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ADAPTATION STRATEGIES FOR CLIMATE CHANGE BY WILDLIFE MANAGERS AND COMMUNITIES IN MERU CONSERVATION AREA, KENYA

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ABSTRACT

The effects of climate change poses a challenge to the management systems in the protected areas, affects wildlife resources and the levels of community benefits. The rates of these changes in most protected areas alter their composition resulting to different habitats and species assemblages. Protected area managers and the communities in Meru Conservation Area have to come to the terms that climate change is an emerging threat and a phenomenon that requires inclusion in the daily planning and decision making for the protected areas. The most effective approach however is to develop adaptation strategies that will cope with the climate change for prosperity of protected areas.

Keywords: Climate Change, Adaptation Strategies, Protected Areas

INTRODUCTION

Understanding that climate change is one of the main emerging threats and a fact of our time is a decision that everyone must acknowledge. Climate change is coming strong as an enormous threat to not only protected areas, but more so to the communities that live in adjacent lands. These protected areas cover about 14% of the world's land surface containing the only remaining large natural habitat (Jenkins and Joppa, 2009). They maintain ecosystem integrity, buffer local climate and help to protect communities and reduce the impacts of natural disasters (IUCN, 2012). Further, protected areas play an important role in climate change mitigation and adaptation by reducing green house gas emissions and helping society cope with the change outcomes by providing the essential services that man requires on daily basis (Dudley et al, 2010). In the context of climate change, adaptation refers to human activities that are intended to minimize the adverse effects of climate change on the environment (Permesan, 2006; The Heinz center, 2007). Further in their studies, (Root et al 2003; Hannah et al 2005 and Lovejoy, 2005) have explained climate change adaptation as the process of designing, updating and implementing strategies to account for the impacts of climate change to ensure the highest return over time.

Like any part of the world, protected areas in Kenya are also experiencing the impacts of climate change. A factor that has made them change from their usual role of a carbon sink to a carbon source due to degradation of the resources in them. The challenges experienced as a result of these changes include prolonged drought, habitat fragmentation, and decline in ecosystem potential eventually culminating to environmental stress. In view of these challenges, the study

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sought to establish the existing adaptation strategies for climate change by the wildlife managers and the community in Meru Conservation Area, Kenya.

2. METHODS

The study was conducted at Meru Conservation Areas in Meru National Park and Mwingi National Reserve and the adjacent lands. These two protected areas which forms part of the complex Meru Conservation Area adjoins Bisanadi National Reserve and Kora National Park. The study used questionnaires, observations, interview schedule and the available secondary data to establish existing adaptation strategies for climate change in Meru Conservation Area. A checklist of the likely intervention was provided in the questionnaire for the respondents to identify and tick appropriately those that are in use. The interview schedule was given to the key respondents who included the KWS personnel, county officers in charge of environment in Kitui County and other local leaders.

Both simple random and purposive sampling techniques were used to collect the required data from the respondents (Kothari, 1985, Dawson, 2002). In this case, the study area was purposively divided into four different blocks based on the dominant ethnic community group living adjacent to the protected area. This included the Rapsu, Baibariu, Ntoroni and Kaningo where the dominant tribe was Borana, Ameru, Tharaka and Kamba respectively, who were expected to have different socio-cultural interactions and land use patterns. After selecting the clusters, simple Random sampling technique was then used to select 30 respondents for administering the questionnaires within each cluster, making a total sample of 120 respondents.

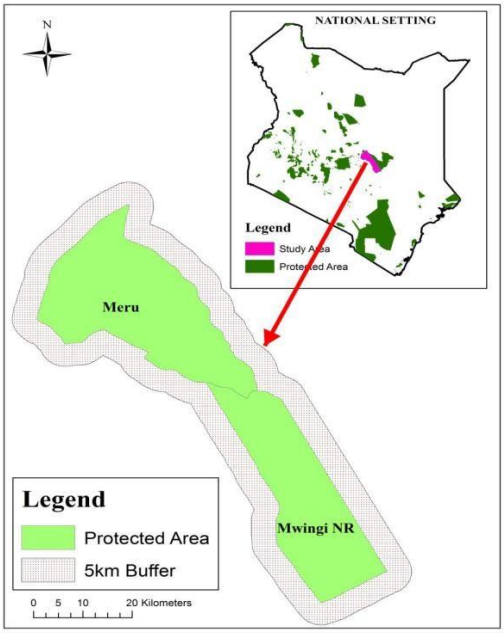

Figure 1: Map of the Study Area showing it location in Kenya

Vol. 3, No. 01; 2018

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3. RESULTS and DISCUSSION

From the study findings 57.5% of the respondents were in agreement that they have initiated adaptive measures for climate change, 14.1% disagreed that there are no adaptation strategies in place and significant number 28.4% did not have any knowledge on climate change. Although there was lack of adequate data on climate change adaptation strategies since majority of the residents had little knowhow, various observations by the researcher in the study area could be attributed to attempts for adaptation strategies for changing climate regimes as applied by wildlife managers and local communities. These were grouped into similar categories as discussed below;

Strategies towards Land Protection and Management

This refers to all the efforts that are directed towards changing land cover, loss of dispersal areas and corridors. Findings from the study revealed that areas that were initially used as wildlife movement corridors and dispersal areas have been replaced by human settlements and farmlands. This is possibly due to the increasing demand for food to meet the growing populations. Various activities were identified that relates to this adaptation strategy as discusses below.

Guarding Farms against Wildlife

A noticeable outcome of the changing climate on humans and wildlife is the increase in human wildlife conflicts. The study found out that communities living around MNP and MNR are worst affected perhaps as a result of regular invasion of their property by wildlife. From the study findings, increase in human wildlife conflicts is attributed to noticeable changes in land use and land cover around the protected areas where much of the area that was initially serving as either dispersal areas or movement corridors for wildlife have been converted to farmlands or settlement.

Free movement of wildlife has been further worsened by the erection of the electric fence round the protected areas. In this study, it was observed that wildlife finds their way out of the established fence to the adjacent land during both dry and wet seasons, hence causing further conflicts. According to the study findings, much of the conflicts experienced in the areas included human injuries and death, livestock and crop destruction. The local communities retaliates these attacks by placing snares to kill or harm the wildlife. Animals such as baboons were reported to contribute to majority of conflicts (54.2%) at all seasons in relation to other major reported such as elephants (35.0%), buffaloes (6.7%). Baboons have been reported by the community to be highly problematic since they are not contained by the electric fence. As a result of this, most of the residents especially those in the agricultural and agro-pastoral zones of Baibariu, Ntoroni and Kaningo respectively have adopted to guard their farms all day and nights to chase them from destroying the crops.

Occasionally, once the baboons succeed to invade the farms, the farmers reported that they rarely reported these incidences to KWS since no action would be taken. The elephants and the

Vol. 3, No. 01; 2018

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buffaloes broke the electric fence and occasionally invaded the farms especially during the dry seasons. To control these, farmers also guard the farms and prepare other devices to scare them away. According to the respondents, the guarding exercise is a tedious cycle that begins from the planting to the harvesting periods. It was perceived from this study findings that this may have negative impacts to the society such separation of the family unit by either mother or father for regularly keeping guard over the animals day and night. This may contribute to social challenges such as family separation, in addition to diseases such as pneumonia, malaria and Sexually Transmitted Infections (STI).

Increasing the Size of Protected Area Providing more land for conservation and establishment of protected area networks is also another action that has been used by management in MCA as an adaptation towards changing climate. For instance, through the PAPF model, several protected areas such as Meru National Park (MNP), Kora National Park (KNP), Bisanandi National Reserve (BNR) and Mwingi National Reserve (MNR) were joined together as one management unit known as Meru Conservation area (MCA). This move was to effectively enhance conservation of biodiversity through creating a protected area network. Wildlife can move freely from one protected area to the other hence increasing their home range, providing more options for breeding areas as well as preferred forage. In the adjacent land to MCA, communities have also been mobilized to establish conservancies as a direct means of wildlife utilization and also providing space for dispersal.

Establishment of Controlled Areas Establishment of controlled areas was done by the research department in MNP. This is where enclosed parcels of land within the park were set aside as controlled areas. These areas are meant to be free from wildlife interference and provide a representation of the vegetation structure as it is in the ecosystem. This helps in improving the management of the existing wildlife areas to maximize resilience

Strategies towards Species Management

Another strategy that has been adopted by wildlife managers is by building attention on the endangered species such as Elephants, Rhino and gravy zebra where various strategies have been developed by KWS and other stakeholders (McNeely and Schutyser, 2003, UNEP, 2006). These strategies recognize the fact that there are changes in the habitat as influenced by climate change and therefore provide guideline through which the survival of the target species can be enhanced amidst these challenges of climate change. The study established that translocation exercise were carried out in MNP in the year 2005 and 2007 to restock wildlife species whose population had reduced due to threats such as insecurity and drought in the previous years. Various species such as elephants and rhinos were brought in to the PA.

In addition to translocation, it was established that the research department organizes for controlled burning of vegetation especially grass in selected blocks so as to increase palatability of forage by encouraging growth of fresh grass, eradicate pest and invasive species as well as to remove accumulated litter that may cause accidental fires.

Vol. 3, No. 01; 2018

ISSN: 2456-8643

Strategies Related to Planning and Management

From the study, it was established that the development of the participatory framework planning model (PAPF) that targeted to improve the involvement of other stakeholders including local communities in the conservation and management of wildlife in MCA by KWS in the year 2007 is hereby acknowledged as an adaptation measure towards changing land cover, land tenure systems and climatic regimes. The strategy further provides for involvement of the communities through their participation in decision making in the protected area. As a result of this, the study established that the management of MCA through the community wildlife service department has initiated formation of functional groups in the communities surrounding MCA. Members of the groups are trained on the importance of wildlife and the need to protect and conserve their habitats. In return, these groups are supported by KWS to establish income generating ventures such as bee keeping, tree nurseries among others. The community groups also provide members for community policing, move to help control incidences of poaching and other wildlife related crimes around the PAs. However, lack of individual tangible benefits from community involvement call for the need to revise the existing management plan so as to cater for emerging issues and changes in legislations for effective participation.

Further, MCA management is taking steps to help improve the compatibility of cultural practices and land-uses surrounding the MCA with the areas conservation, and to ensure that adjacent communities are directly benefiting from the area's natural resources.

Strategies Related to Legislative and Legal Framework

The revised wildlife conservation and management policy 2012 and the subsequent act of 2013 is hereby recognized by this study as a strategy that contributes towards changing land use, land tenure, land cover and climate changes in within and outside wildlife protected area boundaries. The act provide for establishment of wildlife conservation and compensation committee at the county levels to enhance effective participation of the communities in wildlife management. It also provides a robust structure that will ensure compensation of human life, injuries and property are compensated to curb the increasing human wildlife conflicts and drive the communities to support conservation initiatives. Further the act provides for stiff punitive measures against wildlife offenses. This targeted to mitigate crimes such as poaching which has contributed significantly to decline in wildlife species.

Other provisions of the law that are adaptive to changing trends in climate, land use and land cover includes the permit for wildlife utilization where individuals and communities driving economic benefits by engaging in activities such as licensed game farming and conservancies. By this engagement, it perceived that there will be reduction in human-wildlife conflicts, increase in ecosystems management as well as enhanced support for wildlife by the then economically empowered communities.

4. CONCLUSION

Vol. 3, No. 01; 2018

ISSN: 2456-8643

This study set out to determine the possible adaptation strategies for climate change in MNP and MNR. The results have therefore revealed that both the local communities and wildlife managers have developed varying strategies that enable them to counter ongoing changes in ecosystem as a result of climate change. Developing adaptation strategies is a planning approach for sustainable management of wildlife resources that help wildlife, ecosystems and human communities that rely on natural resources to adjust to the effects of the changing climate. Therefore, it is worthwhile to note that since climate change is lending protected areas to be more costly to run, there is need for investment in conservation actions that will provide benefits to the people and nature over the long term.

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