

Using Incentives as Mitigation Measure for Human Wildlife Conflict Management in Namibia.

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Abstract- Local people living with wildlife also saw their possibility of response limited by laws and regulations and became more vulnerable to wildlife damages. Human-wildlife conflicts remain to this day a major concern for humans as well as a serious threat to the survival of many wildlife populations. Changing human values and attitudes have been noted to be shaping wildlife management approaches, where eco-centric, protectionist views of wildlife may not recognize or accommodate the needs of those living with wildlife. The causes are diverse and inter-connected. As biodiversity declined, the world came to recognize the importance of wildlife and the necessity to preserve it. Biodiversity is crucial for the stability of ecosystems and their capacity to provide the ecosystem services necessary to sustain human life. In order to safeguard biodiversity, the conservative approach has been to shield biodiversity from human interventions. Human-Wildlife Conflict (HWC) management are means of control the occurrence of these incidents. If the damage is already done, compensation and insurance schemes developed to replace the loss but, in most cases, these schemes do not meet the initial targets. The scale and urgency of the HWC in the country required intervention from government through Ministry of Environment and Tourism (MET). MET developed Human Wildlife Conflict policy and it was first released in 2009 and it was aimed to address issues relate to HWC.

Index Terms-conservancy, crop raiding, human wildlife conflict, incentives, retaliation killing

I. INTRODUCTION

THuman wildlife conflict (HWC) occurs when the needs of wildlife encroach on those of human populations or needs of human populations encroach upon those of wildlife. More broadly, interactions between wildlife and humans which can cause damage or costs no both sides[1]. Conflicts between humans and wildlife, and between humans over wildlife, have occurred since the beginning of humanity[2]. However, in many regions these conflicts have intensified over recent years as human population growth and the related expansion of agricultural and industrial activities[3].

Interactions between human and wildlife can have direct negative consequences, such as loss of livestock to predators, crop raiding especially by elephants, physical attacks on humans resulting in injury or death mostly by crocodiles, transmissions of diseases, competition over scarce resources to mention a few. While the establishment of protected areas has been an overall successful in conserving wildlife[4], it also contributed to human-wildlife conflicts. The resulting increase in wildlife population creating further opportunity for conflict, especially in areas bordering conservation areas.

Human-wildlife conflict (HWC) has become one of the major drivers of population declines of many wildlife populations. In order to conserve species that generate conflict with people, there is a need to secure rights and livelihoods of rural residents who face the conflicts[1], bear the cost imposed by wild animal. However, this raises one fundamental question still remain if wildlife can coexist with humans despite the dangers it poses.

History of Conservation in Namibia

Indigenous Namibians were pushed out of their land to make way of formalized protected wildlife reserve, and they were given a strip of land on which to live and farm. For those living on the communal lands, turned on poaching as wildlife was regarded as their property confiscated away by colonial government. Though the authorities arrested perpetrators, poaching remained high in the 1970s and 1980s as bad droughts and a war for independence ravaged local livestock[4]. As a result, many wildlife species in Namibia were extremely reduced. Increase in population means increases of rural settlement and expropriation of old ones; settling in buffer zones in areas next to nature reserves and in wildlife migration routes. Compensation the reimbursement to individuals or their families who

have experienced wildlife damage to crops, livestock, or property, or who have been injured, killed, or physically threatened by wildlife can incentivize coexistence, especially when HWC has been on-going and the economic impact of wildlife-attributed loss is at large scale[5]

Causes of Human Wildlife Conflict

Conflicts can be increased by an incomplete understanding of their causes and/or inappropriate intervention measures. Many traditional forms of intervention are also adding to increasing scrutiny and criticism from conservationist. Number of protected areas all over the globe are partially or completely fenced, with the objective of limiting the movement of wildlife inside and keep people and domestic animal out. Despite many conservation efforts, biodiversity worldwide continues to decline while human wildlife conflict remain a serious threat to human's lives and livelihood [6]. Wildlife activities do not always limited by the geographical borders of protected areas[7], leading to animals wandering outside of protected areas and causing damages to adjacent human settlements. Management strategies often solely focused on wild animals, excluding people involved in human-wildlife conflicts. Laws and regulations controlling use of wildlife and general lack of understanding and mindset for local communities led to frictions between conservation authorities.

Early reports, during colonialism era are indicating that access and use for wildlife were mitigated by policy, religion, custom and practice to reflect existing stratification and other imbalances in pre-colonial society[8]. It was in direct contrast with the colonial model of conservation, which led to the development of nature conservation areas as areas cleared of all human influence and settlement, with highly restricted access to resources in Namibia and other parts of Africa. Colonial conservation was based on a myth of nature which emerged from the scientific processes of exploration, mapping, documentation, classification and analysis. Nature came to be defined as the absence of human impact, especially European human impact[4]. In 1970 national wildlife populations were on a downward trend, and it was not until 1968, when freehold farmers were given limited rights of proprietorship over wildlife, that commercial farmers acquired incentives to manage their wildlife for gain. In 1975, these rights were reinforced through the passage of the Nature Conservation Ordinance of 1975, which is still under enforcement and since then wildlife numbers on commercial farmlands have increased by more than 80%[4]. After Namibia gained independence from South Africa in 1990, commitment to biodiversity conservation is reflected in the Constitution. Article 95 (1) provides the foundation for the formulation of policies, legislation and programs aimed at safeguarding the country's biodiversity and ecosystems for the benefit of current and future generations.

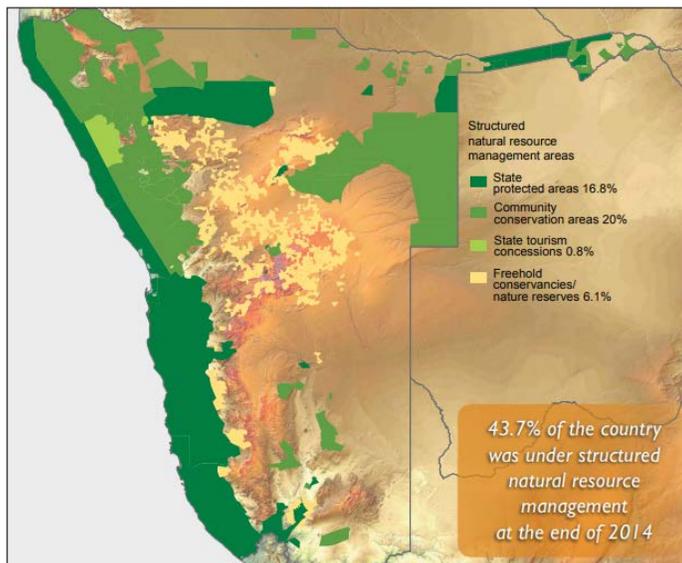


Figure 1: Conservation area of Namibia (Nasco)

II. RESEARCH ELABORATION

Conflict management

Human wildlife conflict management measures can roughly be divided into those that are designed to reduce the incidence of HWC before it happens, and those that mitigate the impacts of HWC after it happens. Two mostly used interventions are relevant to the unbearable component of current conflict[9], either to control most often lethal control the problematic species, population or individual, or to compensate in some way the aggrieved stake-holder.

Among non-lethal management and ways to raise human tolerance for wildlife is to focus on the participation of affected households in planning responses to conflicts with wildlife and inclusion of a range of interest groups and value. Preventative or avoidance

measures represent an essential component of any HWC strategy. Examples of preventative management measures include actions such as land use planning, herd management, creating physical, chemical or psychological barriers, and the use of guard animals. Compensation schemes as control measure are designed to mitigate the effects of wildlife conflict once damages have been incurred by making payments to cover losses. Human wildlife conflict compensation schemes aim to spread the costs of wildlife conservation more fairly within society. Specifically, they aim to reimburse costs of lost property or life. Compensation programs may also aim to increase tolerance for wildlife and conservation policies, thereby reducing illegal killing of wildlife and resistance to conservation management actions. [8]. These programs, however labelled to be, problematic as they cost more to administer than they provide in benefits. In many developing countries they are hampered by corruption or inefficiency, prove difficult to access, or fail to work.[10] In Namibia HWC conflict is compensated through Human-Wildlife Self Reliance Scheme (HWSRS) for areas within conservancies. For conservancies the most important thing is that it arranges for funding through the Game Products Trust Fund (GPTF) for Human-Wildlife Self Reliance Scheme (HWSRS). Conservancies receive a fixed amount of money to offset the losses from HWC[11]. Farmers have to follow certain regulations and procedures' such report the incident to conservancy committee within 24 hours and keeping livestock in an enclosure during night. The GPTF is mandated to collect revenue from wildlife and wildlife products recovered on state land and reinvest it into conservation programs in Namibia. Communities reside outside conservancies claim for compensations from Ministry of Environment and Tourism, but the procedures of reporting remain the same.

In India, local communities opt not to claim for compensation because of the extra cost involved in claiming process. Like many developing countries, the conditions under which compensation schemes are to be implemented are less than ideal. Local people have to travel long distances to report HWC cases and have their compensation claims processed[12]. This is particularly the case in the context of rural and remote areas of the developing world, where many obstacles prevent successful compensation program.

Some researchers believe that compensating pastoralists and farmers for damage caused by wildlife reduces hunting pressure on wild animal populations. However, it can also lead to a decrease in efforts to prevent damage and intensify conflicts with wildlife. Compensation programs increase the return to agriculture and can therefore be viewed as a subsidy toward crop and livestock production[13]. Such subsidies can trigger agricultural expansion and habitat conversion, an inflow of agriculture producers, and intensification of agricultural production.

The potential strategic benefits that can be made by an interdisciplinary approach to human wildlife conflict situations, by integrating knowledge and understanding across the natural and social sciences. also stress the potential tactical benefits from combining new approaches to management with more traditional ones[14]. Whether communities are compensated or not, they still at economic loss and hold hostile towards wild animal. To many of the local communities, human-wildlife conflict is increasingly about loss of ownership, lack of control over wildlife, and the feeling that wildlife is being prioritized over their own needs[6]. On the ground, emphasis on direct costs has also led to the implementation of compensation schemes for wildlife damage. South Africa's Kruger National Park pays funeral costs for individuals killed by wildlife. The reintroduction of wolves in the western United States led some states to compensate cattle ranchers for losses. In a project in Switzerland, compensation for sheep farmers is not provided unless livestock owners show evidence they are guarding sheep using shepherds, dogs, or fencing[15]. Kenya is one of the countries with large number of wildlife roaming freely outside protected areas. In a HWC research conducted by Isak Sindiga in Kajiado Region it is indicating that all the four protected areas in Kajiado Region are centered on dry season wildlife refuges and are too small to support for the current wildlife populations. Wildlife naturally migrate during different seasons, such migrations are cut short by fences around protected area hence[16], and wild animals are always fighting to go out. Part of the region wildlife explore and have access to the surrounding pastoral areas. Compensation system in Kenya for domestic animals killed by wildlife predators as well as compensation scheme for loss of human life or injury has been in place quite some time[17]. According to the policy, the family concerned is compensated with about US\$400 for loss of life. This is not even enough to meet funeral expenditure or treatment bills. Nor does the system take into account the impact of such occurrences on dependent children whose education is affected for lack school fees[17]. Like elsewhere, it does not bring satisfactory results as local people are paid less compared to what they have lost.

Botswana, has a compensation schemes originated date back under British administration during colonialism, with law giving right to landowners or occupiers to destroy damage-causing animals. The problem animal were dealt as trophies were the property of the colonial administration (or on tribal land, customary authorities), which gave farmers monetary compensation[14]. In post-independence Botswana this policy was retained under the Fauna Conservation Act, but amended in 1979 to allow farmers to kill wildlife without damage occurring if wildlife threatened livestock, crops, water installations, or fences[14]. As compensation, farmers could keep or sell the skin and meat. According to wildlife officials, this provision led to abuses killing wildlife without cause, or targeting lucrative trophy animals rather than those actually causing damage. Allowing trophies as compensation reflected livestock's greater value. When these loopholes became apparent and wildlife trophy values outpaced livestock, monetary compensation was introduced. These policy shifts indicate wildlife's growing importance for tourism, but they also reflect a narrow, incentive-based understanding of human wildlife interaction.

III. RESEARCH FINDING

Impacts on Wildlife conservation

Living with wildlife often carries a cost, and increased populations and expanded ranges have resulted in more frequent conflicts. Ironically, although the conservancy approach was partly developed to provide local communities with income from the use of

wildlife that could offset losses caused by wildlife. Through the communal conservancy program, rural Namibians have gained rights over wildlife and due to the commitment shown by local people, there has been remarkable recovery and increases in wildlife populations. Namibia has translocated more than 10,000 animals of 15 different game species including rare and valuable species such as black rhino, sable and giraffe out of parks into communal areas to boost populations there[18] The elephant population has grown from an estimated 7,500 animals in 1995 to over 21,000 today a large percentage occurs outside parks. Namibia has healthy populations of black and white rhinos, including the largest free-roaming black rhino population outside parks in the world[19]. Not only HWC is has impacts on wildlife biodiversity. In many parts of the globe it has been reported that large carnivore populations are declining. This is due to the under pressure of habitat degradation, hunting, disease and the commercial trade of body parts and most of them are listed under red data species. In recent years, conservationist, researchers and biologist have shown interest in predators not because of how impressive they are and powerful images, but also as a result of their relative and their role in the ecosystem ([20]). Their role in the ecosystem which frequently interfere with other animals, be that humans themselves, other endangered wild species, game species or livestock. Carnivores are thus frequently alleged as competitors to humans and, historically, human and wild carnivore interactions have involved conflict and misunderstanding. The rarity of carnivores arises from several of their life history and ecological characteristics and makes them particularly susceptible to the damaging effects of incidental mortality, such as that induced by humans ([21]).Primarily, the biological niche of large carnivores at the top of the food chain means that they will always be less abundant than their herbivore. Namibia has healthy lion populations in several national parks and an expanding lion population outside parks, which has grown in north-western Namibia from an estimated 25 animals in 1995 to around 150 in recent years[22]. Apart from that, the country has a healthy population of other predators such as cheetah which is the highest population in the world. The only predator species which has been declining over the years is African Wild Dog[23]. The population continue to decline beside conservation efforts which brought about increase in other wildlife species. It is suspected that farmers target wild dogs due to their feeding habit and the fact that they occupy large home range, mostly outside the park.

HWC Policy Implications

HWC occurs throughout Namibia on communal as well as freehold land and involves a variety of species. The main problems occur on the communal land where the most elephants and large predators are found outside protected areas and where people are least able to economically bear the costs of damage and losses. The increase is generally attributed to the increase in wildlife brought about by the conservation policies and strategies. Section 83 (2) of the current legislation (Ordinance 4 of 1975) makes provisions for a permitting system as a control and monitoring mechanism, which if combined with effective enforcement can contribute to the safeguarding of wildlife resources.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2014	2015
HWC Report	3019	2036	4282	5713	5640	7095	7659	7772	7279	9228	7774	6331

Figure 1. National Human-wildlife conflict incidents across all registered conservancies between 2003-2015.

Ironically, although the conservancy approach was partly developed to provide local communities with income from the use of wildlife that could offset HWC losses, conservation success has led to increased and unforeseen HWC problems. The problem is to ensure that the current gains that have been made in generating positive perceptions of conservation within communities are not lost. MET recognizes that the involvement and empowerment of rural people in natural resource management, in combination with economic and financial incentives through sustainable use, and linked to skills development and capacity building, can be driving forces in change of attitudes toward wildlife on communally-owned land in Namibia[22]. The scale and urgency of the HWC in the country required government to develop an integrated, flexible and comprehensive policy towards dealing with HWC. The policy was introduced to public in 2009 by the Ministry of Environment and Tourism (MET) with the aim of addressing the human-wildlife conflict in the country Recent increase in incidents of human-wildlife reveal has gaps in the policy, highlighting a need to create new initiatives about HWC management and effective mitigation measures. Most of human-wildlife conflict have created the most negative international publicity include lions being killed in retaliation for killing livestock and elephants being killed in retaliation for damaging crops, infrastructure and killing people. Although human-wildlife conflict will most likely never eradicated, it can at least be reduced and effectively managed to an acceptable level. The strategies set to implement the policy includes land use planning and integrated measures to avoid human wildlife conflicts, community based natural resource management, transmission of decision making-making authority to appropriate institutions. The policy also aims at developing and implementing the best appropriate technical solutions for self-reliance, protected areas and removal of problem causing animals and address losses.

Namibia Government does not have a policy that offers direct compensation to individual farmers or communities due to the complexity of compensation scheme. Currently people in communal areas are reimbursed N\$800 for every hectare destroyed by elephants or hippos. While for livestock, N\$1 500 per cow, N\$500 per horse, N\$200 per goat and N\$250 for a sheep or pig is paid out. Moreover, in incident where a person is killed by a wildlife, the family is compensated N\$5 000 (U\$ 400) towards funeral costs. The farmers have been complaining about payments, as they are not equivalent to market prices. will not be able to continue farming, whether it is with livestock or crops, since they cannot afford to replace the lost livestock. Communities also feel the N\$ 5 000 for

funeral cover is very little and there is no amount can be put on the human life. For that reason, Ministry of Environment and Tourism organized a Human Wildlife Conflict Conference with stakeholders such as traditional leaders, conservancy management committees, NGOs and other government departments such Ministry of Agriculture and Ministry of Land. The aim of the conference was to review and iron out short coming in the HWC Policy. Recommendation made through the conference results in a Revised HWC Policy for 2018-2027 period. The revised policy came out with about 50 % increase in livestock prices and over 200% (N\$ 100 000 or about US\$ 8300) increase for funeral cover. However, the revised policy has not made provision for property damaged by wildlife

IV. CONCLUSION

Crop raiding by wildlife has a significant impact on rural people's livelihoods and lives. It is therefore important to examine any human wildlife conflict issue within the context of people's economic, social, and cultural perceptives. To be effective, mitigation strategies must take in account not only the degree to which wildlife conflicts impact crops and livestock but as household economics. Most people affected by HWC have low income and what they expect from any intervention has to be sustainable and economical. Effective management of human wildlife conflict involves the use of multi-pronged strategies that focus on management, both of wildlife and livestock, financial mechanisms, and education and outreach. The development of these strategies is generally based on existing threats and options to reduce and mitigate those threats.

To reduce hostility of farmers towards wildlife, and retaliatory killing, compensation schemes may be implemented, often in combination with other mitigation such as deterrents and barriers to prevent damage, and awareness campaigns to increase people's tolerance towards wildlife. If protected area authorities fail to address the needs of the local people or to work with them to address such conflict adequately, the conflict intensifies, becoming not only conflict between humans and wildlife, but also between humans about wildlife[24] Where conservation policy and practice have prevented or discouraged farmers from taking direct action against all, or certain, crop-raiding species, farmers' may expect government agencies to assume responsibility for providing adequate crop protection against wildlife. Tying compensation eligibility to better management practices gets around the free rider problem. Many successful programs require participants to meet certain rules regarding livestock husbandry or human behavior before they are eligible for compensation. In case of the HWC Policy, government and other stakeholders need to create outreach programs to educate communities on HWC prevention measures and what qualified to be compensated. For example, farmers required and encouraged to put livestock in enclosures at night or to limit grazing zones on adjacent of protected areas and compensation of human life does not cover for life loss while swimming in a river. The policy can only be effective once it is well understood by all stakeholders. Human-Wildlife co-existence is not only achievable, but desirable because appropriate management and conservation of wildlife is a means to poverty reduction among the local communities.

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