a subsistence activity, it has since ballooned into a commercial enterprise, with urban and international demand fueling the trade. Rural communities must be provided with incentives that will encourage participation in new development strategies to ensure far reaching effects.

The Congo Basin region, specifically the Republic of Congo and Democratic Republic of Congo, serve as critical examples of the increasing threat of poaching and unsustainable hunting practices. The Democratic Republic of Congo is Africa's most biodiverse country, containing many rare and endemic species including the common chimpanzee and bonobo, the forest elephant, mountain gorilla, okapi and white rhino. Five of the DRC's national parks are listed as World Heritage sites, but are now in danger due to civil war and poor economic conditions. These conditions extend into the Republic of Congo as well. Growth of unemployment and urbanization throughout the Central African region has caused a rapid development in bushmeat markets, causing widespread endangerment of wildlife. Hence, overhunting and commercial trade of bushmeat in the DRC and Republic of Congo makes resources scarce for local people, threatening their livelihood success as well. Instability in the area (civil unrest, poor governance, economic
degradation) has delayed a proactive approach for sustainable wildlife practices, jeopardizing the majority of the population which depends upon these resources for their survival.

The Congo Basin forests occupy 5.3 million km², about 7% of the African continent. Sixty percent of the most common game species in the Congo Basin are hunted unsustainably, with total harvest of bushmeat in the Basin estimated at 1-5 million tons annually (Poulsen, Clark, Mavah, & Elkan, 2009; 1598). Leadership in the DRC agrees that the exploitation of forests will not contribute to their economy, poverty reduction, and future prospects (Heath, 2005; 5). However, these governments have limited resources to effectively regulate hunting practices, and thus have little real control over bushmeat harvest (Paillar, Wagner, McPeak, & Floyd, 2009; 761). Additionally, because so many rural people depend upon bushmeat to meet their basic nutritional needs, it is difficult to limit its use (Paillar, Wagner, McPeak, & Floyd, 2009; 761).

One of the most important roles bushmeat plays in the economies of poor people is as a safety net against short term livelihood crises (Bennett, Blencowe, Brandon, Brown & Burn, 2006; 886). The poor and most marginal are vulnerable to three kinds of changes: depletion, degradation and shocks. Depletion occurs when there is less of any resource (for bushmeat, fewer species or reduced populations), whereas degradation pertains to a decline in quality.Shocks are the result of unexpected and other external factors (war, economic crisis, and drought) that rapidly change the conditions people face. Negative environmental changes may not be the result of the actions of the people most affected by these factors. Usually, these changes are the results of actions, policies and decisions taken or made by actors far from where the impacts occur (i.e.,
infrastructure and concession policies) (Bennett, Blencowe, Brandon, Brown, & Burn, 2006; 886).

For many large-bodied and slow-growing species, commercial hunting of bushmeat already exceeds the replacement rate (Wilkie, Starkey, Abernethy, Nstame Effa, Telfer, & Godoy, 2005; 269). Some argue that bushmeat is a deeply rooted cultural preference, and cite some consumers’ willingness to pay more for bushmeat than domestic meat, noting its important role in ceremonies and as a way for urban families to connect with the village life they left behind. Others believe that most consumers are sensitive to prices and typically choose the most affordable meat available in local markets. Economic theory suggests that providing consumers with access to acceptable and affordable substitutes may help reduce unsustainable hunting and enhance wildlife conservation (Wilkie, Starkey, Abernethy, Nstame Effa, Telfer, & Godoy, 2005; 269).

Wildlife is a primary source of animal protein in the diets of rural and urban households in most forested regions of impoverished nations (Wilkie, & Godoy, 2001; 761). Hunting of wildlife for food rather than habitat loss will be the most significant threat to the conservation of biological diversity in the next 15-25 years. Unsustainable hunting risks the extinction of species unique to tropical forests, and irreversible loss of the value they provide to communities and the world. Overexploitation of wildlife species will alter the dominance hierarchies of tree species, and will change forest composition, structure and biomass, having unknown effects on rates of succession, regrowth of fallow fields, accretion of soil nutrients, and carbon sequestration (Wilkie, & Godoy, 2001; 761).
Bushmeat hunting is one component of the broader issue of biodiversity loss. Larger bodied animals such as great apes and elephants have been designated as indicator species for the state of the forest; they indicate an intact ecosystem where seed dispersion and regeneration are still present (Altstatt, Colom, de Marcken, & Maisels, 2008; 227). When poaching and trade are unregulated, species are depleted beyond levels of reproduction. Modern figures estimate that tens of thousands of African Elephants are being slaughtered illegally each year for their ivory tusks, which can fetch up to $1,000 a pound on the black market (Yandell, Bidgood, Timmons, Bakalar, Himmelsbach, & Majerol, 2012; 3). IUCN documented approximately 1.34 million elephants in the 1970’s (Stiles, 2004; 312). In 1987, the group estimated that the elephant population had declined to 760,000, and in 1989 the number had dropped to 608,000. It was this loss of approximately half of Africa’s elephants in ten years that led to the calls for an international ivory ban (Stiles, 2004; 312).

The development of bushmeat policy is ultimately a matter for governments within nations where wildlife is harvested for food (Bennett, Blencowe, Brandon, Brown, & Burn 2006; 884). Additionally, there is a need for international development and conservation agencies to adopt a more consistent and supportive approach to bushmeat policy development. This type of approach should strive to secure important global biodiversity values while recognizing the livelihood dimensions of the trade and practicalities of policy change (Bennett, Blencowe, Brandon, Brown, & Burn, 2006; 884). The ecological, nutritional, economic, and intrinsic values of wildlife hunted for food are all at risk of being lost because present policies and practices cannot reconcile these different values of bushmeat or manage resource sustainability.
The twin imperatives of addressing people’s needs and aspirations on the one hand, and conserving the world’s species on the other, has suggested to many a ‘silver bullet’: solve the bushmeat crisis by alleviating poverty in tropical countries (Robinson, & Bennett, 2002; 332). Logic from outside perspectives may suggest that poor countries and people are trapped by their immediate needs, and forced by circumstances to overuse their resources. Thus, when people’s incomes are raised by providing alternative sources of revenue, lower harvest rates of natural resources will occur. The impact of poverty alleviation efforts on wildlife harvests ultimately depends on how aid is targeted and which people benefit. Past attempts of assistance have failed for a variety of reasons. People lost access to land and traditional resources, experiencing drops in daily protein consumption. Marginalized people lack capital and access to markets and often cannot switch to alternative livelihoods or food sources (Robinson, & Bennett, 2002; 332).

Garrett Hardin argues that, “freedom in a commons brings ruin to all” (Hardin, 1968; 1244). Hardin describes how individual gains often result in collective suffering. Concerning the commercialization of wild meat, species depletion due to poaching ultimately leads to endangerment of wildlife and the increased risk of food and income security for the rural poor. Hardin recommends two possible options for natural resource management: regulation or privatization. These two options support institutional intervention in order to address resource governance.

Elinor Ostrom argues however, that neither state nor commercial interventions have sufficiently produced a long term solution for the use of natural resources (Ostrom, 1990; 1). Traditional arguments claim that natural resource management will inevitably result in either a world regulating system, or a “tragedy of commons.” In the latter
outcome, independent actors will continue to use a resource in spite of the understanding that overuse of the resource is in contrast to the best interests of the entire group. Ostrom disagrees that these are the only possible outcomes, stating rather that a regulatory system, determined by mutually agreed upon rights and rules may foster a system of mutual trust, collective organization and mutual benefit (Ostrom, 1990; 184).

Ostrom states that many successful common pool resource systems are mixtures of both private and public institutions that allow individuals to achieve productive outcomes where desire to free ride is present (Ostrom, 1990; 15). Binding contracts that are "unfailingly enforced" provide an alternative approach to resource management. This strategy allows local people to participate in the designation of rules of a particular resource, though those rules may be enforced by a private body. Individual interest of those involved will lead them to monitor each other and report infractions so that the contract may be enforced (Ostrom, 1990; 17). This system is intended to provide long term benefits to communities, and discourage the achievement of individual profit, often at the cost of the common good.

Most efforts to reduce the consumption of bushmeat have focused on restricting supply, generating scarcity, and raising prices (Wilkie, & Godoy, 2001; 762). Enforcing existing laws may have immediate effects on the volume of bushmeat entering the markets and may by consequence improve conservation. If demand for bushmeat is strong, however, shrinking supply of bushmeat will only increase prices, which will induce others to enter the market and seek ways around the supply constraints. Depending on the structure of demand, supply-constraining measures may only benefit conservation in the short term (Wilkie, & Godoy, 2001; 762).
The Democratic Republic of Congo (DRC), Republic of Congo (RoC), and Congo Basin region (DRC, Republic of Congo, Cameroon, Central African Republic, Gabon and Equatorial Guinea), are utilized as cases within this body of work. The DRC and Republic of Congo are differentiated throughout as independent countries, whereas references to the Congo Basin refer to the region as one entity, encompassing all of the countries mentioned above. The Congo Basin serves as a case with unique circumstances. The area contains an abundance of biodiversity that is rare and specific to that region solely. The rural poor of the Congo Basin depend upon these natural resources and biodiversity for both subsistence and earnings. Yet, poaching in the Congo Basin has increased dramatically over the last four decades, threatening the very means on which the rural population depends for their survival. Eliminating the natural resources of the area, via biodiversity degradation, would result in the loss of a primary source of food and income for the rural poor of this region. The loss of these resources could result in the economic failure of the rural poor, and could lead to a domino effect across the Congo Basin.

Proper utilization of these resources however, could aid in the long term recovery of the Congo Basin. Though the region suffers from a myriad of devastating circumstances, there is hope for the region. The Congo Basin is one of the richest areas in the world in terms of mineral and natural resources. Many of these resources have still not been fully developed or explored, and therefore have potential to contribute to fiscal security. Both the DRC and RoC are moving into periods of democratic governance, and recently adopted constitutions. International investors are developing business opportunities in the region, and are aiding in both economic growth and the strengthening
of infrastructure. Schools, hospitals, roads and other resources are being built and used by local people. Ecologically, the Congo Basin region is building partnerships with international partners and organizations to better manage protected areas and local wildlife. A focus on conservation and preservation means that endangered populations may have the chance to grow their numbers, and protected habitats will remain secure.

In Chapter 2, the present DRC and RoC economies are examined with a focus on the important role of bushmeat production and trade in the livelihood strategies of the rural poor. Additionally, agriculture and labor, land tenure, access to markets, commercial trade, and poverty are examined as alternative sources of revenue. Chapter 3 outlines wildlife in the Congo, with a focus on the bushmeat trade’s impact on species depletion, poaching, markets, governance and policy, and incentives for rural people. This chapter also investigates the affects that the bushmeat and ivory trades have had on great ape, gorilla and elephant populations in the region, and the economic impacts that have resulted.

Chapter 4 examines macro level interventions through policy reform, by assessing Congo’s governance and leadership, price stabilization and food risk intervention, infrastructure, incentives for rural people, and education. Macro level interventions focus on long term strategies for the Congo Basin that may not be able to address immediate needs. The macro level interventions discussed in chapter 4 may not result in immediate effects economically or ecologically, and will be most effective when combined with micro level intervention strategies. Chapter 5 examines a micro level intervention via eco-tourism, evaluating the potential for success in an approach which brings economic and ecological components together. This chapter will study the Congo Basin’s protected
areas, and the role of stakeholder participation, specifically, government, local communities, and non-governmental organizations. If long term sustainability is to be made possible, the realization of this goal must benefit local, rural communities and provide enough incentives for them to support processes that promote ecological longevity while ensuring their livelihood security in the short term. Public-private partnerships are evaluated, illustrated by an examination of Virunga National Park in the DRC. Finally, Chapter 6 offers discussion and recommendations.
The people of the Congo Basin region rely on several different methods to generate income. When these methods are no longer optional to maintain the present standard of living, the DRC and RoC people have sometimes turned to short term options to support their livelihoods. Though seeking out other strategies for survival is not unique to the Congo Basin, the effects that have accrued on the natural resources of the area are quite unique, as many of the natural resources of the area cannot simply be reproduced. The people of the Congo Basin region rely on agriculture, and production of natural resources such as oil and mineral goods as primary sources of income for domestic use and export. Hydro-electric power centers have also grown in importance, and have provided the Democratic Republic of Congo with the opportunity to utilize its many waterways.

The Democratic Republic of Congo has become a captive region, where the types of commercial ventures are manipulated and the viability of local businesses is controlled ("Congo: The Looters' bazaar", Dec. 2002; 54). The flow of money is regulated through currency trading and the widespread introduction of counterfeit Congolese francs ("Congo: The Looters' bazaar", Dec. 2002; 54). The DRC economy has also been devastated by civil wars and rebellions. After the fall of President Mobutu Sese Seko in 1997, international investors diverted attention of major industries, such as mining, communications and transport elsewhere (Vesely, 1999; 37). The costs of war have drained the Democratic Republic of Congo of many of its natural resources, including
diamonds, gold, coffee and copper ("Congo: The Looters’ bazaar", Dec. 2002; 54). The utilization of these resources by other countries, as mortgaged by the DRC government, has had little impact on the daily lives of the DRC’s people. Additionally, the overuse of these resources will profoundly affect the long term sustainability of the DRC’s economy.

After the collapse of Mobuto’s reign, the Democratic Republic of Congo has again been brought to the brink of economic collapse, due to the world recession ("International: Too big to fail; Congo’s faltering economy", 2009; 54). The DRC has experienced a slump in demand for its mineral resources, as copper and cobalt exports plummeted. In December, 2009, the DRC government reduced its’ estimate for cobalt exports by more than half, and have experienced further hardship because of the decreased demand for diamonds globally. Department of Congo diplomats argue that there is not enough money to pay salaries, to pay soldiers, or to pay the costs of running the government, causing foreign donors to worry about investing in an unstable market ("International: Too big to fail; Congo’s faltering economy", 2009; 54).

Agriculture and Labor

Many poor countries display high agricultural shares in GDP and employment, suggesting that strong growth in agriculture is critical for fostering overall economic growth ("Agriculture for Development", 2008; 28). As GDP per capita rises, agriculture’s share declines, as does its contribution to economic growth. The gap between agriculture’s shares in GDP and employment suggests that poverty is concentrated in agriculture and rural areas—and that as non-agriculture growth accelerates, many of the rural poor remain poor ("Agriculture for Development", 2008; 28). Leaving rural areas to
more urbanized areas is hampered by lack of information, cost, skill gaps, aging, and family and social commitments. Hence, many people remain in rural areas with expectations for better lives, often leading to disappointing results.

Agriculture continues to play a fundamental role in the economic growth and development prospects of the vast majority of developing countries (Gibb, 2004; 563). Sustained growth of the farm sector, including small scale agriculture, can make a vital contribution to improving the livelihoods of many people living in extreme poverty (Neto, 2004; 50). Small farms in developing countries tend to be more productive than larger farms, primarily because hired labor on large farms is usually less productive than family labor unless there is adequate supervision or incentives (Neto, 2004; 50). Three out of four people in developing countries—883 million people—lived in rural areas in 2002 (“Agriculture for Development”, 2008; 26). Most depend on agriculture for their livelihoods, either directly or indirectly.

Agricultural growth has often acted as a precursor to industrial growth and has offered attractive business opportunities in domestic markets. Dairy farming in Kenya, aquaculture in Bangladesh, and vegetables for markets in Latin America derive from the work of rural farmers. Success has also been found again with traditional crops creating new demand, such as feed-maize exports to China from Laos and sugar cane for biofuels in Brazil (“Agriculture for Development”, 2008; 26). Yet, challenges remain for African farmers due to often low agricultural growth, rapid population growth, weak foreign exchange earnings and high transaction costs when linking domestic and international markets (“Agriculture for Development”, 2008; 26). Some rural farmers are then forced into supplementing their earnings from farming with earnings from other activities.
Many bushmeat hunters also farm. Farmers may help trap bushmeat around their fields for both home consumption and local sale (Damania, Millner-Gulland, & Crookes, 2004; 259). Others hunt commercially with guns and sell the majority of their produce in urban settings. The amount of time devoted to hunting and the equipment used is a decision taken in conjunction with the household’s other income generating activities. Higher bushmeat prices may lead to a shift in labor supply from agriculture to hunting. Studies have shown that an increase in income may have the undesirable effect of increasing a household’s consumption of bushmeat, because of the additional revenue. These studies suggest that when labor devoted to hunting is reduced because of higher agricultural prices, it is likely to become more focused on more expensive and efficient technologies, such as gun versus snare hunting. In this case, raising agricultural prices actually worsened the conservation status of vulnerable species that are selectively hunted with guns rather than snares (Damania, Millner-Gulland, & Crookes, 2004; 259).

The forested regions of the Republic of Congo do have a high agricultural suitability, which could play a role in agricultural expansion (Gorenflo, & Brandon, 2005; 199). Agriculture accounts for 54.2% of the GDP, employing 63.2% of the population, but Africa’s food security situation is dire. Famine and food shortages plague Niger, Darfur, Chad, Malawi, and various other countries on the continent, highlighting the need for a collective approach to address this issue. Sustainable practices in agriculture are now more important than ever before. African countries will benefit from focusing on food security crops.

Environmental fluctuations can affect many different aspects of agricultural production. With increasing climate variability, shifting temperature and precipitation
patterns, as well as other global change components, a range of crop and ecosystem responses may affect integral agricultural processes (Lin, 2011; 183). These effects propagate changes in nutrient cycling and soil moisture, as well as shifts in pest occurrences and plant diseases, which can negatively impact food production as well as food security (Lin, 2011; 183). African crops often fail because of Africa’s erratic rainfall patterns, lack of fertilizer and poor soils (Babaleyeye, 2005; 24).

Land Tenure and Access

Particular problems obstructing development in Africa are oppressive political systems without democratic elections, disrespect for the rule of law, and a lack of property rights (Rossouw, & Fourie, 2010; 423). The lack of enforceable property rights stunt economic development and growth. Spanning a distance of 500 kilometers, the provinces of North and South Kivu stretch along the borders of the Democratic Republic of Congo with the republics of Uganda, Rwanda, and Burundi (Acker, 2005; 79). These areas consist primarily of highlands and volcanoes to the East, and lowlands to the West. After DRC and RoC independence in 1960, peasants of neighboring countries continued to flock to Kivu to escape the crowded conditions of their native lands (Acker, 2005; 79).

Land tenure systems consist of a set of institutions that structure the social organizations of space (Acker, 2005; 80). In Kivu, for example, land is held in common by a group linked by ethnicity, clan, or lineage. The land is also assigned rights as simple use right only, and disables the alienation of parts of the collective domain, meaning land cannot be used if it is currently in use by another. Lastly, land relations are tied to the social hierarchy. Use rights of land do not ensure full benefit rights, and tributes are
redistributed upwards in a system of dependency (Acker, 2005; 80). Immigrants can obtain land in this area, if they are taken on as ‘clients.’

In 1973, Mobutu introduced a new law which declared all land property of the state. The only way the land could be extracted from the state was through administrative procedures that involved registration and cadastration. Land that was used for economic reasons thus became political assets, and loyal clients of the state were rewarded. Social, political, and economic factors helped to perpetuate a new situation where a land hungry modern class was looking to exploit market opportunities, protect their wealth from inflation, or satisfy political needs (Acker, 2005; 85).

Figure 1 Democratic Republic of Congo
Source cia.gov, 2013

Land tenure reform is primarily aimed at strengthening the land rights of smallholders, including those farming collectively owned land and does not necessarily involve physical redistribution (Neto, 2004; 51). Strengthening the property rights of smallholder farmers has made a significant contribution to greater food production per hectare and thus aids in poverty alleviation (Neto, 2004; 51). The more than 800 small-
scale farmers which belong to cooperatives around the DRC capital of Kinshasa could potentially produce enough rice and vegetables for the capital’s estimated eight million inhabitants (Chaco, 2009). Yet farmers argue that they cannot effectively work the land without knowing their long-term prospects for land security. For years, land has been taken away for new construction, which are rural areas surrounding the capital city. Though the city’s government claims to support the livelihoods of rural people, villagers question why then the government would risk their greatest source of income (Chaco, 2009).

Natural Resource Rights

Two levels of planning are involved in the CBFP landscape use planning process: the landscape level scale and the macro-zone scale (Altstatt, Colom, de Marcken, & Maisels, 2008; 226). Planning assesses broad, wide-ranging trends, influences and impacts at a large scale, incorporating and integrating multiple protected areas with resource-use zones. A large scale approach facilitates the identification of resource use opportunities that provide both economic and social benefits while promoting ecological sustainability. Macro-zone areas can be found within the landscape, and are zones for varying purposes and levels of resource protection. Three types of macro-zones are specified within the landscapes: protected areas, community-based natural resource management areas and extractive resource zones (Altstatt, Colom, de Marcken, & Maisels, 2008; 226).

In community-based areas, communities have some form of natural resource use rights (Altstatt, Colom, de Marcken, & Maisels, 2008; 226). Extractive resource zones include forest concessions, large-scale private plantations, mines, safari hunting zones,
and energy and transportation infrastructure. Land use planning in the region strives to allow involvement by local communities, government, relevant industry, and other stakeholders. Local community members and other stakeholders becoming involved in land use creates a sense of ownership and improves the likelihood that any future plans will be supported and that it will be successfully implemented (Altstatt, Colom, de Marcken, & Maisels, 2008; 226).

Most of the deforestation that occurs in the Congo Basin is a result of clearing associated with small scale agriculture, particularly along roadways (Altstatt, Colom, de Marcken, & Maisels, 2008; 226). Since the early 1990’s, hunting, not deforestation has been recognized as the most serious threat to biodiversity in this region. Bushmeat is destined for three main sets of consumers: local rural communities, laborers working in logging and mining concessions within the forest, and urban markets. Within forest systems, the presence of larger bodied and slower breeding animals indicate the health of the system. When these species begin to decline in the area, unsustainable hunting is evident.

Human populations across the Congo Basin are characterized by their dependence upon local natural resources for their subsistence and source of income (Altstatt, Colom, de Marcken, & Maisels, 2008; 229). Agriculture, and collection of non-timber forest products are important subsistence activities for every household, but fishing and hunting in these areas are often the sole source of revenue and protein for poor rural populations. Bushmeat markets need to be understood within the context of demand (urban areas, mining towns, previously depleted areas), in addition to the economic alternatives to those populations located near sources of bushmeat and the dynamics between the source
and the end markets. Understanding qualities of local trade, like available infrastructure and distance between sources and markets can help in comprehending the importance of bushmeat in local communities, as well as the possibilities of alternative economic activities (Altstatt, Colom, de Macken, & Maisels, 2008; 229).

Access to Markets

A large volume of trade in the northern Republic of Congo centers on the areas of Ouesso and Djembe, and destined for Pointe Noire and Brazzaville (Bowen-Jones, 1998; 14). For the Democratic Republic of Congo, the main centers of commercial consumption are Goma, Bukavu, Kisangani and Kinshasa, plus cities east of the Congo/Lualaba river system (Bowen-Jones, 1998; 14). However, the market could grow as plans for improving the rail and road systems are carried out and access is increased. Today, there are too few roads on which to move produce from the countryside to the towns; an adequate transportation system has not yet been developed (Anderson, 2008; 17). As a result, tons of rice, maize and other crops are left to rot in the fields (Anderson, 2008; 17)

The Republic of Congo’s road network is 145,000 kilometers in length of which the rural network consists of 104,000 kilometers (Minten, & Kyle, 1999; 469). Additionally, the Congo has 16,000 kilometers of navigable rivers. Most of the road network is in poor condition, with important sections almost impassable and rural roads are maintained by local authorities who do not have the resources or the organizational capacity to carry out the task. The poor condition of rural roads has been blamed for high transportation costs and for the lack of competitiveness of domestic food supply compared to food imports (Minten, & Kyle, 1999; 469).
The gathering and transportation of local food products is in the hands of different types of traders: small itinerant traders, transporters with their own means of transport, formal firms with regional offices and stores, NGO’s, agro-businesses, and parastatals or the government (Minten, & Kyle, 1999; 469). Small farmers and traders are growing in importance, but effective rural marketing associations are lacking. Although prices are officially liberalized, 23% of traders report prices to be fixed by the authorities at the producer level (Minten, & Kyle, 1999; 469). Policies may differ by area, and are sometimes affected by the will of the local chief or village leader.

By 2002, initial steps were taken to increase commercial trade in the Congo Basin, along a national trade network. Commercial vessels began operations to carry aid supplies to the River Congo, which has been used as the main transport artery in the country until the civil war prevented trading vessels from linking Kinshasa with the eastern provinces (Ford, Misser & Vesely, 2002; 14). Vessels carry fuel and food to
towns, and return with timber to Kinshasa’s sawmills. The transportation of goods allows local people to obtain basic food supplies, such as rice and salt, and other necessities, such as soap.

Road, rail and air transport are either limited because of poor infrastructure, or unavailable to the majority of the population (air travel). The Congo Basin has, however, successfully utilized its energy resources through electricity exports. The Inga hydroelectric power (HEP) plant acts as the main source of power for the Congo Basin, but also exports power to several other countries in the Southern African Development Community and supplies 45% of Zimbabwe’s power consumption (Ford, Misser & Vesely, 2002; 14). The region’s massive rainfall levels and the power of the River Congo allows for unlimited HEP potential.

Commercial Trade

Mineral Resources

The Congo Basin holds 80% of the world’s coltan reserves, more than 60% of the world’s cobalt and the world’s largest supply of high grade copper (Montague, & Berrigan, 2001; 15). The region also has large supplies of Uranium, and notably contributed to the Manhattan Project which produced the world’s first atomic bombs dropped on Hiroshima and Nagasaki. Although many U.S. consumers are familiar with the blood diamond phenomenon, few are as familiar with the concept of blood gadgets, which are made from other conflict resources. The explosion of cell phone use in the last decade or more has fueled and intensified the violence in the Congo (Clarke, 2008; 32). Human rights groups are urging consumers to become more educated about the genesis of the products we buy, such as gold, diamonds and cellular phones. These valuable
minerals are used in many countries around the world, to maintain economic prosperity and consumer satisfaction. The United States, for example identifies sources of strategic minerals, particularly in third world countries, and then encourages U.S. corporations to invest in and facilitate production of the needed materials (Clarke, 2008; 32).

U.S. businessmen and politicians have gone to extreme lengths to preserve access to these mineral resources, providing millions of dollars in arms and military training (Clarke, 2008; 32). Canada, Belgium, South Africa and China additionally come in and conduct studies of the areas where they are interested in mining (Anderson, 2008; 16). These countries then acquire contracts from the government for the exploitation of minerals for periods as long as 20 or 30 years, which rarely benefit the Congo’s economy. In June, 2007, the DRC government began a formal review of 60 mining contracts signed between 1996 and 2003, to evaluate their legality and fairness and to decide whether to keep, renegotiate or cancel them (Anderson, 2008; 16).

This review raised the potential for the DRC to have an increased share of mineral profits. No fewer than 57 of the companies involved have accepted the principle of renegotiation of their contracts with the current government and diluting their average 83% share of profits to something closer to a 50/50 split (Morgan, 2009; 54). The review was conducted in response to a 2000 UN report in which it was found that some companies had paid bribes to secure contracts from the government or local warlords, and linked ongoing conflict in the Congo Basin to the control of natural resources. According to the UN’s review, the increase in state revenues would increase from around $25 million to nearly $184 million (Morgan, 2009; 54).
The review intended to allow a government appointed commission to check whether companies were abiding by the mining code, paying the right taxes and investing in infrastructure and social services, as they promised ("International: Who benefits from the minerals? Congo", Sep. 22, 2007; 70). The DRC government began to demand more transparency in mining contracts and for more revenue to go to the state and the DRC people. International mining executives rushed to Kinshasa, Democratic of Congo’s capital, to badger friendly officials, and to place advertisements in local newspapers to show how much they have done for the country ("International: Who benefits from the minerals? Congo", Sep. 22, 2007; 70).

The review resulted in few benefits for the people of the DRC, despite a two year review of the government’s contracts with companies mining billions of dollars in mineral resources ("The Mining Review in the Democratic Republic of the Congo: Missed Opportunities, Failed Expectations, Hopes for the Future", 2009). The government continued to display a lack of transparency and refused to publish the results of the renegotiation. Sources indicate that enforcing policies outlined within the contracts would be difficult for a well regulated government and overseeing body, which the DRC is not.

Recently, DRC’s government announced that China would lend $5 billion to build new transport infrastructure to help rehabilitate the country’s mines ("International: Who benefits from the minerals? Congo", Sep. 22, 2007; 70). Country officials stated that the DRC would repay the loan by allowing for mining concessions and toll rights from roads and railways that the Chinese would build, including a road link to Zambia and a railway from southern Dem. of Congo to the Atlantic ("International: Who benefits from the
minerals? Congo”, Sep. 22, 2007; 70). In September 2007, China Exim Bank agreed to provide $8.5 billion for infrastructure to support DRC’s mining industry. In return, China was granted rights to copper and cobalt reserves said to be worth $14 billion (Komesaroff, 2008; 38). The Chinese loan also initiated the formation of a DRC incorporated company, Socomin, which will be jointly owned by DRC (32%), and Chinese state-owned companies (68%). Socomin will invest in DRC mineral resources with the profits used to pay for infrastructure. The agreement requires the joint venture to set aside 0.5% of all investments for training and technology transfer while 3% will be spent on social amenities for the local community. President Joseph Kabila hailed the arrangement stating that, “for the first time in (Dem. of Congo’s) history, the Congolese people can see that their nickel and copper is being used to good effect” (Komesaroff, 2008; 38).

International NGO’s have argued that the lack of transparency about the arrangements with foreign companies will only weaken the already unstable democracy in the Congo. Furthermore, NGO’s have described the concessions as extremely one sided to the advantage of the foreign mining companies (Komesaroff, 2008; 38). The DRC government has welcomed Chinese investments because unlike Western aid, Chinese loans tend to be much larger and the approval process is quicker. Chinese companies are also able to execute projects more quickly than other investors, and they have also invested in infrastructure, building the D.R.C.’s biggest and most modern hospital. Portions of the $8.5 billion loan is earmarked for infrastructure projects, including a high voltage power distribution network, highway and railway extensions, the
construction of 31 hospitals, 145 health clinics, 5,000 houses, two universities, and repair to the D.R.C.’s water supply system (Komesaroff, 2008; 38).

Rwanda has also controlled trading networks and the export of other commodities such as coltan, gold, diamonds and timber (Eriksen, 2005; 1097). Rwanda has been able to maintain central control with most of the profits generated through mining, trade and smuggling in the Congo Basin going to the state. Thus the export of gold, diamonds and coltan from the Congo Basin region increased during Rwanda’s stay in the country, even though there was no increase in domestic production of these goods. A structure has been established so that profits from the Congo are channeled directly to the government in Kigali; this is partly done through direct control at the extraction site and partly through handpicked intermediaries. Rwanda has managed to avoid fragmentation of the state, in which central control over the armed forces would be undermined by the army’s economic activities in the Congo Basin (Eriksen, 2005; 1097). Thus, the war in the Congo Basin has become a source of income for Rwanda, without damaging its central control.

Petroleum

The most well-known effects of oil exploration on tropical ecosystems include soil contamination, water pollution, soil erosion, removal of vegetation, visual intrusion, air pollution, noise pollution, bush fires, road and crossing-point damage, and damage to fossil, archaeological, and cultural sites (Thibault, & Blaney, 2003; 1811). Poaching, slash-and-burn agriculture, and other human activities facilitated by the opening of road access and the creation of new settlements are other undesirable ecological effects. Often, the economic force of petroleum companies in developing countries can outweigh
legislation related to environmental protection and protected area conservation (Thibault, & Blaney, 2003; 1811). But with 90% of the DRC’s oil being exported for profit needed by the region, can the country sustain a shift away from oil production?

The sudden collapse of petroleum prices in 1986 sent the DRC’s economy into a tailspin. Per capita GDP fell 30 percent from 1985 to 1990, while the foreign debt escalated from $3.5 billion to $5 billion (Clark, 1998; 235). By the early 1980’s, the predominant share of the country’s foreign exchange earnings came from petroleum income. This increase in petroleum production initiated a growth in urbanization and accelerated the growth of the Democratic of Congo’s foreign debt (Clark, 1998; 235). The DRC’s people became more dependent on imported food and consumer goods as a result.

In the wake of oil discoveries on the eastern side of Lake Albert, which separates north-Eastern DRC from Uganda, the Democratic Republic of Congo’s government is trying to emulate its smaller neighbor by wooing foreign investors to help rejuvenate the country’s economy, partly through increased oil production (“International: We’ve got it too: Congo’s oil”, April 10, 2010; 52). In 2010, the Democratic Republic of Congo only received 28,000 barrels a day, courtesy of French oil company Perenco, from onshore and offshore blocks along its sliver of Atlantic coastline between Angola to the south and the Angolan enclave of Cabinda to the north (“International: We’ve got it too: Congo’s oil”, April 10, 2010; 52). The north east area of Lake Albert holds a treasure trove of 2 million barrels, which is awaiting exploitation.

In June, 2010, Joseph Kabila cancelled an agreement with Tullow Oil PLC for two exploration blocks in the Dem. of Congo’s remote, environmentally sensitive
interior, awarding them instead to companies owned by a relative of South Africa’s president (“Congo president cancels Tullow block agreements”, Jul 19, 2010; 32). South African President, Jacob Zuma, asserts that the contracts should be viewed in the context of a developing strategic alliance between the Congo and South Africa. The DRC’s Ministry of Mines, which confirmed the awards, is seeking a $6 million signature bonus from the two BVI (British Virgin Islands) companies. Tullow Oil expressed its concern about rewarding contracts to companies who have little oil and gas experience, particularly in an environmentally sensitive area. In addition to the two new agreements, the DRC also awarded Block 3 to South Africa’s SacOil, a 50/50 joint venture of the Eucha Group and DIG (“Congo president cancels Tullow block agreements”, Jul 19, 2010; 32). SacOil has planned to invest $100 million through 2014. Countries located in the Congo basin are a likely target for increased extraction because of the petroleum quality and the low production costs in the region (Thibault, & Blaney, 2003; 1812).

Wildlife Products

The DRC’s commercial market for natural products, also referred to as nutraceuticals, has also grown into a potentially booming business opportunity. Global sales for herbal remedies were expected to reach about $40 billion by 2010, with Africa anticipated to be a primary resource supplier (Magada, 2007; 62). The increasing popularity of health conscious living has aided in the desire for natural products, often based on the traditional knowledge of African communities who have used locally grown plants to produce natural remedies, nutritional food and medicines.
Poverty

The Democratic Republic of the Congo has suffered from the virtual collapse of its formal economy in the last few decades due to mismanagement and instability (Fa, Currie, & Meeuwig, 2003; 72). A year after the war in the Democratic Republic of Congo officially ended on June 30, 2003, more than one thousand civilians continued to die every day (Autesserre, 2007; 113). Most of the deaths were caused by disease and malnutrition, and could have been prevented if outbursts of violence had not impeded access to humanitarian aid (Autesserre, 2007; 113). The overall crude mortality rate in the Congo is the highest in the world, with the majority of deaths caused by preventable infectious diseases ("Elevated Mortality Associated With Armed Conflict-Democratic Republic of Congo", 2002; 469). From 1996-2007, nearly four million people have died, as a result of violence and poor living conditions (Kaplan, 2007; 300).

Children and adults alike in the DRC suffer regularly from four plagues: malaria, various forms of diarrhea, respiratory infections and malnutrition (Balegamire, 1999; 240). In other areas, famine is a daily struggle because of insufficient or high cost food supplies. Many children suffer from kwashiorkor, a form of severe malnutrition. The disease has been perpetuated by economic stagnation, which has translated into emergency assistance, rather than self-promotion initiatives for the populations most affected. Malaria is rampant due to areas of propagation of anopheles, found in swampy areas that are rarely drained or correctly cultivated. The roads and paths perpetuate numerous pools of water. Water supplies are underdeveloped, and have still not been tapped or equipped in sufficient number to distribute drinking water everywhere.
Consequently, people continue to draw water from nearby rivers.

Children who cannot attend formal educational programs or vocational training centers to learn job skills are often forced into poverty. These conditions often aggravate a child’s dissent into delinquent and illegal behaviors. Children may specialize in petty theft in the market or from private properties, or may even go further into more serious crimes, such as armed robbery (Balegamire, 1999; 249). Others turn to a life in mining, where they are exposed to an environment that is physically and morally unhealthy for anyone, particularly children. Many girls start working as prostitutes early, without or sometimes with the blessing of their impoverished parents (Balegamire, 1999; 249). These young girls risk exposure to pregnancy or sexually transmitted diseases, as well as sexual violence and abuse.

Poverty and hunger in unstable countries has also driven parents to sell their children into combat service. Others join voluntarily, or are compelled to join an armed group because of extreme poverty. UNICEF officials and international aid agencies operating in the Congo Basin say that the child soldier epidemic can be traced largely to economics (Sussman, 2007; 24). Many children enlist for the minimal food and shelter that it will provide, while others are looking for revenge or prestige. Families in the Congo tend to be large, and parents sometimes recognize that they cannot meet the needs of their children. Today, former child soldiers are learning income generating activities like sewing, woodworking, and bicycle repair, so that they may survive without the patronage of armed groups (Sussman, 2007; 24).
Wild Meat in Household Economies

Hunting of wild animals is an important component of household economies in the Congo Basin. Quantitative studies show that: a) bushmeat remains the primary source of animal protein for the majority of Congo Basin families; b) bushmeat hunting can constitute a significant source of revenue for forest families; c) bushmeat consumption by low density populations living in the forest may be sustainable at present; d) demand for bushmeat by growing numbers of urban consumers has created a substantial market for bushmeat that is resulting in a halo of defaunation around population centers, and may be driving unsustainable levels of hunting, and e) large bodied animals with low reproductive rates are most susceptible to over-exploitation compared with other species that can tolerate relatively intensive hunting (Wilkie, & Carpenter, 1999; 927).

Wild meat hunting has been documented in the Democratic Republic of Congo since at least the 1950's when Mbuti Pygmies of the Ituri forest started to make contact with meat traders (Bowen-Jones, 1998; 11). Meat was exchanged for iron tools, tobacco or agriculturally produced food, however there were noticeable decreases in forest species as a direct consequence of the change in hunting focus and methods. Increasingly, animals are not hunted for local consumption but for urban population centers where demand keeps prices high and prompts others in the forest to hunt (Bowen-Jones, 1998; 11). The supply links between rural areas to larger towns and cities follow predictable patterns, and the infrastructure within this region determines the availability of meat.

It is argued by some that bushmeat hunting could contribute to development if managed for sustainability and transparently integrated into the general economy (Damania, Milner-Gulland, & Crookes, 2004; 259). Yet, efforts to manage the bushmeat
trade are built on the assumption that bushmeat consumption is driven by the limitation of protein. It is also assumed that increases in livestock and agricultural production will reduce human reliance on wild sources of food (Brashares, 2004; 1180). Little empirical evidence supports the notion, however, that consumption of wild meat would be linked to the availability of alternative sources of protein. Bushmeat has proven to be an attractive option economically for many rural people in the Congo Basin region. Unlike domestic animal husbandry, the labor inputs which it requires are discontinuous and easily reconciled with the agricultural cycle (Brown, 2003; 5). Bushmeat is the product of a system of farm/forest management which in total offers high returns from a range of different activities.

For farmers who are trying to minimize their risks, and to whom labor is a major constraint, bushmeat hunting appears to offer a viable option for livelihood security. The trade is likewise low risk and flexible, with minimal capital costs, and thus attractive to the poor (Brown, 2003; 5). Men, traditionally, are responsible for the hunting and women are in charge of the commerce and point of sale in chop bars and restaurants. Bushmeat has excellent storage qualities, similar to that of agricultural produce and is easily transportable in terms of value/weight ratio. Evidence suggests that the long-term prospects for bushmeat relate to values of the former buffer type and that it is unlikely to figure strongly in any process of capital accumulation (Brown, 2003; 5).

Though many studies focus on consumption levels in reference to wild meat, others have shed light on the increasing importance of production and its impact on the rural poor. De Merode examined patterns of consumption and sale in the Zande area in the Eastern DRC (2003), revealing significant variations in patterns which correlated with
relative wealth (Brown, 2003; 9). De Merode found that while wild foods in general formed a significant proportion of household production, most was sold on the market and not consumed. In cases of bushmeat and fish, more than 90% of production was sold. Bushmeat and fish consumption were fairly even across all wealth ranks, except for the poor who consumed very little of their own production (Brown, 2003; 9).

Commodity chain analysis is increasingly being applied to connect explicitly consumption and production processes (Bowen-Jones, Brown, & Robinson, 2003; 390). The benefits from the bushmeat trade accrue too many stakeholder groups along the commodity chain that stretches from the wild animal to the final consumer. A chain can be very short or complex, depending upon the number of stakeholders who are linked together. The high demand for bushmeat in rural and urban areas has encouraged the number of professional and commercial hunters, hence the market for bushmeat is much more integrated with hunters linked to both rural and urban consumers (Bowen-Jones, Brown, & Robinson, 2003; 390).

Chapter Conclusion

The Democratic Republic of Congo and Republic of Congo have utilized agriculture, oil and mineral resources, hydroelectricity and logging as its main sources of economic development over the last several decades. Yet, these sectors lack proper oversight and planning, causing losses in growth, where there could be gains. Economic turmoil has affected both countries, at the government level, down to the individual. The DRC and RoC governments would benefit from greater investment in the areas forementioned, while continuing to look for opportunities to diversify their economies.
Although demand for bushmeat predominantly drives the trade, the expansion and increasing unsustainability of the bushmeat trade is a result of pressures and shocks over the past several decades. The Congo Rebellion drew in seven African countries, all of which experienced negative international impacts to their economic security. International relief from investors stalled several times, due to the lack of progress made by local economies to get projects off of the ground (“Congo: The Looters’ bazaar”, Dec. 2002; 55). As a result, many people resorted to bushmeat hunting and commercial trade to provide not only food but also income for themselves and their families.

Because development of agriculture has proven to be a precursor to growth of other sectors in many other developing nations, it may benefit the DRC and RoC to focus on the growth of this sector for both acute and long term needs. Development of the agricultural sector would help alleviate food security issues in the short term, as well as help in economic recovery for future needs. Long term solutions to economic recovery should focus on developing hydroelectric power, and creating more oversight and management in oil and mineral resources. Creating a plan that addresses both immediate and long term economic sustainability would allow the governments of the DRC and RoC to prioritize needs that affect individuals and the entire country.
CHAPTER III
WILDLIFE IN THE CONGO BASIN

Unsustainable hunting is leading to the extinction of large mammal species, and protein shortages may ensue once bushmeat supplies are exhausted (Kumpel, Milner-Gulland, Cowlishaw, & Rowliffe, 2010; 251). The search for policy solutions to this problem has emphasized the complex linkages between bushmeat hunting and wider issues of poor governance, inadequate land tenure, poverty and lack of livelihood alternatives. The ability of poor people to adapt if access were prevented or if supply ran out depends on factors such as market access, availability of alternative foods and livelihoods, and educational, skills or cultural barriers to alternative sources of income (Kumpel, Milner-Gulland, Cowlishaw, & Rowliffe, 2010; 251). Today more than 30 million people live within forested regions of Cameroon, Gabon, Equatorial Guinea and other Central African nations, and these inhabitants eat about the same amount of meat each year as most North Americans (Clarke, 2003; 14). More than 60 percent of this meat comes from local wildlife (Clarke, 2003; 14).

Wild Meat Consumption

Presently, Central and West Africa lack land management and tenure systems that would give rural communities a say in access to and distribution of natural resources. Rural families often have few assets on which to rely, and existing natural assets are increasingly depleted or claimed by more people amid rapid population growth. Wildlife harvested for food is a valued commodity that is subject to a growing demand when supply is either static or declining. As a result, many rural locations in Central and West Africa have few barriers to entering the bushmeat trade and few alternatives to offset
demand, resulting in increased hunting pressure and a decrease in wildlife populations (Bennett, Blencowe, Brandon, Brown, & Burn, 2006; 885).

Human population across this area is likely to have at least doubled since the 1920’s, and given average growth rates of 2.7% are expected to double again in by 2025 (Wilkie, & Carpenter, 1999; 928). Given this, demand for wild game will increase and may exceed production rates, resulting in the depletion of primates and ungulates throughout the rainforests of the Congo Basin (Wilkie, & Carpenter, 1999; 928).

Numerous quantitative studies regarding the scope of bushmeat consumption and trade have taken place over the last several decades, but an overall quantitative study and projective proves problematic due to unclear consumption estimates and non-universal measurement techniques.

Bailey and Peacock (1988) estimated meat consumption for foragers in the Ituri forest of northeastern Democratic Republic of Congo to be 0.16 kg per person per day (Wilkie, & Carpenter, 1999; 928). However, total meat consumption was higher in urban compared with rural areas, given their higher population density. Studies on bushmeat consumption indicate which species are being exploited and allow for generalizations regarding the likely impact of hunting on wildlife populations. Unless longitudinal studies are performed in the same area for a length of time, the study will provide only an anecdotal assertion about the sustainability of bushmeat hunting in a given area.

Lahm (1994) censused game densities in hunted and non-hunted patches of forest near Makokou, Gabon. Assuming that habitat, vegetation density and visibility are comparable in the hunted and un-hunted sites, data suggests that hunting resulted in a decline in game densities of 43-100% in hunted areas (Wilkie, & Carpenter, 1999; 936).
Primates and large bodied species were most severely affected by hunters and six of 14 species of wildlife were essentially wiped out from hunted areas. This may result in long term changes in tropical forest dynamics through the loss of seed dispersers, large granivores, frugivores, and habitat landscapers, such as large forest mammals (Fa, Peres, & Meeuwig, 2002; 233).

Species Depletion

Wild meat is an important source of animal protein for rural and urban peoples and also a source of cash income for hunters, transporters and sellers (Albrechtsen, Fa, Barry, & Macdonald, 2006; 340). Bushmeat, generally the flesh of forest mammals, but also the meat of some reptiles (snakes, crocodiles, lizards, and tortoises) and birds (hornbills, turacos), is a cheap and plentiful supply of protein in regions where often meat from domestic animals is scarce and more expensive (Fa, Currie, & Meeuwig, 2002). Precise estimates of the significance of wild animal proteins to the diets of tropical forest-living peoples are lacking, however the consensus is that such protein is an important contributor to food security (Fa, Currie, & Meeuwig, 2002).

Species depletion affects not only rural peoples, but also other local species which depend on these food resources as well. Evidence suggests that large forest felids are negatively affected by the depletion of their prey base through exploitative competition with humans hunting for bushmeat (Henschel, Hunter, Coad, Abernethy, & Muhlenberg, 2011; 12). In the Congo Basin rainforest, the leopard is the largest mammalian predator. The potential for competition is high because human populations in the region rely primarily on bushmeat for their protein requirements, with between one and five million metric tons of wild meat estimated to be traded annually. Hunters target larger-bodied
species, and extraction rates for species >5 kg are considered to be unsustainable (Henschel, Hunter, Coad, Abernethy, & Muhlenberg, 2011; 12).

Fa, Peres, and Meeuwig (2002), used data on the extraction rates of mammal species on the Congo and Amazon Basin from a review of hunting studies by Fa and Peres (2001). The average number of animals consumed per person per year was estimated following Peres (2000), which builds on previous estimates by Redford and Robinson (1987). Fa used mean body mass to estimate extraction rates (kg/km²/year), for a total of 57 and 31 mammalian taxa in the Congo and Amazon, respectively (Fa, Peres, & Meeuwig, 2002; 234). Data on the number of animals and biomass extracted per species were derived from anthropological studies that reported animal kills brought into settlements (23 and 14 rural settlements in the Amazon and Congo, respectively) during a period of >1 year.

To assess the sustainability of current extraction rates for each major taxon and species, Fa determined ratios of extraction to production (E:P) for the Congo and Amazon. Rates of exploitation of species at specific body masses were significantly greater in the Congo than in the Amazon. Extraction rates increased with body size, reflecting hunters’ preferences for large-bodied animals; the extraction to production ratio for the Congo was 30 times higher than that of the Amazon (Fa, Peres, & Meeuwig, 2002; 234).

Sixty percent of Congo mammal taxa were harvested unsustainably: most ungulates (93%), primates and carnivores (63%) and rodents (11%). Data suggests that hunting levels of forest mammals reflect the high human population in the region, coupled with accelerating habitat loss. According to the IUCN, the World Conservation
Union, poaching has reduced Africa’s only surviving population of wild northern white rhinoceros by up to half ("Criminalizing dissent", Dec 2004/Jan 2005; 12). In 2005, between only 17 and 22 of these animals were left in the Democratic Republic of Congo, with a loss of between 14 and 19 rhinos since the year before ("Criminalizing dissent", Dec 2004/Jan 2005; 12).

**Commercial Wildlife Trade/Harvesting**

Large mammals in Central Africa’s forests are in a state of rapid decline. Stemming this decline will require focusing scarce conservation funds and resources on programs that most directly address the major threats to this declination (Kuehl, Nzeingui, Le Duc Yeno, Huijbregts, Boesch, & Walsh 2009; 1500). The level of hunting varies from region to region, yet consists of commercial and or subsistence hunting. Distinguishing between subsistence and commercial hunting and between local and non-local hunters is crucial in order to determine which strategies will be most effective for conservation and addressing livelihood strategies.

**Table 1 Value and volume of bushmeat consumption in Congo Basin countries**

<table>
<thead>
<tr>
<th></th>
<th>Cameroon</th>
<th>CAR</th>
<th>Congo</th>
<th>DRC</th>
<th>Eq.Guinea</th>
<th>Gabon</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total consumption (tonnes/yr)</td>
<td>78,077</td>
<td>12,977</td>
<td>16,325</td>
<td>1,067,873</td>
<td>9,763</td>
<td>11,381</td>
<td>1,196,396</td>
</tr>
<tr>
<td>Average harvest (kg/km² forest/yr)</td>
<td>503</td>
<td>248</td>
<td>77</td>
<td>897</td>
<td>574</td>
<td>50</td>
<td>645</td>
</tr>
<tr>
<td>Average Consumption (kg/person/yr)</td>
<td>21</td>
<td>17</td>
<td>11</td>
<td>41</td>
<td>24</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>Bushmeat value (US $ '000/yr)</td>
<td>195,193</td>
<td>32,443</td>
<td>40,813</td>
<td>2,669,683</td>
<td>24,408</td>
<td>28,453</td>
<td>2,990,990</td>
</tr>
</tbody>
</table>

One major factor working for wildlife poachers and smugglers is the availability of unlimited markets ("5 African Nations Combat Poaching: Form Animal Interpol to Bar Export of Trophies", Nov 19, 1969; 17). Ivory goes to the United States for billiard balls, to Germany for piano keys and to the Far East for carvings. Leopard and other skins find a market everywhere for handbags and garments. Rhinoceros horns are in great demand in India and the Far East as an aphrodisiac; the horns are ground down and spread onto curries. Rhinoceros horns are also often sent to China for medicinal reasons, and are believed to cure flesh wounds, relieve pains and aid in chest complaints ("5 African Nations Combat Poaching: Form Animal Interpol to Bar Export of Trophies", Nov 19, 1969; 17).

The informal economy can be extremely dynamic, and without an understanding of how it’s social and political structures affect the bushmeat trade it is difficult to plan conservation measures accordingly (de Merode, & Cowlishaw, 2006; 1263). Swift changes in the informal economy may be most extreme under conditions of armed conflict, and these changes are often responsible for the deleterious impacts of warfare on the environment. The greater availability of firearms makes large mammals easier to hunt and sell, while human populations displaced by hostiles are more dependent on consuming and trading in natural resources after their pre-conflict lives have been interrupted or destroyed (de Merode, & Cowlishaw, 2006; 1263). Poachers and the military can be found in league together, since soldiers cannot manage on their monthly salaries ("Poaching in Congo Threatens Hippos", Oct 29, 2006; 12). The soldiers therefore shoot anything that can be turned into income, instead of shooting the enemy ("Poaching in Congo Threatens Hippos", Oct 29, 2006; 12).
Villages near logging roads hunt much more intensively than villages that lack market access (Walsh, Abernethy, & Bermejo, & Beyers, 2003; 612). Groups of hunters use logging roads and vehicles to enter remote areas (including parks and wildlife reserves), then export bushmeat to nearby logging towns, regional transportation hubs, and large cities hundreds of kilometers away (Walsh, Abernethy, & Bermejo, & Beyers, 2003; 612). Expanding road networks fragment tropical forest areas, opening them up to a growing rural population; in frontier forests, where people have no history of commercial agriculture or logging, people exploit the most accessible and abundant resource-wildlife (Poulsen, Clark, Mavah, & Elkan, 2009; 1598).

Once roads provide access to markets, bushmeat becomes a market commodity, transforming hunting from a subsistence to a commercial activity (Poulsen, Clark, Mavah, & Elkan, 2009; 1598). Traditionally, hunters tend not to be among the wealthier members of their communities, or at least do not perceive themselves as wealthy (Paillar, Wagner, McPeak, & Floyd, 2009; 762). Most hunters hunt to provide their families with meat, because poverty has driven them to hunt and there is no other alternative, and for income (Paillar, Wagner, McPeak, & Floyd, 2009; 762). Other reasons given include: hunting out of habit, to protect fields from crop pests, cultural/heritage reasons, and to use meat as payment for farm hands (Paillar, Wagner, McPeak, & Floyd, 2009; 762).

The Congo Basin: Total Economic Value (TEV)

Congo Basin protected areas generate a wide range of goods and services that are used for income and subsistence, provide vital life support and underpin other economic activities and sectors, or hold significance regardless of their actual use (Hugues, 2011; 130). Since its development in the 1980’s and 1990’s by Barbier (1989), and Pearce and
Turner (1990), Total Economic Value (TEV), has become the most standard and most widely applied framework used by economists to categorize ecosystem values (Hugues, 2011; 130). The TEV extends beyond the marketed and priced commodities, and considers the full gamut of economically important goods and services associated with ecosystems (Hugues, 2011; 130).

Looking at the TEV of Congo Basin forests involves considering their complete range of characteristics as integrated systems-resource stocks or assets, flows of environmental services, and the attributes of the ecosystem as a whole, including:

- **Direct values**: the raw materials and physical products that are used specifically for production, consumption and sale (e.g. income, energy, shelter, foods, medicines and recreational facilities).

- **Indirect values**: the ecological functions that maintain and protect natural and human systems through services, such as maintenance of water quality and flow, flood control, micro-climate stabilization and carbon sequestration.

- **Option values**: the premium placed on maintaining a pool of species and genetic resources for future possible uses, such as leisure, commercial, industrial, agricultural, and pharmaceutical applications and water based developments.

- **Existence values**: the intrinsic value of ecosystems and their component parts, regardless of their current or future use possibilities, such as cultural, aesthetic, heritage and bequest significance.

In 2007, CIFOR, CIRAD and the World Bank carried out a comprehensive study of the economic value of ecosystems, focusing on the Democratic Republic of Congo. The figures presented in the study aimed to provide broad brush approximations of the
scope and magnitude of protected area values. The values cover only a tiny proportion of the total economic value of Congo Basin protected areas, because only selected services and goods were able to be quantified in monetary terms (Hugues, 2011; 131). Protected areas represent a valuable natural asset, which when managed wisely and sustainably will continue to yield economic values indefinitely.

Immense values have been attributed to the exploitation of timber resources in Congo Basin countries, although official forestry records show the sector’s contribution to the GDP has been decreasing over time. It is currently estimated that forestry contributes €120 million in tax income each year for Congo Basin countries. It is estimated that informal timber harvesting totals around 1.5 to 2.5 million m$^3$ a year, between four and six times as much as is officially recorded. Non-wood forest products (NWFP) are arguably the most important and direct use value obtained from Congo Basin forests, because they are vital to income, nutrition and health of a large proportion of the rural population (Hugues, 2011; 131).

Other NWFP which are harvested from Congo Basin forests and protected areas include a varied range of products used for income, shelter, food, medicines and handicrafts (Hugues, 2011; 132). More than half of the population in Central Africa harvests non-wood forest products (Hugues, 2011; 132). Women are predominantly the harvesters and traders of non-wood forest products, and men traditionally hunt and harvest higher-value commodities such as bushmeat. NWFP provide important sources of income for many households. In Equateur Province in the Democratic Republic of Congo, households selling leaves, caterpillars, mushrooms, charcoal and palm wine can earn a monthly income of US $84, which is equivalent or higher than that of a civil
servant or secondary school teacher (Hugues, 2011; 133). Local traders can earn approximately US$130 to US$216 monthly, equivalent to that of a doctor. For those in trade in Kinshasa, one can earn approximately US$1,352 monthly. Non wood forest products are also exported to France, the United Kingdom, Belgium, Spain, and Portugal to a total of 32,000 tons worth more than $96 million US (Hugues, 2011; 133).

The potential economic benefits from forest products could be paramount to the economic sustainability within the Congo Basin. The timber sector, the informal timber sector, wood fuel, bushmeat, non-wood forest products and gorilla tourism are directly valued at a minimum of US$13 billion per year (Hugues, 2011; 135). Indirect values of watershed protection and carbon sequestration total billions more annually. If the Congo Basin region is able to create a system which allows for sustainable practices of these forest products, the opportunities for economic gain are boundless, regionally, nationally, and at the community level as well.

Bushmeat hunting represents an extractive approach that has proven to be unsustainable to indigenous people, due to a lack of oversight, management, and a free for all system amongst poachers and hunters. What TEV proposes, is an alternative strategy that may provide long term benefits. Both approaches are extractive in nature, but how a TEV strategy is developed and implemented may prove to be the difference between the two approaches. TEV approximates the value of all forest resources, including those that can be produced readily and repeatedly, such as non-wood forest products (NWFP). Utilizing these resources may provide viable economic strategies for forest dwelling people, and provide a distinct alternative to bushmeat hunting. Drawbacks of extraction may include further loss of resources and more damage to species in the
area. Adopting strategies of extraction may prove to be unwise if extraction is already endangering local wildlife in a particular region.

The Ouesso Market

Ouesso, a popular market area in the Northern Congo, has been almost completely hunted out of large mammals, and now depends on external sources of meat (Hennessey, & Rogers, 2008; 180). Meat enters and leaves the market by truck, three days a week, by dug-out canoes on the two rivers, the Sangha and the Ngoko, and intermittent trucks from the villages of Sangha Palm and Ngombe. An average of 5700 kg of meat-total weight-was sold in the Ouesso market each week, at an average of 0.5 kg per person, per week, according to analysis conducted by Hennessey and Rogers (2008; 180). The most common animal sold in the market is the Peter’s duiker, followed by primates which made up 22 percent of the market meat trade. An average of 132 primates of eight different species was brought into Ouesso each week, including gorilla meat which averaged 1.6 carcasses per week. Chimpanzees are of less value to hunters, because they are more difficult to catch and have little meat on their bodies. Leopards, which are also sold at the market, have nearly been hunted out of the region, and therefore show up less frequently (Hennessey, & Rogers, 2008; 180).

Elephant meat or tusks were encountered on an average of 3.8 times per week, which was estimated to be about thirty-two elephants over the four month study (Hennessey, & Rogers, 2008; 180). Elephant meat lasts for a longer duration than other types of meat, because of the nature in which it is preserved; it is smoked in chunks and typically lasts up to 4 weeks. Elephant meat and ivory continuously come through the market, and are even flown out to neighboring Brazzaville. By the time the meat is sold at
the market in Ouesso it has gone through the hands of many different stakeholders. As this area becomes more accessible by permanent roads built by logging companies, hunting will only increase, particularly of monkeys and elephants, and the meat trade could easily increase and surpass sustainable levels (Hennessey, & Rogers, 2008; 180).

Bushmeat-Apes

African apes comprise three different species: the bonobo (*Pan paniscus*), the chimpanzee (*Pan troglodytes*), and the gorilla (*Gorilla gorilla*). Gorillas, separated into western and eastern gorillas, are found in ten countries from Nigeria to Uganda; chimpanzees are found across 21 countries in west, central and east Africa; and the bonobo is found only in the Democratic Republic of Congo (Downing, 2012). The hunting and consumption of apes, chimps and gorillas may be viewed as one of the most ethically daunting issues to strike the environmental movement in the last three or four decades.

Great apes are supposed to be sentient, conscious, and self-conscious animals with highly complex feelings and emotions as well as many socio-cognitive abilities (Benz-Schwarzburg, & Benz, 2012; 182). Apes are able to use tools and form cultures, as well as communicate, even in human sign languages. Great apes are aware of some of their own mental states and the mental states of others, and they care for and mourn for each other. Great apes laugh when they are tickled, and play in gender specific ways (Benz-Schwarzburg, & Benz, 2012; 182). They resemble human beings in many ways, which has led to great support for their protection in the Congo Basin and elsewhere.

Apart from the ethical dimensions surrounding great ape hunting, low reproduction levels also cause major concern when studying apes. Great apes have
relatively long gestations and infant dependencies (Downing, 2012). Depending on the species, sexual maturity isn’t reached until about eleven to thirteen years old. Parental involvement is high, typically lasting for several years. Lifespan is also quite long for apes, averaging 53 years for chimpanzees, 40-50 years for gorillas, and 40 years for bonobos. The ability of a population to rebound from a population decline is a protracted and lengthy process (Downing, 2012). Field reports from across Africa indicate that increasing and unsustainable demands on natural resources are having a profound effect on wild primate populations (Farmer, 2002; 118). A recent survey of field researchers of apes found that 96% of ape populations are in decline, and that 72% are predicted to decline by 50% in the next 50 years with current trends in habitat loss, fragmentation, and hunting (Farmer, 2002; 118). Gabon and the Congo alone are thought to hold roughly 80% of the world’s gorillas and most of the common chimpanzees (Walsh, Abernethy, Bermejo, & Beyers, 2003; 611). Ape populations are particularly vulnerable to overexploitation because they live at relatively low densities and tend to be social, active, and highly visible by day (Downing, 2012).

The commercial trade in bushmeat presents an immediate and rapidly growing threat to Africa’s great apes and other wildlife (Eves, Gordon, Stein, & Clark, 2002; 171). Without intervention, this trade risks extinction of many ape populations within 10 to 20 years. Even though the majority of wildlife species hunted are elephants, duikers, pigs, rodents, and other primates, Africa’s great apes (gorillas, chimpanzees, and bonobos) dominate media coverage of the bushmeat crisis, due in part to morphological, behavioral, and genetic closeness between humans and apes (Eves, Gordon, Stein, & Clark, 2002; 171). Traditional eating habits in Central Africa depend not upon one’s
membership in the modern nation states, but upon one’s allegiance to a tribe or ethnic group; and the tribal or ethnic food preferences and taboos in Africa are subtle and complex, as a result of historical traditions (Peterson, 2003; 64).

Local traditions are often rationalized according to familiar myths, and in the case of apes, these ancient tales can evoke the theme of kinship (Peterson, 2003; 64). For others however, the similarity to humans is actually an attractive cause for the hunting and consumption of apes. Some cultures believe that apes look like human beings, but have superhuman strength. This combination may help to explain why apes are, in some places, culturally valued as a food for ambitious men who would like to acquire the strength and even perhaps the virility, of an ape (Peterson, 2003; 64). Ape and chimpanzee populations have also come under threat from the spread of Ebola. Over the course of 18 months, wildlife conservation workers and an international research team found many ape carcasses in the Congo, across the border from the 2001 human epidemic sit at Mekambo (Walsh, Abernethy, & Bermejo, & Beyers, 2003; 611). In addition to the economic effects and the issue of food shortages, the consumption of bushmeat is also associated with severe health consequences (Harnish, 2006; 33).

According to the Bushmeat Crisis Task Force, human consumption of other primate species is scientifically associated with the spread of deadly zoonotic diseases, including AIDS and Ebola. Evidence of simian immunodeficiency virus (SIV) infection has been reported for 26 different species of African primates. Both SIV cpz from chimpanzees and SIV sm from sooty mangabeys are known to be the initial cause of AIDS in humans. Though apes and monkeys are the most likely vectors for the transmission of harmful diseases because of their genetic likeness to humans, all forms of
bushmeat pose risks to humans because it is not federally regulated and is not thoroughly
inspected prior to consumption (Harnish, 2006; 33).

Bushmeat hunting of apes is especially concerning because great apes tend to
breed more slowly than other animals hunted. Great apes are one of the most difficult and
dangerous species to hunt (Benz-Schwarzburg, Benz, 2012; 187). In the Congo Basin,
their density is less than 0.13 per square, thus their carcasses are relatively uncommon in
markets. Yet, they are severely threatened by the growing bushmeat trade, because of the
growing demand for their hands, feet, and sculls which are sold as delicacies or fetish
items. Furthermore, gorillas are scarce, large-bodied, and slow to reproduce, making even
current levels of hunting a threat to their long term survival (Benz-Schwarzburg, Benz,
2012; 187).

To be hunted sustainably, some ape species could lose no more than one member
per square kilometer every 20 years, but bushmeat hunters are annually killing 6,000
western lowland gorillas, along with 15,000 chimpanzees (Clarke, 2003; 14). At current
estimates, scientists from the Wildlife Conservation Society argue that poaching has
surpassed habitat loss as the most immediate threat facing western lowland gorillas, and
could lead to their extinction in the next 20 years (Clarke, 2003; 14). Not infrequently,
the haunch of a silverback gorilla or the brain of a chimpanzee will be flown to London,
Brussels, or New York to expatriate Africans, or to others interested in traditional African
foods (Larsen, 2003; 14). Chimpanzee bones are also valued for their therapeutical
qualities: the bone corresponding with the damaged part of the patient is boiled in water
and the liquid applied to the skin (Downing, 2012). Chimpanzee skulls are sometimes
sold to traders from Nigeria where they are used in connection with magic (Downing, 2012).

Levels of hunting and poaching are alarming, as are illegal killings, pet trade, political instability and diseases (including transmission by humans) (Benz-Schwarzburg, & Benz, 2012; 184). In orangutans, fragmentation and isolation within only a few remaining patches of rainforest are especially problematic. Today, there are approximately only 680 mountain gorillas left, distributed over only two regions, the Bwindi Impenetrable National Park in Uganda and the Virunga Volcanoes region of Rwanda, Uganda and the Democratic Republic of Congo. Deforestation leads to limited corridors necessary for mating and feeding. Hungry animals then become unwelcome guests on plantations and easy prey for poachers and pet traders (Benz-Schwarzburg, & Benz, 2012; 184).

Apes that are not killed or do not initially die of their treatment or capture may find safe harbor in sanctuaries. Across seventeen sanctuaries throughout Central Africa, more than half of all apes arriving there have been identified as confiscated, and a quarter had been donated, although donors remain anonymous (Farmer, 2002; 123). The majority of the apes had been found awaiting sale or transportation. Most of the apes had reported health problems upon arrival, including internal parasites, behavioral abnormalities, and malnutrition. Wounds due to wire or chains, infected wounds, and external parasites were also features, though less frequently, as were cases of broken bones, bullet wounds, and suspected malaria. Sanctuary field workers also reported some cases of hair loss, pneumonia, skin problems (fungal/bacterial), ulcers, physical handicap (e.g., missing
digits, lameness, and limb dysfunction), self-mutilation, dehydration, diarrhea, teeth grinding, and chest infections (Farmer, 2002; 123).

Incentives and Initiatives to End Commercial Trade

Government entities assigned to the protection of species from the bushmeat trade are typically understaffed, underfunded, and lack equipment such as vehicles, means for communication, firearms, and ammunition (Downing, 2012). In addition, most government officials are paid low salaries and have a lack of reward or recognition, which leads to decreased motivation for combating public issues. As a result, effective policing of the bushmeat trade, the enforcement of existing laws, and the prevention of poaching activities remain nearly impossible (Downing, 2012).

The primary activities of the CBFP in the region have been to establish formal spatial plans, to enforce laws protecting natural resources and to promote better forestry and logging practices through encouraging forest certification; other interventions have been established to directly benefit the people. These interventions include improvements in agriculture, fishing and livestock rearing practices, the organization of community management of some forests and hunting areas and interventions at a political level to ensure that a proportion of the royalties from logging are reinvested in local social infrastructure.

Community-based conservation (CBC) initiatives often act as a means to reduce unsustainable exploitation of wildlife (Downing, 2012). Strict protection and policing have been utilized for the prevention of bushmeat hunting in protected areas. Increasing police presence in underdeveloped areas remains problematic, as it is not often economically viable to devote already scarce resources to habitat protection. Even with
law enforcement policies, bushmeat hunters are likely to adapt to new regulations by switching to less detectable methods, targeting smaller animals, organizing larger groups, and hunting and traveling more at night. Establishing local law-enforcement units, providing additional resources, and allowing villages to become more involved in conservation efforts will be central to initiating more sustainable practices (Downing, 2012).

Chapter Conclusion

Wildlife in the Congo Basin is threatened by unsustainable hunting and the growing demand for bushmeat in foreign markets, particularly in Asia and Europe. Though local use of bushmeat is common for subsistence, commercial trade has caused high levels of species depletion in the region. Population growth and encroachment on protected areas has also aided in the growing demand of wild meat and animal products. Larger bodied animals, with low reproduction rates, such as elephants, rhinos and great apes are the species most likely to face extinction due to overhunting. These species cannot reproduce at the volume necessary to counteract the amount of animals killed by poachers and hunters.

Growth of both logging and mining sectors often draw people closer to protected areas, which has led to an increase in poaching. Because of the high demand, and high price for bushmeat, incentive is high for hunters, as well as farmers to continue the practice. With few other livelihood alternatives, rural people rely on the income and subsistence that wild meat provides. Without interventions, various species in the Congo Basin region could become extinct. Both the Democratic Republic of Congo and
Republic of Congo governments should explore more sustainable wildlife practices, while utilizing their wealth of natural resources.

The Congo Basin rainforests have immense potential to aid in economic recovery and growth in the region. Total Economic Value, TEV, estimates that the Congo Basin rainforests could yield billions of dollars of revenue. Profits gained from the utilization of forest resources have already produced evidence that sustainable and economically viable solutions are possible, for individuals, and communities. International export of forest goods could aid in national and regional economic gain as well. Congo Basin countries should focus efforts on utilizing forest resources that can be reproduced, and develop long term goals that enhance sustainability initiatives and livelihood strategies.
CHAPTER IV

MACRO INTERVENTIONS

Both the Democratic Republic of Congo and Republic of Congo lack stability (political, economic, infrastructural), which negatively influences the implementation of effective macro level interventions. The Congo Basin region has suffered from poor decisions made by high level officials who often cling to short term solutions. This tendency for immediate results is evident in the behavior of individuals as well, exemplified by unsustainable hunting practices; The places where species are threatened, pinpoint where development policies have failed, and the future of the rural poor is likely to be threatened as well (Bennett, Blencowe, Brandon, Brown, & Burn, 2006; 885). World leaders have stressed the importance of Africa’s future success being dependent upon good governance. Often, major crises in Africa have been met with international intervention, with little proven leadership coming from within.

This chapter seeks to explore the current status of several factors: governance, price stabilization and food risk intervention, food availability via bushmeat, infrastructure, and education. Additionally, a focus will be placed upon which macro level interventions and strategies can be improved, or implemented in order to support long term economic and ecological success in the Democratic Republic of Congo and the Republic of Congo. These areas represent some of the greatest roadblocks to effective and sustaining livelihood approaches for rural people in the Congo Basin.

Governance

Governance in the Congo Basin region has been tarnished by corruption and lack of transparency for many decades. Numerous civil wars in the area have caused constant
unrest amongst the approximately 12 million rural people who live in the Congo Basin (Tollens, 2010; v). The international community has called upon leaders in the DRC and Republic of Congo to build upon existing peace accords, though pockets of instability still exist throughout the countries. Civil society organizations are crucial partners and actors in the public policy sphere, and are essential in the protection of fundamental freedoms and the development of democratic governance ("The Mining Review in the Democratic Republic of the Congo: Missed Opportunities, Failed Expectations, Hopes for the Future", 2009). African leadership must additionally pursue the path of political accommodation, tolerance for ethnic diversity, democratic governance, and the revitalization of economic development programs (Orogun, 2002; 25).

Democratic Republic of Congo

From the 1960’s to the late 1980’s, Mobutu used the Democratic Republic of Congo’s immense natural wealth, as well as Cold War support, for an extensive patronage network, which slowly destroyed government bureaucracies (Dijkzeul, 2003; 183). Prominent economic contributors, such as agriculture and mining were damaged by corrupt systems and underutilization. Though support for Mobutu had waned for decades, it was not until 1997 that Laurent Kabila of the Alliance des Forces Democratiques pour la Liberation du Congo (AFDL) received enough support from the Rwandan and Ugandan armies to run Mobutu out of the country and establish a new government.

Arguments have been made that to ensure a peaceful long term resolution to the DRC conflict, there is a vital need for greater involvement by the international community, particularly the United States, the United Nations, and other leading Western powers (Orogun, 2002; 25). Since the early 1990’s, Africa has accounted for over 40
percent of the United Nation’s security council’s peace-and-security program, and African states have continuously remained on the lowest rungs of the United Nation’s Development Program’s human development index (Pentland, 2005; 922). American involvement in African security is still shaped by the Somalian conflict, and is restricted to a few mineral or oil rich countries, and more recently to regions linked to terrorism, in Africa and around the world (Pentland, 2005; 922).

Between 2000 and 2002, rebel groups entered the eastern half of the Congo, and revolted against the Kabila regime, establishing effectively a separate state in Eastern Congo (Burke-White, 2005; 562). In December, 2002 the various parties involved in the Congo conflict reached a peace agreement, which served as the basis of the transitional government, created a power sharing arrangement among the former government, the Congolese Rally for Democracy (RCD), the Movement for the Liberation of Congo (MLC), and the unarmed opposition (Burke-White, 2005; 562). Economic recovery is still in its infancy and state structures are still in disarray. The national army has committed human rights abuses throughout the region, forcing UN peacekeepers to become embedded in the country.

In 2005, the DRC adopted a new constitution, which envisioned a strongly decentralized political system. The reform includes a strong fiscal component which requires the decentralization of government expenditure and revenue-raising authority to sub-national government structures (Tull, 2010; 653). The Democratic Republic of Congo has suffered from its post-independence failure to consolidate democracy, primarily because of the faults of its political and military leaders who have placed narrow class interest above patriotism and the general welfare (Nzongola-Ntalaja, 2004;
Instead of attempting to meet the basic needs of the population, the wealth of natural resources in the region has been monopolized by its rulers and their foreign allies, which involves an expansive network of international financial criminality including states, mafia groups, and rogue business operators (Nzongola-Ntalaja, 2004; 125).

**Republic of Congo**

Due to its geographic importance in the area, the Republic of Congo has the capacity to play an effective role in ensuring stability and sustainable development in the Congo Basin region. The Republic of Congo shares borders with Gabon, Cameroon, Central African Republic, the Democratic Republic of Congo, and the Cabinda enclave of Angola. The RoC gained independence in 1960, but did not reach a democratically elected government until 1992 (“The World Factbook: Republic of Congo”, 2013). A civil war in 1997 restored former Marxist President Denis Sassou-Nguesso to power, leading to several more years of unrest in the region. A peace accord reached in March, 2003 has not ended the tenuous infighting, however, and humanitarian crises are common throughout the country (“The World Factbook: Republic of Congo”, 2013).

Despite the Republic of Congo’s attempt to implement a five-year plan to fight poverty, high unemployment continues and has led to hardship throughout the country, particularly amongst younger people (“UNHCR country operations profile-Republic of the Congo”, 2013). The Republic of Congo hosts approximately 121,000 refugees and asylum seekers, predominantly from the DRC and Chad. The remoteness of the country and lack of infrastructure has restricted efforts to aid this vulnerable population. The fragility of the region’s security could trigger an additional influx of refugees (“UNHCR country operations profile-Republic of the Congo”, 2013).
Political instability, armed conflict and a breakdown of state agencies to monitor and regulate the illegal trade in weapons and other smuggled goods underscores the general lack of governance in the region (Demetriou, Muggah, & Biddle, 2002; 31). The proliferation of trade in military weapons for poaching in the Republic of Congo, represents two threats to security and stability in the country (Demetriou, Muggah, & Biddle, 2002; 45). The trade encourages the development of an illegal market for wild meat. Additionally, violence, crime, and other consequences of this trade activity threaten both the sustainable livelihoods of inhabitants located near reserves and the local wildlife. Consequently, these activities demonstrate a trend toward criminal behavior, which undermines any attempt to rid the region of poor governance practices (Demetriou, Muggah, & Biddle, 2002; 45).

Price Stabilization and Food Risk Intervention

The Food and Agricultural Organization (FAO) estimates that nearly 73 percent of the DRC’s population is living with food insecurity. Thought the DRC has approximately 135 million hectares of agricultural land (34 percent of the national land), only 10 percent has been developed. The country has responded by introducing the PARSAR development project, centering around four components: institutional support, capacity building, support for agricultural production, and the rehabilitation of basic socioeconomic infrastructure (Bakiman, 2011). The project is being implemented to support small land holders with access to improved seed and advice on agricultural techniques, and upgrades for roads to ease access to markets. New techniques include improved seeds that have short growing cycles and high productivity. They are also more capable of resisting plant diseases (Bakiman, 2011). The program is one of several in the
area that is focusing on improving conditions for rural people. These grassroots programs represent proactive approaches to food risk intervention.

Price Stabilization and Marketing

Since the early 1980's, donors have promoted the reform of agricultural marketing as a central mean for economic structural adjustment programs in Africa (Jayne, & Jones, 1997; 1505). From 1980 to 1995, privatization and liberalization of staple grain marketing took place under aid conditionally in over 20 African countries. Controlled marketing systems are meant to contribute to the development of highly dualistic production and marketing structures. Additionally, the system was designed to support and stabilize agricultural good prices to world market levels, and prevent African farmers from eroding the viability of less efficient producers internationally (Jayne, & Jones, 1997; 1505). Production instability often plagues African countries, both in urban and rural settings. Farmers face high transport costs to coastal ports, creating large fluctuations between export and import prices.

Grain marketing in the region has gone through several phases, most recently characterized by attempts to liberalize and privatize food marketing systems under structural adjustment. Other countries in East and South Africa have also moved into a period where the state has withdrawn almost completely from grain trading and pricing (Jayne, & Jones, 1997; 1520). The removal of government controls on grain has mitigated the adverse effects of declining state marketing subsidies associated with structural adjustment (Jayne, & Jones, 1997; 1520). Lower processing costs for grain, made possible through liberalization, have reduced the wedge between producer prices and consumer prices. Liberalization of markets does not ensure universal benefits,
however. Under any system of regulation, market or intervention, there will be a complex pattern of winners and losers (Gibb, 2004; 585).

Poverty reducing effects of enhancing production in the farm sector depend on the net marketing position of the poor and the price elasticity of food demand ("Agriculture for Development", 2008). Poor net-food-selling producers gain only if productivity grows faster than prices fall. Accepting that demand for staple crops is usually price inelastic, producers may lose. Yet, increasing staple crop productivity usually reduces poverty overall, because in addition to the urban poor, more than half of poor rural households are typically net food buyers ("Agriculture for Development", 2008). The Congo Basin countries grossly neglect their agricultural sector, spending less than 5% of their national budgets on agricultural expenditures (Tollens, 2010; 31). By 2010, Congo Basin countries pledged to increase their agricultural expenditures to 10%, but all of the countries listed below fall short of their pledge. Because many of these countries are wealthy in natural resources, they neglect their agricultural sectors, and instead import their food needs. None of the countries below have signed the CAADP compact, which signifies that they do not believe that agriculture is a key component of their economy and critical to the elimination of hunger, food insecurity, and poverty (Tollens, 2010; 31).

<p>| Table 2 Agricultural Expenditures In National Budgets by Country in the Congo Basin Compared to CAADP Target (Maputo Engagement) of 10% |
|---------------------------------|-----------------|-----------------|
|                                |                 |                 |
| Cameroon                        | 3.8             | 2005            |
| CAR                             | 3.0             | 2005            |
| DRC                             | 1.7             | 2005            |
| Eq. Guinea                      | -(1)            | -               |</p>
<table>
<thead>
<tr>
<th>Gabon</th>
<th>0.8</th>
<th>2004</th>
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<tr>
<td>Rep. of Congo</td>
<td>-1(1)</td>
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(1) No data reported to NEPAD secretariat
Source: NEPAD Secretariat, Tollens, 2010; 31

Through the Comprehensive Africa Agriculture Development Programme, or CAAPD, African governments are committed to raising agricultural productivity by at least six percent per year (Tollens, 2010; 32). In conjunction with the New Partnership for Africa’s Development (NEPAD), the CAAPD is a radical new intervention, aimed at bolstering Africa’s long term commitment to agrarian success (Tollens, 2010; 32).

Food Risk Intervention and Initiatives

During the 1990’s, development assistance to African agriculture halved from $4 billion to $2.6 billion, while those in need of regular food aid doubled (Peacock, 2003; 4). In 1996, the World Food Programme (WFP) reduced rations for refugees in Uvira, in the Democratic Republic of Congo, by 20% when visiting donors established that food aid was being sold in local markets, or exported (Reed, 1998; 128). Maize and other commodities were often sold to obtain cash for other items, such as salt and soap, neither of which were distributed by relief groups at that time. Maize was often sold first because of its unfamiliarity and dislike from local peoples. Cooking maize requires a high amount of fuel, and hand pounding for use in porridge reduced fuel demands but was not enough to fend off hunger. Women complained that the maize caused diarrhea and that children could not or would not eat it, leaving them malnourished (Reed, 1998; 128).

Parents also sold maize to buy fruit, sugar and cassava flour to feed their families. Refugees bartered vegetable oil received for equal quantities of palm oil, which was locally produced and more highly preferred (Reed, 1998; 129). A refugee household
survey, conducted at random of 1,005 households selected across eleven refugee camps, demonstrated that 42% of households reported some food-aid sales and that 80% of these had most recently sold maize. The majority of the sales were to purchase another food because householders preferred other types of food, to break the monotony or to balance their diet (Reed, 1998; 129).

Analysts argue that reform measures, particularly those related to trade will not be enough to impact smallholder farmers. Trade reform may only benefit elite farmers, and will not tackle rural poverty. Smallholder farmers need significant investment and support through coordinated services provided by NGO’s and the international community (Reed, 1998; 130). Additionally, greater investments in improving frontline services, the development of rural infrastructure, increased participation of the rural power, reforming national and international trade policy, and provision of incentives for agricultural innovation through price support and stabilization could aid in long term security in the region (Reed, 1998; 130).

The agricultural sector is critical for development; both the staple crop and the agricultural export sectors play important, but distinct roles in fostering growth and reducing poverty (“Agriculture for Development”, 2008; 30). The staple crop sector is typically the largest subsector and produces primarily for the domestic market. Staple crops typically include: cassava, maize, beans, palm oil, bananas, pineapples, squash, and sweet potatoes (Chaco, 2010). The non-staple crop sector typically produces for export and is dominated by traditional commodities, though is starting to include high value products such as vegetables, flowers and fish. When the staple crop sector is large and
non-tradable, gains in staple crop productivity increase the aggregate food supply and reduce food prices. ("Agriculture for Development", 2008; 32).

Food Availability and Bushmeat

Bushmeat overexploitation and loss is a development problem because it encompasses issues of sectoral and intergenerational equity. Where bushmeat markets are thriving, impoverished rural communities are often mining their wildlife resources to supplement the protein consumption costs of urban families. The failure of development to provide growing urban populations with secure livelihoods and sustainable sources of animal protein have resulted in overharvesting of wildlife in rural areas and decreased livelihood security of poor rural families who are dependent on dwindling wildlife resources (Bennett, Blencowe, Brandon, Brown, & Burn, 2006; 886).

Although precise estimates of the significance of wild animal protein to the diets of tropical forest-living peoples are still lacking, the prevailing opinion is that such protein is an important contributor to food security (Fa, Currie, & Meeuwig, 2003; 71). Bushmeat is a cheap and plentiful supply of protein in regions where domestic animals are scarce and more expensive. In the Congo Basin countries, non-bushmeat protein (mainly starchy root crops such as manioc, or animal-derived products that include meat, seafood and fish) derives from domestic agriculture and from imports that vary from 6% of total supply in the DRC to 55% in the Republic of Congo (Fa, Currie, & Meeuwig, 2003; 71). Consumer behavior is affected by meat prices, thus if cheaper alternative domestic meats such as beef, pork, chicken or goat were available, people might purchase significantly less bushmeat.

Yet, these substitutions are only one part of the solution to a greater problem.
Wilkie and Godoy (2001) have also suggested that demand for bushmeat depends on income elasticities, particularly in relation to price and availability of alternative meat sources (such as beef and chicken). Assuming that consumers will opt for cheaper alternative protein regardless of taste preferences, the important question is whether a sufficient volume of such meat is available (Albrechtsen, Fa, Barry, & Macdonald, 2006; 340). Increasing smallholder agricultural productivity is also essential to reduce demand for bushmeat from urban and rural areas.

Raising livestock in the humid rainforests of Central Africa has proven to be nearly impossible because of the presence of tsé-tsé flies, which transmit trypanosomiasis, the sleeping disease of cattle (Tollens, 2010; 35). Although some trypanotolerant cattle breeds exist, their productivity rates are low, and hence not profitable. Additionally, these breeds need extensive care and treatment, which is costly, both in terms of time and finances. Typically, the only livestock found in these regions are sheep and goats, and occasionally pigs. Goats are particularly adaptable due to the rustic nature of the area. Another hindrance to the growth of livestock production is lack of animal feed that is imported into the region. Only mineral and vitamin concentrates and sometimes soybeans are imported for mixing with cereals, flour of root and tubers, soybeans and protein cakes. Purchased concentrated feed is often too expensive and of questionable quality. Poultry and pig farmers, in particular, often mix their feed themselves with small concrete mixers, using locally procured maize, oilseed cakes, and other ingredients. Often, the feed made is of low quality, resulting in substandard livestock performance, which negatively affects local competitiveness against imports (Tollens, 2010; 35).
Infrastructure

Upgrading infrastructure in the Republic of Congo could aid in the diversification of the country’s economy, as well as aid in the reduction of poverty (Pushak, & Briceño-Garmendia, 2011; 1). The Republic of Congo has several areas within the infrastructural sector that must be addressed and improved. Restoring the national transport network, including port, road, rail and river will require major investment and careful policy decisions. The World Bank reports that the Republic of Congo needs to spend $0.95 billion per year through 2015 to catch up on infrastructure quantity and quality (Pushak, & Briceño-Garmendia, 2011; 1). The Republic of Congo’s urbanization patterns are directly linked to the country’s infrastructure backbones. The biggest cities are clustered in the south and southwest around oil fields and mining resources, with 61% of the population living in Brazzaville in the southeast, and Pointe-Noire in the southwest (Pushak, & Briceño-Garmendia, 2011; 1).

Roads, Rail and Bridges

The Republic of Congo’s existing infrastructure is primarily focused in the developing south, highlighting the country’s urbanization patterns (Pushak, & Briceño-Garmendia, 2011; abstract). Lack of infrastructure in rural communities can lead to devastating consequences, in terms of economic stability, however. When farmers cannot transport their goods to markets, they have been forced to either abandon their goods as they are left to spoil, or wait in anticipation that local governments will work to address the many problems facing roads, and bridges. With bridges built under the colonial administration in the 1950’s, lack of upkeep and repair has led to several agricultural regions being cut off from their corresponding markets (Severin, 2009). When roads are
damaged or obstructed individuals within the community have had no other option than to fix them. Although a 2011 report from the World Bank indicates that the Republic of Congo spent $460 million per year during the mid-2000s on infrastructure, the money has not always been utilized away from urban concentrations. Members of parliament support construction of roads, by spending money from their salaries to pay locals to carry out public works, or to rent equipment to fix roads (Severin, 2009).

Though projects have been in progress for several years, most members of the Republic of Congo parliament argue that they are hardly enough to address the growing need for more rural roads (Severin, 2009). The RoC government is aware of the concerns, and understands that agricultural goods can only be moved to markets, and therefore to urban communities, if the completion of rural roads is a primary objective. The Republic of Congo recognizes surface transport as a development priority, and has become a critical element of the country’s Poverty Reduction Strategy Paper (Pushak, & Briceño-Garmendia, 2011; 18). The combined initiatives of local people, with parliamentary support could greatly improve the chances of overall support from the RoC government, improving their access to markets which is mandatory for success.

Investments in the road and rail sectors will prove to be more effective if the focus targets productive activities. For example, potential for expansion in agriculture in domestic markets would create a desire to invest in roadways. Additionally, investments should be planned to correspond with neighboring countries, to eliminate the need for transit traffic which reduce costs and transport time (Pushak, & Briceño-Garmendia, 2011; 20). Routine maintenance must also become a priority to avoid more expensive projects in the future. By reallocating resources within and across sectors, the Republic of
Congo could gain tens of millions of dollars toward funding its infrastructure needs. Money that is currently spent on maintenance can be reallocated toward capital spending in transportation, and an extension of road networks would help to benefit more rural people, who often do not have access to roadways, or are limited to lengthy and perilous routes (Pushak, & Briceño-Garmendia, 2011; 20).

Water and Hydroelectricity

Water systems underpin a community’s health and safety with high fixed costs that typically benefit from economies of scale (Jones, & Silva, 2009; 500). Infrastructural systems have long economic lives, strong links to economic development, a tradition of public sector involvement, large geographic extent, long temporal boundaries, and a wide and varied potential impact on multiple stakeholders (Jones, & Silva, 2009; 500). The Congo’s access to water systems, predominantly strong river systems, allows for a great deal of potential growth in water development projects.

One proposed water works solution has garnered a great deal of attention across the continent. The Grand Inga Hydroelectric project is the world’s largest proposed hydropower system. The system is a priority project for several African development organizations, including the New Partnership for Africa’s Development (NEPAD), the Southern Africa Development Community (SADC), East African Power Pool (EAPP), and ESKOM, Africa’s largest power utility (“Grand Inga Dam, DR Congo”, 2013). The Inga Hydroelectric project would yield generating capacity of 39,000 MW, making it by far the biggest single source of hydroelectric power in the world, as well as the single biggest source of generation (DCR Congo: Power Progress for the DRC, 2007; 73).
Funding to rehabilitate the existing Inga hydroelectric plants has also been agreed upon, with a $296 million grant provided by the World Bank (DCR Congo: Power Progress for the DRC, 2007; 73). Most of the funds will be used to upgrade the Inga I and II facilities, which will hopefully return the plants to their maximum generating capacities. Some investment will also be made in transmission infrastructure to enable electricity from the site to be transported more easily eastward to Kinshasa and beyond. Additionally, $88.5 million is to be invested in improving the distribution network within Kinshasa, and technical support is also being provided to the national power utility, Societe Nationale d’Electricite, to enable it to operate more efficiently (DCR Congo: Power Progress for the DRC, 2007; 73).

Because of its geographical position and its hydroelectric resources, Kinshasa is often labeled as the key to the African power sector (Ford, 2005; 29). The Grand Inga project or other hydro projects could provide massive amounts of electricity for African consumption and export. Furthermore, emerging power grids in Southern, East and West Africa can be linked only by passing through the Congo, creating a pan-African power pool. This system would enable the transfer of electricity from power rich areas to those who still have unmet electrical needs. Private sector developers will only invest in transmission infrastructure if the Congo remains a peaceful and stable country (Ford, 2005; 29).

Some people argue that though the project could provide lucrative business opportunities for the DRC government and investors, the project could potentially harm local communities and protected areas. By design, Inga could centralize a vast store of the region’s electric and financial power, which is feared to be a catalyst for further
tensions and civil wars (Hathaway, 2008; 34). A decentralized program would, on the other hand, spread wealth more evenly and allow electricity to flow within the country. Another primary concern is whether the increased development would bring more hunters and poachers into the region, or drive up the demand for bushmeat by more people moving into urban areas. Studies show that growth of population in urban areas correlates with an increased demand in bushmeat, therefore regional planners, government officials, NGO’s, or other stakeholders may benefit from a collaborative approach to address all aspects of this development initiative. Prior to groundbreaking, all consequences of expansion should be analyzed to determine the most pragmatic strategy that offers the fewest negative offsets, both economically, particularly for local inhabitants, and for the regional ecology as well.

Others view the project as having the potential to bring tremendous development opportunities to the region. The Grand Inga is now listed by the G20-Multilateral Development Banks as one of the top 10 “Exemplary Transformational Projects” meant to have significant impact on development (“Grand Inga Dam, DR Congo”, 2013). The World Bank has now updated its infrastructure investment strategy to include consideration of the Grand Inga project. The strategy would emphasize pooling sources from both private and public sources and fund the project through a Private Public Partnership model (“Grand Inga Dam, DR Congo”, 2013).

Incentives

National governments as well as individuals must be provided with economic incentives, linking aid and debt relief to verifiable measures of conservation performance (Walsh, Abernethy, Bermejo, & Beyers, 2003; 613). The Norwegian Nobel Committee
challenged the world to utilize a holistic approach that examines the interlinked factors contributing to effective, ecologically sustainable development ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 24). Leaders must become motivated to build fair and just societies in which resources are shared; to protect the environment to meet the needs of future generations; and to create further opportunities for women and minorities, so that minorities are represented alongside majority rule. In order for peace and development to become realized, citizens must feel vested in a common future and empowered to address their own problems ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 24).

Simple methods of caring for the environment can have major impacts on not only the health of communities, but also on economic empowerment and growth ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 24). When the environment is destroyed, plundered, or mismanaged, quality of life is compromised for rural families. Good governance is crucial in order to give a voice to societies’ weak and vulnerable populations ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 26). Many African leaders have recognized the need for good governance, making the connections between their own personal actions and the problems that they witness in the environment and in society. Organizations such as the African Union are moving toward greater engagement by leaders to consult with one another and decide amongst themselves how to end conflicts, instead of waiting for assistance from external resources. Empowering citizens may initially prove to be difficult because they may need to be persuaded that they may be poor not only in capital, but also in knowledge and skills pertaining to sustainable practices. Rural people in the DRC and Republic of Congo
have been conditioned to believe that solutions to their problems must come from outsiders, which has led to a dependency syndrome ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 26).

Individuals must begin to understand that they have the power to bring about change, and do not have to wait for local authorities, government, or development agencies ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 26). The Green Belt Movement, in Kenya, provides an excellent example of what may happen when citizens understand the complex linkages between the environment, development, democracy and peace. The movement theorizes that sustainable development and peace can only occur if citizens participate in protecting and restoring their environment and demand a place at the decision-making table. The Green Belt Movement now partners with the Congo Basin Forest Partnership to promote development. The CBFP brings together about 30 governmental organizations and NGO’s to manage the Congo Basin in a sustainable way. The goal of the partnership benefits the peoples of the region by promoting economic development, and poverty alleviation through conservation programs, the improvement of local governance through natural resource conservation, and enhanced resource management through control of illegal logging and wildlife poaching ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 26).

Citizens of the DRC and Republic of Congo are also being called upon to participate in decision-making processes through the formation of the African Union’s Economic, Social, and Cultural Council (ESOSOCC) ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 27). This organization acts as an assembly of civil society organizations from all African countries to facilitate dialogue between
governments and civil society and to increase participation in the implementation of new policies and programs of the African Union. Organizations like the ECOSOCC allow individuals to become more involved in decisions that affect their future ("An Unbreakable Link: Peace, Environment, and Democracy", 2008; 27).

Education

Conservation education can play a vital role in increasing knowledge and changing attitudes towards the value of wildlife (Breur, & Barrel Mavinga, 2010; 454). Research shows that higher education and knowledge can have a positive influence on attitudes of wildlife and conservation issues in northern DRC. Environmental education is not a priority in the school curriculum and teachers often lack basic knowledge of ecology and evolution, as well as relevant teaching materials. With a few exceptions, schools fail to offer students basic educational skills such as writing and math, which makes it challenging to introduce concepts of sustainability and conservation (Breur, & Barrel Mavinga, 2010; 454).

Widespread poverty in the Democratic Republic of Congo means that many households in the country cannot afford school fees for their children. In rural areas of the Democratic Republic of Congo, everything is lacking in terms of the information and communication technology infrastructure (Nsomwe-a-nfunkwa, 2006; 39). Adults in the DRC are characterized by high levels of illiteracy, and child school-dropout rates are high because of a lack of money for schooling fees (Nsomwe-a-nfunkwa, 2006; 39). A child at school is regarded as a guaranteed future, for himself and for his parents, who consider the child to be somewhat of a lifetime insurance policy (Balegamire, 1999; 249).
Since the 1970's many qualified and skilled teachers have fled the DRC due to poor economic conditions, and civil unrest. Many teachers have moved on to neighboring countries where they are guaranteed salaries and better security than they have received in recent decades in the Congo. The consequences of the war of 1996-1997 in the DRC were fatal for teachers and pupils, who often died during abductions, or from being forced to enlist as soldiers (Balegamire, 1999; 249). After this conflict, parents were reluctant to send their children to school, fearing a lack of security and forced military enlisting (Balegamire, 1999; 249). Many children have to contribute to their educational needs. Some help to finance their schooling themselves, and if they do not they are taken out of school. Others contribute to the education of their siblings, even if they are no longer able to attend school themselves (Balegamire, 1999; 249).

The government of the DRC is enjoying success with remedial education centers set up to give children from underprivileged backgrounds a free education and vocational training (Bakiman, 2012). Approximately 20,000 children attend remedial education centers, known as CRS. These centers provide a special, accelerated program for children between the ages of 9 and 11 who have had to leave school in the past, for one reason or another (Bakiman, 2012). Children learn trade skills which can prepare them for careers in carpentry, tailoring or other professions. The percentage of children not enrolled in the Democratic Republic of Congo is 83.5 percent, according to education specialists in the DRC (Bakiman, 2012). The number of children out of school after quitting due to non-payment of school fees has also risen.

Material and financial assistance from organizations such as UNESCO, UNICEF, and USAID are often too limited to meet the country's educational needs. The
organizations provide roughly $300,000 in educational relief, but educational leaders in
the DRC estimate costs at $15 million to educate about 900,000 children every year
(Bakiman, 2012). Additionally, the DRC’s government only allocated $125,000, less than
0.01 percent of its 2011 budget, to educational institutions (Bakiman, 2012). The amount
of urban centers built should also be offset by an equal amount of rural centers built in
the DRC, as rural children often have a more difficult time accessing educational
programs.

In 2011, Japan pledged to give $6.6 million for basic education programs in the
Republic of Congo. The Japanese government asserted that the funds will provide
educational opportunities for more than 8,000 children over the course of three years. The
grant focused primarily on children who have been excluded from the formal education
system (“The Japanese Government Helps 8000 Children in Congo Fulfill Their Right to
Education Through the Grant of $6.6 Million”, 2011). The grant would provide funding
for the construction and equipment of 36 early childhood development centers to promote
the development of children under five years old. Additionally, funding would allow for
the rehabilitation and equipment of 18 re-schooling centers to offer access to basic
education to children excluded from the formal education system (“The Japanese
Government Helps 8000 Children in Congo Fulfill Their Right to Education Through the
Grant of $6.6 Million”, 2011). The grant also allows for education for parents in such
matters as health care in early childhood, best practices in hygiene, nutrition and
HIV/AIDS. In some areas, distance learning and bilingual educational CD-ROM
strategies are being put into practice. The majority of rural dwellers are farmers living
scattered across huge areas in villages. Many rural people in the Democratic Republic of
Congo have never seen or used a computer, television or other technologies due to a lack of electricity and ICT infrastructure. Yet, these educational strategies could provide one way in which rural people, in particular, have access to reliable educational programs (Nsomwe-a-nfunkwa, 2006; 40).

Chapter Conclusion

Improvements are needed in several key areas: governance, price stabilization and food risk intervention, food availability via bushmeat, infrastructure and education. Macro level interventions are necessary to enhance opportunities and livelihoods for the people of the DRC and Republic of Congo. Government officials have not proven themselves to be effective leaders, often acting out of self-interest. International food aid has helped, but reduced funding from foreign aid organizations means that domestic solutions must be implemented, and quickly. The DRC and Republic of Congo have several sectors that could aid in economic growth in the long term, if they are funded and developed appropriately. An increase in agricultural productivity is essential to both economic longevity, as well as a means to thwart food insecurities and malnourishment. The region should focus on staple crop production, such as cassava, maize, beans, and palm oil, which have high rates of growth and desirability by local buyers. Livestock production can be beneficial if farmers focus on animals that are durable to the area’s climate, such as goats, pigs and chickens.

Infrastructure programs have received increased funding in the last ten years, particularly for roadways near urban markets. Yet financial investment in roads, rail and bridges must be increased in order to benefit the greater population in the DRC and Republic of Congo. Increased mobility improves access to markets, which provides
numerous advantages in terms of access to food, as well as the ability to sell and trade goods. Large scale projects, such as the Grand Inga Hydroelectric project, could provide long term economic opportunities for the Congo Basin. Increases in foreign investment and international cooperation could provide the region with a much needed perception of stability for future investors and stakeholders.

Lastly, providing higher levels of education, and opportunities for communities to become involved in growth techniques will strengthen the likelihood of economic success in the region. If new policies are to be implemented from a top-down model, having community support is essential to the long term success of those policies or services. When citizens are educated about policies and involved in decision making, they feel invested in the success or failure of an operation. Increased participation allows for individuals to be involved in shaping the processes that determine their livelihood strategies.
CHAPTER V

MICRO INTERVENTIONS THROUGH ECOTOURISM

The advocacy of tourism is an emerging theme in development literature. Tourism has become, for many countries, one of the most influential forces shaping economic growth (Binns, & Nel, 2002; 235). For wildlife conservation to have positive, long-lasting effects, it must satisfy two conditions: first, wildlife and wildlife habitats must be regarded as intrinsically valuable worthy of conservation, and secondly, wildlife must also possess economic value, in terms of international tourism and at the regional level for local populations (VanderPost, 2007; 224). It has sometimes been argued that if environmental degradation is associated with the marginalization of poor rural communities, it would be logical to assume that conservation and preservation would result in community sustainability and protection of livelihoods (Robbins, 2004; 147). Yet, this has not often proved to be true in communities that are strongly divided on environmental management and ecosystem maintenance.

The importance of Protected Areas began to be widely recognized in the 1970’s, with arguments stating that parks should be socially and economically inclusive (Adams, & Hutton, 2007). Community-based strategies dominated debate about conservation strategies in the rural developing world from 1990-2000. People and park projects were developed in many countries, introducing the importance of protected areas, which were created by human action. The World Conservation Strategy began to approach conservation planning away from damage limitation, to a focus on sustainability (Adams, & Hutton, 2007).
Those advocating sustainable use, or incentive-based conservation, argue that conservation can best be achieved by giving rural people a direct economic interest in the survival of species, by linking conservation success to the issue of secure livelihoods (Adams, & Hutton, 2007). Sustainable use strategies based on hunting show some economic benefits, but are opposed by animal rights groups. Sustainable use approaches that focus on non-consumptive uses of wildlife, such as ecotourism, are the more ethical and ecological strategies backed by conservationists.

This chapter opens with a brief synopsis of the Congo Basin’s forest management sector, highlighting current activities and functions. Following is a focus on eco-tourism as a micro-level intervention, with a focus on the importance of stakeholder participation, encompassed by local communities, government, NGO’s and international agencies. Ecotourism’s benefits as well as limitations will be discussed. Additionally, attention is given to the distinction between commercial and public parks and protected areas, and their costs and benefits. Ecotourism has proven to be successful at the DRC’s Virunga National Park, which boasts a world renowned gorilla habitat, amongst other sites. Virunga National Park may serve as a blueprint for other parks in the region which are still in the process of development.

Forest Management in the Congo Basin

The Congo Basin rainforest spans across six countries-Cameroon, Central African Republic, Democratic Republic of Congo, Republic of Congo, Equatorial Guinea and Gabon. (Unless notated otherwise, reference to the Congo Basin or Congo Basin rainforests mentioned hereafter in this chapter refer to the entire region). The Congo Basin’s forests cover two thirds of the Congo Basin’s total territory. The forests are
comprised of state and private forest; the state domain is divided into three sectors, or zones, and then further divided into Forest Management Units (FMU) (Bayol, & Eba’a Atyi, 2008; 99). Broad guidelines, adopted in March 2004, included general management directives for forest concessions, specific management protocols for zones for production, conservation, protection, scientific research and community development, as well as a framework for drafting forest management plans (Bayol, & Eba’a Atyi, 2008; 99).

**Figure 3 Congo Basin Rainforest**
*Source google.com, 2013*

The Ministry of Forest Economy (MEF), and the Ministry of Tourism and the Environment are responsible for various functions within the Congo Basin. The MEF takes charge of the management of the forestry sector, management of forest resources and forest management, the forest economy, supervision of rural forestry, research and training and management of wildlife resources (Bayol, & Eba’a Atyi, 2008; 100). In 2008, the staff of MEF consisted of 750 officers, including 350 forest and wildlife
technicians. The administration is dogged by a lack of staff and resources. The Ministry of Forests ensures that activities authorized in the national forest regions are carried out in a sustainable way to avoid destruction and maintain sustainability, expansion and exploitation (Bayol, & Eba’a Atyi, 2008; 100).

Two hundred species of mammals have been identified in the Congo Basin, 24 of which are fully protected and 14 are partially protected. Estimates indicate an additional 700 species of birds, 600 of which have been inventoried (Bayol, & Eba’a Atyi, 2008; 106). Formal biodiversity management is carried out mostly in protected areas, which number at 14, covering a total of 3,513,438 hectares and represent over 10% of the national territory. Wildlife management initiatives in forest concessions also maintain sustainable management practices. These forest concessions involve an assessment of wildlife resources, as well as an assessment of hunting threats, which integrate anti-poaching regulations (Bayol, & Eba’a Atyi, 2008; 108).

Ecotourism

Eco-tourism has widely been accepted as the, “responsible travel to natural areas that conserves the environment and sustains the well-being of local people” (Watkin, 2003; 6). This definition was expanded by Honey (1999) to include the following aspects: respects local culture, involves travel to natural areas, minimizes impact, builds environmental awareness, provides direct financial benefits for conservation, provides financial benefits and empowerment for local people, and lastly, supports human rights and democratic movements (Watkin, 2003; 6). Research shows that there are more than five million eco-tourists globally, mostly originating from North America, Europe and Australia (Ezebilo, Mattsson, & Afolami, 2010; 51). Ecotourism accounts for a large
share of some countries’ gross domestic product, and so contributes to livelihoods of many people, in Kenya, Madagascar, Nepal, Thailand and Malaysia (Ezebilo, Mattsson, & Afolami, 2010; 51).

Ecotourism Benefits

The Millennium Ecosystem Assessment identified four kinds of service that may provide regional benefits through ecosystem services: provisional, regulating, cultural and supporting (Adams, & Hutton, 2007). Provisional services include food, water, timber and genetic resources, regulating services account for waste treatment, cultural services include recreation and aesthetic enjoyment, and lastly supporting services encompass soil formation, nutrient cycling and plant pollination. Protected Areas may provide local people with a share of revenues from tourist fees and other services associated with protected areas.

The Congo Basin’s protected areas support both nature tourism and recreational hunting (Hugues, 2011; 130). There are currently seventeen Pan African Sanctuary Alliance (PASA)-affiliated facilities, in 13 African countries, that accommodate apes: three in Cameroon, three in Republic of Congo, and one each in Gabon, The Gambia, Guinea, Sierra Leone, Nigeria, Democratic Republic of Congo, Kenya, Uganda, Tanzania, Zambia, and South Africa (Farmer, 2002; 121). The focus of each varies, with some focusing on rescue and rehabilitation (long term captive care), while others focus on reintroduction. Some sanctuaries also list conservation, protection, education, and tourism as part of their main focus.

Gorilla tourism is one of the most well-developed, and lucrative, sources of international tourism in the protected areas of the Congo Basin region. A census taken in
2010 reveals that the number of mountain gorillas living in the adjoining parks of Congo, Uganda and Rwanda has increased 26 percent since 2003 (Burnett, 2012). The improvements made within Virunga National Park, as an example, represent the success that can follow, given a well-managed park system. Creating a successful ecotourism venture is a complex process, weaving economic and ecological concerns and practices.

When reviewing only the Ugandan and Rwandan portions of protected areas, every international visitor spends approximately an average of US $1,254 on gorilla viewing travel, additionally gaining on average US $953 in consumer surplus (Hugues, 2011; 133). Around 36% of this total is retained in country (Hugues, 2011; 133). Hatfield and Mallaret-King’s 2007 study estimates the current gorilla tourism potential of Park de Virunga Sud in the Democratic Republic of Congo to be in the region of 20,000 visitors per year. Based on these figures, and on the per capita values imputed to gorilla tourism in Rwanda and Uganda, this suggests a potential value of US $44.14 million a year, of which US $15.89 million might be retained in country (Hugues, 2011; 133).

Conservation and protection zones complement the network of protected areas in the Congo Basin region, which are in place to ensure the preservation of biodiversity in the Basin’s forest ecosystems (Bayol, & Eba’a Atyi, 2008; 108).

Employment opportunities, development associated with infrastructure (e.g. better road networks and water) and ecotourism businesses could provide much needed income for local peoples (Ezebilo, Mattson, & Afolami, 2010; 51). In 1990, Kenya received $443 million in revenue from the eco-tourism sector (Pawson, 1997; 8). Uganda, Zimbabwe, South Africa and Zambia are also utilizing safari trips as a way to attract tourists. It was estimated that one African lion had a visitor-attraction value of $27,000 each year, while
an elephant was worth approximately $60,000 (Pawson, 1997; 8). In a region where the majority of the population has an annual income of less than $100, it is simple to understand why any African government would favor the establishment of wildlife-abundant safaris (Pawson, 1997; 8).

In order to improve environmental education in schools, the Wildlife Conservation Society has initiated a wildlife club in several villages around the Nouabalé National Park. The Nouabalé-Ndoki Project aims to work with the local communities living in the villages of Bomassa and Makao-Linganga through educational programs, infrastructure development, preferential employment, alternative livelihood activities, and a village development fund linked to tourism revenue (Breuer, & Barrell Mavinga, 2010; 455). WCS, and a logging company also have created a project to mitigate the effects of logging and bushmeat hunting in the buffer zone of NNNP (Kabo, Pokola, and Loundoungou forest management units), that is based on sustainable land-use planning, anti-poaching patrols, and alternative livelihood activities (Breuer, & Barrell Mavinga, 2010; 455).

Ecotourism Costs

The Congo Basin region, like many other areas in Africa, suffers from capacity issues to independently financially support ecotourism. When funds are made available to invest in protected areas or reserves, the parks that attract the most attention receive limited government funds (Vesely, Aug/Sep 2003; 60). Parks that receive the least amount of attention are often neglected, and game ranger salaries and maintenance of park roads become low priorities. Poaching is not uncommon in parks that are poorly visited. Regardless of where investments are coming from, funding across the Congo
Basin’s parks is not evenly distributed. Some parks have been more successful than others, and have more opportunity to develop and attract more visitors. Those that are still in the development stage still lack the tools and attractions necessary to draw in significant amounts of visitors, tourists, and investors.

Tourism may perpetuate unintended consequences including environmental degradation, as well as community factionalism and social stratification whenever communities do not enjoy a fair share of jobs and revenue (Hilaire, 2011). In some communities, operators have worked out agreements with local people to hire them as guides, to provide some benefits for development projects and to run social services liked medical care and professional training, though these are rare (Hilaire, 2011).

Preliminary assessments of the ecotourism industry reveal numerous drawbacks. These drawbacks include adverse impacts on wildlife and ecosystems from nature-based tourism development few economic benefits to local people or protected areas, the breakdown of local cultural traditions, and aggravated conflicts over resource access (Young, Zimmerer, & Bassett, Ed., 2003; 40). Ultimately, whether ecotourism can provide benefits to local people, and provide enough incentive to safeguard natural resources, can only be addressed on a site-specific basis.

At the regional level, economic and political structures and government policies and practices may reinforce or worsen conflicts over access to common resources at the community level (Young, Zimmerer, & Bassett, Ed., 2003; 41). The cost of intense policing can be large, and the use of arbitrary power by conservation agencies can be problematic (Adams, & Hutton, 2007). Ecotourism may be prone to boom and bust
cycles according to global market and political conditions that are outside of local control. This is particularly true in regions of civil unrest, such as the DRC and RoC.

Forced displacements have not been uncommon, in areas where wildlife protection and species conservation have been the primary goal. None of the transnational conservation organizations that promote park establishments have until recently adopted and published explicit policies and formal safeguards for the displacement and resettlement of populations from parks on protected areas (Cernea, & Schmidt-Soltau, 2006; 1810). The demand now is for biodiversity conservation and protected area management that strives to reduce and not exacerbate poverty (Cernea, & Schmidt-Soltau, 2006; 1810).

In 1991, a group of sociologists and geographers called for the elaboration of a predictive theoretical model apt to anticipate the cumulated social and economic impacts of displacement, to be applied before the decisions to displace people are made (Cernea, & Schmidt-Soltau, 2006; 1810). The authors described their concern about the negative effects that displacement can have on the rural poor. The authors argued that conservationists need to be aware of the effect that protected-area establishment, subsequent relocation, and denial of access to resources might have on the attitudes of local people towards the protected area itself (Cernea, & Schmidt-Soltau, 2006; 1810). The protection of habitats alone cannot be the one and only purpose for conservations, particularly if they hope to create a sustainable solution. Conservation groups must work with indigenous populations to ensure that their specific needs are being met as well.
Stakeholder Participation

Endangered species conservation, encompassing research, policy, and management, is a process that requires integrative and interdisciplinary methods to be most successful (Wallace, Clark, & Reading, 2002; 70). It is generally accepted that social factors, such as leadership, organization, and communication/cooperation play a critical role in the success or failure of endangered species conservation efforts. These efforts have at times been sidelined by the inability or unwillingness of some government and non-governmental participants to adopt new knowledge and skills, use them effectively, and address the clear conservation challenges in a successful manner (Wallace, Clark, & Reading, 2002; 70).

The trend in endangered species programs is toward more and larger partnerships (Wallace, Clark, Reading, 2002; 75). Partnerships are no longer limited to government agencies as conservation groups, universities, and businesses are becoming more prominent and taking leadership roles in partnerships. The expectation in conservation partnerships, is that the goal of recovery is beyond the scope of any one agency or organization; none of them working independently has the resources, such as expertise, funds, and authority to get the job done. By cooperating using pooled resources, partnerships can maximize possibilities for species recovery (Wallace, Clark, Reading, 2002; 75).

Influential figures argue that an international community exists, and that it is not limited to connections born of commerce and communication (Menon, 2009; 236). Furthermore, an international community may embody a shared vision of a better world, as expressed in the UN Charter and various other treaties, laws, and conventions (Menon,
2009; 236). Yet, determining how the international community, local communities, and non-governmental organizations can work together in order to create sustainable ecological success for the Congo region has often been an elusive feat. These various stakeholders have the potential to contribute to the long term attainment of economic freedom, as well as ecological responsibility.

It has become increasingly difficult for African wildlife to sustain itself, especially with the introduction of a new generation of dangers (Harnish, 2006; 31). Growing populations, the transformation of African societal values, and the growing feels of malice towards wildlife induced by what some consider discriminatory colonial game laws can have negative impacts on the success of conservation. Before the influence of Western society, Africans were more minimalist, happy to receive only what they needed to survive. However, with colonialism came capitalist ideas, and westernized ideas of success. Hunters were driven to kill not only enough to provide for their families, but also to make extra money on the side (Harnish, 2006; 31).

Government

In November, 2008, conservation groups and the government of the Democratic Republic of Congo established a new reserve to protect the bonobo, a great ape found only in the forests of the DRC (Herro, 2008; 5). The Sankuru Nature Reserve spans 30,569 square kilometers within the Congo Basin, Africa’s largest rainforest. The bonobo population has been decimated because of the Congo rebellion and habitat destruction, with population estimates ranging from 60,000 to fewer than 5,000. The reserve is also home to Okapis, elephants and at least 10 other primate species. Preserving this reserve also has great consequences for climate change. If deforested the reserve would release
approximately 2 billion tons of carbon dioxide, equivalent to the emissions of 38 million cars a year for 10 years (Herro, 2008; 5).

Apathy on the part of African governments and administrators has often been considered a major factor leading to the decimation of wildlife (“5 African Nations Combat Poaching: Form Animal Interpol to Bar Export of Trophies”, Nov 19, 1969; 17). Recently, however, authorities in the Republic of Congo are showing an encouraging new readiness to arrest and prosecute people trading in endangered species (Severin, 2011). Conviction of wildlife smugglers is a new occurrence in the Republic of Congo, as most cases typically resulted only in the possession of the cargo, or a monetary fine. For a long time, no specific law existed regarding the hunting or trade of endangered species. The Republic of Congo has since ratified the international treaties, including CITES, and has reviewed and revised its domestic legislation (Severin, 2011). In November, 2008, the RoC government adopted a Law for the Protection of Wild Animals and Protected Areas which explicitly forbids the export, import, and commercialization of protected animals or their parts (Severin, 2011).

Local Communities

Local communities may experience both positive and negative consequences due to protected area development and conservation planning. Though some regions strive to involve local communities in decisions regarding land use, forest management, and other livelihood issues regarding ecotourism, this is not always the case. It is essential to understand where the benefits and drawbacks lie, when planning for an expansion of ecotourism, or protected area growth. Countries deliberating ecotourism expansion need
to consider not only the conservation opportunities, but also what effects ecotourism may have on local people.

Understanding human social process in practical terms is important because endangered species will be saved only if social process can be made to effectively support that goal (Wallace, Clark, & Reading, 2002; 87). Social process mapping describes the interaction between people and the problem, such as the effect that recovery actions, such as habitat protection may have on people’s lives and values, as well as the interaction amongst people in the recovery challenge. These two types of interactions are both the ultimate cause of the endangered species crisis and the site of its ultimate solution (Wallace, Clark, & Reading, 2002; 87). Ignoring the social dimensions associated with local communities and conservation can result in overlooking important alliances, and can lead to intractable negative public perceptions and can draw down trust in government and NGO officials and professionals in the conservation field.

Without support from local communities, and a failure to protect their needs, conservation efforts are likely to fail. Although anti-poaching patrols and control of bushmeat markets and traffic help to control the commercialization of bushmeat in logging concessions, it is essential to work with local communities to change their attitudes toward the intrinsic value of wildlife in general and the importance of conserving endangered species, such as great apes, in particular (Breuer, & Barrell Mavinga, 2010; 455).

Non-Governmental Organizations

National and international governmental and nongovernmental organizations are devoted to the protection of endangered or threatened species. NGO’s like the Pan
African Sanctuary Alliance (PASA), Borneo Orangutan Survival (BOS), The Dian Fossey Gorilla Fund, or Lola ya Bonobo rescue orphaned or injured apes to reintroduce them into the wild if possible (Benz-Schwarzburg, & Benz, 2012; 183). Many field activists engage in conservation projects ranging from natural habitat preservation to fighting the causes of the bushmeat trade. Non-governmental organizations, particularly at the international level bring together governmental and intergovernmental actors, as well as scientists and academic foundations, local civil society and private actors. These groups are integrated in conservation efforts, such as the Convention of International Trade in Endangered Species of Wild Fauna and Flora, more commonly known as CITES. This intergovernmental agreement forbids or controls the trade of about 5,000 endangered animal species and 28,000 plants, including the trade of dead endangered species and products made from them (like meat, leather, timber, timber-curiosities, and medical products) (Benz-Schwarzburg, & Benz, 2012; 183).

Non-profit organizations, such as the World Wildlife Fund, and other community partnerships, like the Congo Basin Forest Partnership, are working directly with the DRC government to provide support and knowledge regarding forest and wildlife management. The World Wildlife Fund (WWF) works to promote more sustainable methods of extracting natural resources to limit the impact to wildlife and forests (“Congo Basin”, 3/5/2013). WWF, as part of a tree plantation program outside of Virunga National Park in the DRC, has planted over 10 million trees to help meet the needs of local people, and also to preserve mountain gorilla habitats. The World Wildlife Fund has also provided fuel-efficient stoves and works with local communities to find alternatives to wood by utilizing private and community forests, instead of encroaching upon protected areas.
NGO’s in the region also work to implement low-impact logging practices, and to reduce the effects of iron-ore mines and to stop poaching and commercial wildlife trade resulting from an increase of migrant workers (“Congo Basin”, 3/5/2013).

Non-governmental agencies, aid organizations, law-enforcement agencies and governments are working together to train, equip, fund and organize those engaged in protecting wildlife and the environment (Wasley, 2008; 30). This has traditionally involved providing arms and military-style training to rangers and wardens, particularly in areas that have been embroiled in conflict. Though not everyone involved in the preservation of wildlife agrees with such extreme measures, others believe that greater use, rather than less, is necessary in the environmental movement. Clashes with poachers or rebel groups are among the most common causes of fatalities or serious injuries worldwide, according to the International Ranger Federation. Many rangers are forced because of a lack of resources and manpower, to patrol great expanses of remote wilderness, making them vulnerable to attacks. Poachers, illegal loggers, and other groups have become increasingly well-armed and organized, often overpowering ill-equipped rangers (Wasley, 2008; 30).

This issue has made those involved in the environmental debate ask how far environmental enthusiasts should go, when protecting the planet. Some want to deploy paramilitary-style rangers and environmental ‘police.’ Others hope for the creation of eco armies, comparable to units from the United Nations or NATO. In recent years, several African countries have equipped eco militias, because local governments have found themselves unable to effectively police their natural resources (Wasley, 2008; 30). Yet, these military operations have had little success, or support, apart from initial efforts to
stop major elephant poaching gangs. Few organizations want to align themselves with paramilitary organizations, with virtually no accountability in already lawless countries.

NGO’s are not always viewed favorably by local communities in regard to local practices, particularly if the NGO is trying to interfere with practices that earn income for local peoples. In 1989, the World Wildlife Fund for Nature (WWF) received enough money from the Kenyan government to run five aircraft to help resolve the poaching problem in Tsavo National Park (Pawson, 1997; 8). Game wardens were given strict instructions to act on a shoot-to-kill policy of poachers, men from local communities who were shooting elephants to make money from the tusks, flesh or hides. Local officials believe that these NGO’s care more about the animals in the region than they do the people, assuming that the NGO’s want Africa to be preserved like a national park where outsiders can, “come and see wildlife and black people-like a zoo” (Pawson, 1997; 8).

Public-Private Partnerships

One solution that has arisen over the last decade is the privatization of parks and reserves that governments are unable to develop. The US state department, and the World Bank have thrown support behind efforts to privatize parks in Kenya, Zambia, Malawi, Mozambique and Uganda. By privatizing the ecotourism industry, governments could earn income from underfunded parks which would otherwise earn virtually nothing. Private enterprises can supply management expertise that most developing nation’s lack, in addition to the financial support which is necessary to help the parks survive (Vesely, Aug/Sep 2003; 60).

The financial needs of protected areas often outpace the government’s ability to provide adequate financial resources. Some park agencies have developed models that
allow for a more businesslike management approach and greater financial independence, whereas some governments have entered into public-private partnerships (Saporiti, 2006; 1). These partnerships can be divided into two categories: traditional tourism partnerships, and biodiversity management partnerships. Traditional partnerships involve a private partner using the government’s assets to provide services and produce income via operating shops, lodges, and restaurants. Biodiversity partnerships allows for a private partner to perform a public function on the government’s behalf, like conservation of public natural assets in protected areas (Saporiti, 2006; 1).

Which strategy is more appropriate depends primarily on the capacity of the public park agency. The immediate needs of the protected area and the level of support for reform among stakeholders also play an important part. Several Congo Basin parks lacked the institutional and financial resources to undertake conservation management alone. The parks’ overseers have therefore entered into long term concession contracts with private partners. In 2003, African Parks, started to develop partnerships with African governments to manage and fund protected areas. By 2005, the company had signed six concession contracts in the DRC, Ethiopia, Malawi, Sudan and Zambia, with terms of 5-30 years (Saporiti, 2006; 3).

African Parks has since mobilized tens of millions of dollars in private and public funds for future investments in the parks it manages. Public-private partnerships offer a possible solution for improving the economic sustainability of parks, enhancing the quality of services, efficiently leveraging investment in conservation, while contributing to the protection of natural habitats. Commercially managed areas can produce enough revenue to fully cover operational and maintenance costs. Ecotourism’s competitive
nature requires an offering of high-quality or unique experiences, in order to succeed (Saporiti, 2006; 4).

Virunga National Park

Virunga National Park spans 7,800 square kilometers on the eastern border of the Democratic Republic of Congo. The park provides refuge for 200 endangered mountain gorillas and a small population of eastern lowland gorillas (visitviruga.org, 2013). The three most popular attractions in the park include visiting mountain gorillas in their natural habitat, climbing an active volcano, and climbing the snow-capped Rwenzori Mountains. The park also contains savannas, lava plains, swamps, erosion valleys, forests and ice fields.

The Virunga National Park serves as a successful eco-tourism venture in the DRC. The southern sector of the park (gorillas and volcanoes) boasts approximately 100 visitors per month. Virunga National Park has been deeply affected by the circumstances of the region, but has experienced a dramatic renewal due to the dedication of certain politicians, conservationists, park rangers, and wardens (“Virunga National Park”, 2013). Virunga National Park’s history reflects the general unrest of the region, experiencing poaching, destruction of infrastructure, and death of many of its park rangers. In 2008, the Virunga National Park was in disarray. Now, however, the park is back in the hands of the ICCN, and enjoying the greatest resurgence in the park’s history (“Virunga National Park”, 2013). International investors are donating to the park’s infrastructure in unprecedented levels. Tourism has increased from zero in 2008 (due to unrest in the region) to 2000 in 2010, with numbers growing steadily.
Virunga National Park is currently managed by the Africa Conservation Fund, ACF, a UK registered charity created in 2005 to help protect the park ("Africa Conservation Fund", 2013). Since then ACF has worked with the Congolese Wildlife Authority to raise awareness about Virunga and to solicit and secure funds to pay for needed improvements for protection systems and infrastructure. The partnership has created a more efficient, credible and visible institution. ACF manages Virunga’s financial resources, primarily derived from donations given by the European Union. ACF operates a transparent system, with numerous audits annually and has conducted an aggressive media campaign to raise Virunga’s profile ("Africa Conservation Fund," 2013).

The Congolese Wildlife Authority has made tremendous gains by working with ACF. They have rebuilt and extended primary schools in the villages of Jomba, Bikenge, Bukima, Gatovu and Rumangabo. Additionally, park headquarters have been refurbished and rangers are now trained, fed, paid and equipped with new uniforms and vehicles. Furthermore, emphasis has been placed on the need to reduce demand for the park’s natural resources through alternative programs designed to change attitudes about the use of natural resources, aiding in the preservation of the Mikeno Sector, home to the mountain gorillas.

Virunga National Park’s success is dependent upon several factors, and may be used as a blue print for other parks and protected areas in the Congo Basin. The park benefits from efficient management and transparency. Morale of park rangers is high. New tourist activities are continuously being developed to draw in new visitors, and also to encourage past visitors to return to the park. Habituation of chimpanzees and new
high-end lodging near the main tourist attractions provide rare experiences for visitors. Virunga National Park partners with various tour operators to offer convenient travel opportunities for tourists and visitors (“Virunga National Park”, 2013). The park has benefited from international management and funding, but has the potential to experience tremendous growth economically.

Chapter Conclusion

The ecotourism industry has helped to foster both local and national economic growth for many developing nations, while simultaneously protecting wildlife through conservation initiatives. Both factors are considered essential components to ensuring long term wildlife ecotourism success. Eco-tourism’s potential for economic gain may aid conservation efforts by allowing for much needed funding for conservation programs, parks and reserves, and capacity-building necessities such as personnel. Because developing nations often do not have the financial aptitude to support conservation work, while still meeting social, infrastructural and other essential needs, private investors and public-private partnerships may be the missing element that is needed if eco-tourism is to become an economic contributor in the future. In addition to private investors, the ecotourism sector may consider inviting local communities, government officials, non-governmental agencies and other stakeholders into the discussion to move forward with economic growth activities. Though eco-tourism in the Congo Basin may not be developed enough at present to significantly influence economic recovery, priority could be focused on exploring this sector as a potential contributor to both economic strength and responsible wildlife management. Development of this sector is moving in the right direction, and could have significant impact in the future.
Ecotourism can have negative implications as well, as discussed previously in this chapter. Local communities often pay the price of ecotourism expansion, either through displacement from their lands, or denial of natural resources that they have come to depend upon. Local people are not often included in eco-development, even though their knowledge would be critical, because of their closeness to the environment. Engaging local communities and creating opportunities for them to benefit from resource development is absolutely essential to long term success of ecotourism. Ecotourism ventures will not succeed in duration if local people are not invested in the success of the program. Prosperous regional ventures hire and train local people, provide them with quality pay, include them in planning efforts, and invest in local communities.
CHAPTER VI

DISCUSSION AND RECOMMENDATIONS

Discussion

The commercial trade and harvest of wild meat is considered to be one of the greatest threats to biodiversity and habitat loss in the Congo Basin region. Subsistence hunting focuses primarily on meeting the basic nutritional needs of the rural poor. Yet, commercial harvesting has exacerbated the loss of endangered species, causing the potential for further species depletion and disruption of natural processes in the region’s ecosystem. Bushmeat hunting and trade has grown in the area because of a growing demand from urban and international markets. Wild meat can be sold at markets for a higher price than traditional goods, which provides incentive for rural peoples to become more involved in the practice. Over the last several decades, bushmeat hunting has become unsustainable, prompting the environmental community to evaluate the reasons for its increase, as well as possible livelihood alternatives for the rural poor who are most invested in the custom.

It is argued by some that bushmeat could become an integrated component of the DRC and RoC economies, if managed properly to focus on sustainability. However, recent examples of the overexploitation of ivory and wild meat, underscore the possibility that mismanagement and free reign of wildlife could lead to irreversible effects on biodiversity. Bushmeat hunting is further aggravated by poor governance, the availability of firearms and weapons, price instability, food security, poor infrastructure, lack of incentives, and a need for education about the importance of wildlife conservation.
Success in the region is dependent upon the implementation of macro and micro level intervention strategies. Macro level intervention strategies focus on long term solutions such as investment in key economic sectors, and investing in infrastructure and education. Macro level interventions are meant to address institutional problems, and may not have immediate effects. Micro level interventions instead are meant to affect change in the present, and ideally would have future benefits as well. Both types of interventions are important to the well-being of the Congo Basin, as they address different needs.

Recommendations

Invest in Key Sectors

In order to grow the Congo’s economy, and to have long term stability, the region must focus on economic diversification. Though commercial trade in wild meat and animal resources is a lucrative business, it has not proven to be sustainable; once a resource has been depleted or exhausted, the revenue for that resource will end. Therefore, the Congo must focus on growing several different sectors simultaneously, so that if an unforeseen shock or change in one area occurs, alternative livelihood strategies are available. Focusing on developing agriculture, which is the backbone of most rural countries, will create not only economic opportunities, but also alleviates food insecurities.

The Congo has a wealth of natural resources currently contributing to the region’s GDP, which should further be developed and utilized. Mineral resources as well as oil and hydroelectric power are valuable contributors. Yet, contract transparency, contract oversight and implementation are necessary for long term success of these sectors.
Recommendations for long term planning should include the development of a national mineral policy which would provide clear indicators of how national assets will be developed, managed and spent ("The Mining Review in the Democratic Republic of the Congo: Missed Opportunities, Failed Expectations, Hopes for the Future", 2009). The Congo’s logging and forestry sectors are more well-developed and managed, due in part to their involvement in the Congo Basin Forest Partnership, which adheres to strict regulations and guidelines.

The Congo Basin forests themselves may provide a viable economic solution to aiding in poverty alleviation in the DRC and Republic of Congo. If these two countries within the Congo Basin can develop programs to utilize forest products in an ecologically sound fashion, not only will conservation efforts be prioritized, but economic security will become attainable. Fostering practices that develop sustainable treatment of the Congo Basin’s many natural resources may result in economic stability for the area’s growing population of rural people. Total Economic Value (TEV) of the Congo Basin region provides some quantitative value to the resources available in the forests of the DRC and RoC. Further analysis of the potential benefits of extraction should be conducted, with a primary focus on sustainability and non-wood forest products. If extraction in Congo Basin rainforests proves to be an unsustainable resource following analysis, community forests should be considered as a viable, and ecofriendly alternative, or supplement.

Invest in Infrastructure

In order for key sectors to be successful, governmental agencies must invest in infrastructure, so that rural people have access to markets in urban centers where business
is more lucrative and prosperous. With an increase in food availability, upon the
development of agriculture, domestic markets will thrive and the need for foreign imports
will lessen. Building roads, waterways, bridges and rail systems will ensure ease of
transportation, particularly for rural people. Growth in basic infrastructure can lead to
further development of other key sectors, including logging and water hydroelectricity.
The development of roads in protected areas should be conscious of the possible negative
consequences of drawing more hunters to those areas. Adding more eco-guards and
police near these areas may ensure that logging companies and their workers do not
infringe upon these zones.

Develop Public-Private Partnerships

The Congo Basin’s protected areas serve several purposes, primarily conservation
and education. Strides in conservation, research, management and planning, and
education have been achieved. Additionally, partnerships have grown to encompass many
different stakeholders. The scope of nature conservation is often too large for one
organization, group or body to handle, and must involve local and international
stakeholders in order to be successful.

Many of the region’s protected areas and parks would greatly benefit from a
public-private partnership. The region’s most successful parks have achieved higher
quality of management and planning, have increased their outreach to the local
communities, and prioritize conservation awareness. Local governments cannot often
financially support conservation efforts or park development, which is why public-private
partnerships are vital to the growth of the ecotourism industry in the Congo Basin.

Virunga National Park is an example of the most successful protected area and tourist site
in the Congo, partly because of outside management and funding for park infrastructure. The Congo Basin needs to grow its capacity to fund ecotourism, and protected area management. If the DRC and Republic of Congo can continue to build alliances with other African nations, as well as develop international relationships, the perception of the region may slowly begin to change, and more outside visitors and tourists may be prone to visit the many diverse protected sites that the Congo offers.

Conclusions

The Congo Basin region provides a unique and complex case regarding economic and ecological sustainability. Quantitative data often varies by province, or village, if it is available at all. Bushmeat consumption is difficult to quantify because hunters are unwilling to come forward with information regarding kills, and consumers are concerned about admitting to purchasing illegal game. Yet, the information that is available provides critical insight into the impacts of the bushmeat trade on wildlife and rural people, as well as the reasons why the trade has increased. Future quantitative analysis of the bushmeat trade would be vital to further understand its impacts on wildlife and local people.

The Democratic Republic of Congo, and Republic of Congo have long, complicated histories. These countries have endured decades of civil strife, poor governance, resource wars, poaching and poverty. These issues only intensify the need for reform in the region. The rural poor have often been forced to rely on themselves for livelihood security, or the help of international relief organizations. Uncertainty and instability has plagued the DRC and RoC for too long. Now is the time for change.
It would be untruthful to lionize the Congo Basin’s present circumstances. Instability is still present. However, there are reasons to remain hopeful about the future success of the DRC and Republic of Congo. Investment in key sectors and infrastructure has grown in the last decade under democratic leadership. Conservation efforts have expanded and now include partnerships that not only aid in wildlife protection, but also economic growth across the region. Further actions focusing on economic and ecological sustainability are needed to ensure that the Congo Basin’s people and wildlife are protected and allowed to thrive.

Despite the area’s insecurities, the Congo Basin region could flourish if proper management and oversight are prioritized for economic and ecological sustainability. The wealth contained within the Congo Basin rainforests provides numerous sources of economic gain. The desire for individual gain must be replaced with a sense of concern for the general welfare of not only people but wildlife also.

Though bushmeat hunting and commercial trade offer short term benefit for local hunters and traders (individuals), the long term results (depletion of species, lack of resources) harm the greater Congo Basin region and its inhabitants. Bushmeat hunting has done nothing to benefit the DRC and Republic of Congo economically or ecologically; the commercial wildlife trade has not alleviated poverty, provided adequate food supply, or generated enough profit to develop infrastructure or any other basic needs expected of democratic institutions. Nor is it designed to. The aforementioned recommendations are meant to address both short term and long term needs of the DRC and Republic of Congo. They include strategies that are intended to promote economic gain for individuals, by way of collection decision making. Macro-level intervention
strategies (investment in key sectors and infrastructure) could provide long term structure for the region, whereas micro-level strategies (ecotourism) can begin to address immediate economic and ecological concerns.

The “tragedy of commons” often associated with developing countries, particularly in resource rich countries, may be overcome in time given practical applications of economic and ecological objectives. Individuals are more likely to adopt community-benefiting livelihood strategies if they are presented with rules and rights that provide a safe, advantageous, and credible commitment (Ostrom, 1990; 186). Individuals are prone to keep this commitment so long as others in the same situation adopt the same commitment, and as long as the net benefits produced by this approach are more profitable than those achieved individually.
REFERENCES


