

# Tourism Raised Problems in Masai Mara National Park Narok, Kenya

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## Author's note for the Mountain Forum

The Topography of Masai Mara National Reserve consists mostly of gently rolling to flat plains at 1000 meters elevation, surrounded by hills and escarpment, which range up to 2290 meter elevation. Within Reserve micro climatic variation is noticeable due to the elevation. The metamorphosed sediments of the Basement System are underlying large areas of central and southern parts of Narok district. Nguruman escarpments, west of the Mara River have exposed rocks of quartzites, gneisses, schists, amphibolites, migmatites, mylonites and pegmatites. Loita, Siana hills and hills around Lemek are dominated by quartzites derived from original sandstones and grits.

In the Masai Mara National Reserve the drainage is determined by topographic conditions. The Mara ecosystem is drained in a south - easterly direction because it is sloping gently downward to the Southwest from Lemek Hills. Mara River originates from Mau Hills flowing south west through footslope of the Siana escarpment then south through Mara National Reserve turning west and discharging into Lake Victoria. All the watercourses in the plains drain into Mara River. The Sand River and Talek, the largest tributary of Mara River, drain the National Reserve and Siana Plains. Most of the tributaries dry up during the dry season except Mara and Talek rivers (Omondi 1995).

The vegetation of Mara ecosystem varies from grasslands to shrublands to wooded grasslands and shrubby and wooded riverine. 'Pure' grassland communities are widely dominated by *Themeda triandra*, *Bothriochloa insculpta*, and *Setaria phleoides*, whereas the open grassland plains are dominated mostly by *Themeda triandra* (Onyeanusi 1986).

The central plains where most of the wild herbivores graze comprise short and tall as well as wooded grassland. The wooded grasslands that are mainly composed of *Balanites* to *Themeda triandra* are found mainly in the Mara triangle, which is located in western part of the park. Shrubby grassland community is dominant within the Mara Reserve, Loita Hills and southern parts of Koyaki ranch.

Generally, the physiographic condition of Masai Mara which I have noticed and found in literature is as mentioned above. I myself can not say that, this area is totally hill, however, the reserve's 50% area is hill and upland. Rest is slope and flat. In my opinion we could rank this area as up land.

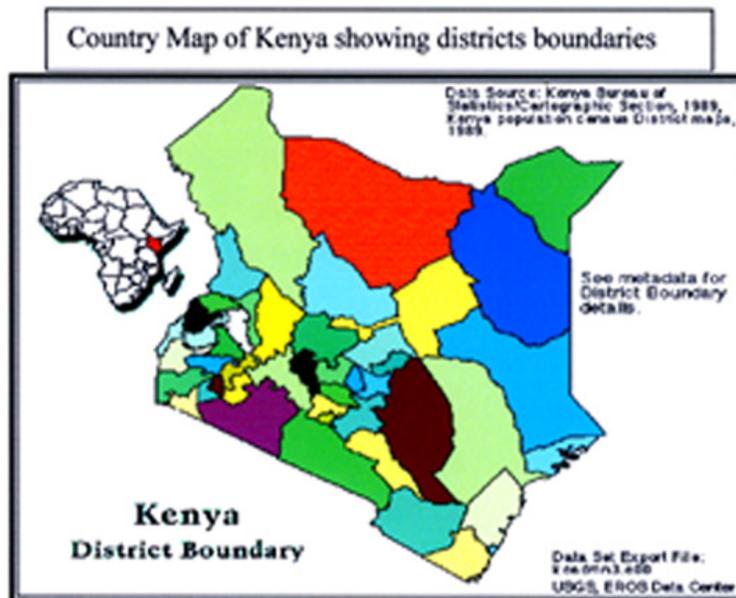
## **Introduction**

Biological resources and areas are being depleted day by day in developing countries. Population pressure and increasing demand for biological resources for various purposes are responsible for the reduction of these resources. This continuing process of depletion may cause natural imbalance as well as decrease in wildlife population (IUCN-1991).

The depleting rate is high and the cause of depletion is over exploitation of natural resources and encroachment on unprotected and protected natural areas. Protected areas are established to safeguard outstanding examples of natural heritage for their own sake, for the conservation of life-support systems and biological diversity and for human enjoyment. National park areas are designated to maintain the diversity of ecosystems species and wild gene. Wild- species and populations are highly sensitive to human and domestic animal disturbance (IUCN-1991).

## Study area

The Masai Mara National Reserve lies in Narok district of Kenya, South - Western Kenya bordering Serengeti National Park, on the Tanzania border (Map 2.1). It lies between latitudes south and between longitudes east between: 1,500-2,170m Altitude. It forms the northern portion of the Serengeti Mara System that covers an area of 40,350 square kilometers (Burney, 1980), of which the Mara National Reserve comprises 1,673 . The Masai Mara Reserve is surrounded by the group ranches and is divided by Mara river. This park was established as world heritage site in 1989. The main purpose of the establishment of this park was to protect the existing wildlife.



## Problem Statement

Increasing human population, mobility and participation in recreational activities have exerted pressure on finite resources of land and water almost everywhere in the world. This threatens not only nature but also the quality of recreation itself (Van der Zee 1992). People want a closer view of wildlife. They also want to observe their behavior closely. In this regard, mobility in the Wildlife Park has increased rapidly. This desire of tourists has certainly raised the question of the loss of natural vegetation in the park (Onyeanusu, 1986). Some researchers have already started to think about it and have given some overview. Most of the literature available in the field has not delineated the affected areas with regards to where, when and to what extent vegetation loss occurred. It is important to make park management aware of this critical issue.

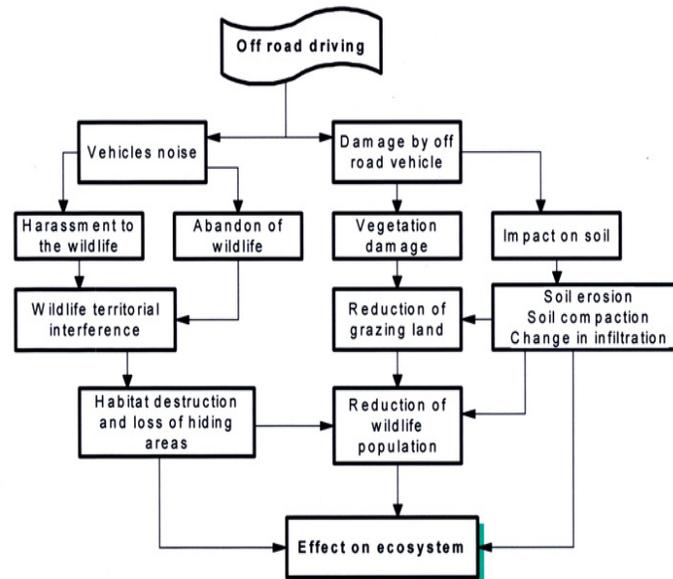
Many questions are unanswered in the field of tourism and off road driving in Masai Mara. Tourist vehicles enter the park with high noise. The impact of tourist off road driving in soil, vegetation cover and infiltration is still unknown.

Loss of the wildlife habitat is an important problem in wildlife conservation. There are various problems in and around the park related to biophysical and socio-economic aspects. In the Masai Mara National reserve in Narok district of Kenya the primary problems are related to the insufficient life support system and the secondary problems are related to the infrastructure in the area. Too much pressure on park by tourists are considerable problems in the reserve. The flow of tourists to the park can be economically beneficial but in terms of wildlife conservation it is not true.

The infrastructure development for the tourists including roads within the reserve, hotels, resorts and camping have negative impact on the wildlife habitat (Gakahu, 1992). Tourism has both positive and negative impacts (flow charts 1.1).

The situation has changed a lot since the reserve was first established. From 1940/ 50 onward relatively small human population was displaced from the reserve and, until recently, most reserves allowed the continuation of traditional human activities. In recent years, the situation has completely changed. There is growing population pressure from agriculturists and livestock keepers around the park and in wildlife areas. The population growth in Kenya is relatively high in the world (3.3% per year). Agriculture is increasing even in marginal areas that are part of a wildlife habitat. The dependency of these communities on resources is direct and immediate in the wildlife habitat. In their struggle for food and fuel they often have little choice. At the same time these people experience considerable damage to crop and livestock from wildlife. Tourist flow to Kenya is high and the main attractions for the tourists are national reserves (UNEP, KWFT, 1988).

Around the Masai Mara National Reserve area ranchers' and farmers' needs have not been adequately addressed despite the fact that wildlife often enter into their land and destroy livestock, and use water and grazing land. To them, wildlife is another competitor and enemy that exploits ranch resources and threatens their survival. Wildlife in the group ranches is like another catastrophe in the environment such as drought. As a result, many ranchers have developed negative attitudes towards wildlife (Aboud, 1989).



*Flow chart: The effects of ORD in the National park.*

### **Tourism related problems**

Natural ecosystems are being threatened because of the increase in human population and improved facilities for travel enabling more people to spend leisure time away from crowded urban areas. External tourist influence is higher than the internal and local tourists on the reserve (Onyeanusi, 1986). Increasing population growth in the drier areas of Kenya has led to a pressure exceeding the carrying capacity of the land in relation to park management, which in turn has led to a lower income per capita, and even to famine around the park areas (World Bank 1980). Many programs related to people's participation in natural resource management and wildlife management has been launched but the degree of influence of tourism on park and reserves have not been assessed as yet. The influence of tourists on the reserve is increasing and off road driving on the reserve is also increasing comparatively. Tourism is a source of foreign exchange so the tourist business is being highly encouraged. The possible negative impact of tourists has not been assessed and tourists being allowed to enter into the park areas with their motor cars. This tourist entry is suspected to disturb wild animals and damage natural vegetation by off road driving. The noise by the vehicle may also be disturbing to some wildlife (Skidmore & Leeuw, 1997).

### **Tourist flow and its effect on the reserve**

Tourism in the Masai Mara reserve has been extremely successful in economic terms. Out of the 57 protected areas, which include inland and marine national parks and reserves, Masai Mara receives the highest number of visitors not only in Kenya but in East Africa (Muthee, 1992). An available report shows that

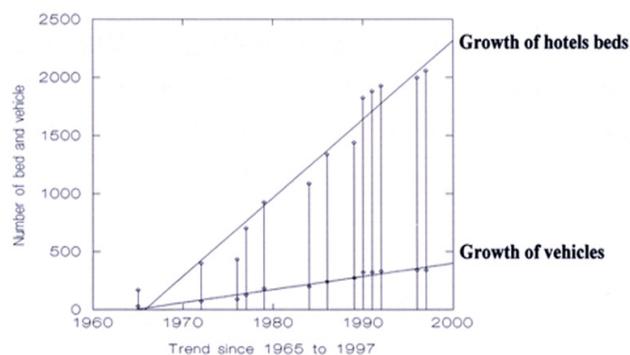
average annual tourist entry in the park is around 200,000 (Gakahu, 1992). Development of tourist facilities in the reserve has been rapid in response to the increasing number of visitors. The first lodge Kekorok was established in 1963. During the field work May 1997 to June 1997, the number of permanent hotels had reached 25, excluding outside tented camps and temporary tented camps inside the reserve.

Increased tourist facilities have caused the loss of habitat and naturalness of the area. Lodges have garbage and sewage disposal problems. Garbage attracts carrion-eaters such as hyenas, baboons, velvet monkeys and marabou storks. These problems are of concern to the reserve's management because animals can be obvious threats to people, including tourists. Another impact of garbage is that some scavengers, such as hyenas, may change their natural feeding habits and become permanent garbage feeders.

The problem of increasing visitors has led to an increase in the number of vehicle entries in the park (Figure 1). Its negative impact might be higher in long term.

### Hotels in the park

The dramatic increase in visitors, vehicles and visitors' accommodation has concerned many, especially the conservation community. Managing tourism and assessing visitor capacity of the reserve has not been done yet (Henry, 1992). The following Figure 1.1 shows the trend in number of hotels and beds in the Masai Mara National reserve since 1965 to 1997 (for details see Appendix).



*Figure 1.1 Increase in hotels and vehicle in Masai Mara*

Figure 1.1 shows hotels and vehicles are increasing trend in the reserve. In 1965 there was only one hotel, with the bed capacity of 25 and two vehicles. Now the number of hotels has reached 25 and the bed capacity 2057. Likewise, the number of vehicles is 339, which excludes the tented and safari camp out

of the reserve. This trend shows regular growth of tourist flow in the park. The tourist flow fluctuates, however.

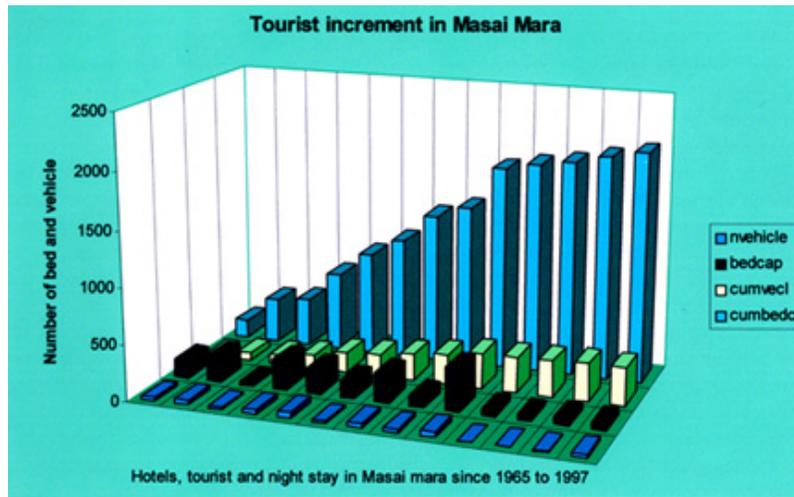


Figure 1.2. Tourist and Vehicle increment in Masai Mara.

Where,

$Cumbedc$  = Present hotel bed capacity

$Cumvecl$  = No of vehicle present in hotels

$bedcap$  = yearly bed growth

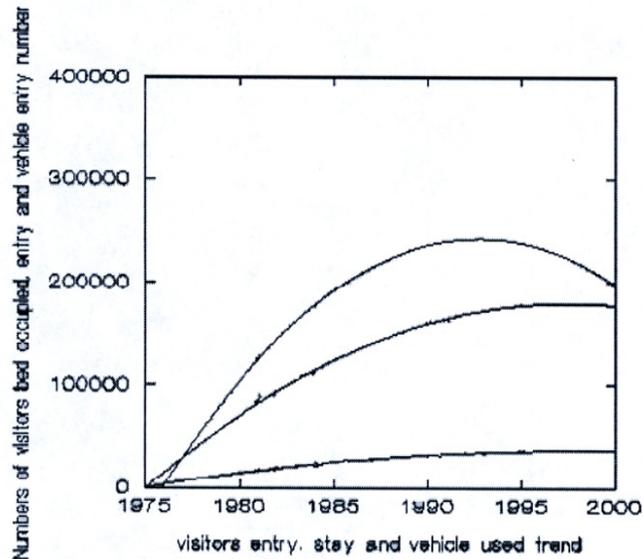
$nvehicle$  = yearly vehicle growth

Figure 1.2 shows the increase in the hotel's bed capacity in and around the reserve. The first row of the figure shows the vehicle growth each year, second row shows beds, third row shows the total growth of vehicles and the fourth row shows the overall growth of beds in the reserve. The number of vehicles indicates those for game driving, which obviously drive off the road to show wild animals to the tourist. Apart from the above- mentioned number of vehicles, many vehicles comes every day directly from Nairobi and other places and return back.

### Tourist and vehicle entry in the park

Over the past decade, the recorded visitor entries to the Masai Mara National Reserve are increasing annually at the rate of 9 percent per year. In 1980, the total visitor entry was 114000, which reached 255000 in 1990. On an average the visitor stays in the reserve for about 2.5 days. After 1990 visitors entry rate is not constant every year but the trend is not negative. As increase visitors also increases the number of vehicles, the impact on the reserve is also greater. In 1980, the number of vehicles entering was 17160 and in 1990 the same approximately doubled and reached 33110. After 1991 due to some external factors such as Gulf war, fears of AIDS, and terrorist attacks and some other reasons, the number of visitors has fluctuated (Washilwa, 1996). But 1995 onwards, the flow is increasing. Permanent vehicles in the park (Figure 1.2)

and external vehicles entering are driven often off the road. The problem of off the road driving is increasing at the same rate of hotel beds or vehicles in the reserve (Figure 1.2). Tourist and vehicle flow is shown in the following Figure 1.3.



*Figure 1.3 Tourist entry bed occupancy and vehicle use trend in Masai Mara National Reserve*

Figure 1.3 shows the increasing trend in tourist arrived, tourist stay and vehicle entry since 1975 to 1997. The trend is not uniform. However the duration of tourist is coming down. But wherever tourist stay, if they entry in the park game drive impact is growing.

### **Off Road driving (ORD)**

The Masai Mara National Reserve has relatively very few gullies, rivers and thick vegetation that could interfere with cross-country vehicle driving. As a result, drivers go off designated roads and tracks and criss-cross the grassland. Repeated off the road driving has resulted in a myriad of tracks with damage to vegetation and naturalness of the area. There are very few roads and viewing circuits. C 12 is the tarmac up to 42 km from the main Sekenani Gate. The official main roads within a park are C12, C13, E176 and D301. The following are the five roads connecting different gates of the reserve:

- Narok - Segenani Gate (73km)
- Narok- Oloolaimtia (80km)
- Narok-Oloololo Gate (90km)
- Kilgoris- Oloololo (60km)
- Serengati - Sandriver (150km)

Likewise, officially accepted viewing circuits are as follows:

1. Segenani- Keekorok- Mara Bridge- Serena and Ooloolo (95km)
2. Olemelepo- Talek- Musiara Gate 35 (km)
3. Oololaimutia- Keekorok-Sand River (130km) the total is 260 Km.

Only a very small area is separated where off the road driving is not allowed since 1989 and 1996, but in most of the area there is no restriction on off the road driving in the reserve. Mostly the three mentioned circuit areas are affected by the off road vehicles. The main off-road circuits and areas are as follows:

- a. Olemelepo- Talek- Kekorok- back (34 km)
- b. Kekorok- Segenani- Oololaimutia and back (30 km)
- c. Intrepids- Olave Orok and back (64 km)
- d. Main Governors-Musiara Gate- Olare Orok and Back (90 km)
- e. Mara Serena- Ilpunyatta- Esankuriai (34 km)
- f. Mara Serena-Olpunyatta- Ngiro- Sand Lick and back (65 km)
- g. Roan Hill-Olmisigiyioi-Outlook-Mara Bridge-Kekorok (90 km)
- h. Mara Bridge- Saltlick- Mara Serena (65 km)
- i. Hill and back to Sarova (30 km)

The net has been produced by the track in Talek to Kekorok. Sometime it is difficult to find an area that is not affected by ORD. Talek to Kekorok 260+502 =762 km off tracks are converting into permanent tracks and the average width of the tracks is 5 meters. In this ways 3810 area is completely damaged only on the Talek area the ORD. In the field survey for this study, the areas were selected randomly. However 2062 tracks with the total width of 1601.49 (330.2272 hectares) was noted within small area in comparison to the whole park. Estimation made using GIS shows a total of 2582.73 hectares of area is covered by the ORD tracks (see 4.1). Clearly, there is a problem of ORD in the park.

### **Off road driving and its impact on biomass**

The damage to the vegetation cover due to the off road vehicle is very common in the reserve. Vehicle tracks are everywhere and damaged and undamaged areas are clearly visible. Drivers go off the designated tracks and criss-cross the grassland in search of the elusive predators. Repeated off road driving has resulted in localised degradation of grass and development of multiple tracks, which destroy the naturalness of affected areas.

### **Off road driving impact on species cover and composition**

Off road driving damages the vegetation cover and affects the species cover percentage as well as species composition. In the off road drive area there are

no *Themeda triandra* species in the track whether ORD is continued or closed. In the area which is closed for ORD since 1989 there are still no original species. Some new species like *Eragrostis tennifolia* are coming. Off road driving is dangerous for soft grass area. Masai Mara is dominated by soft grasses like *Themeda triandra* so the impact is strong everywhere.

### **Off road driving impact on soil**

The soil compaction is the major effect of ORD. Weighted vehicle's wheel roll outside the road affecting vegetation immediately and the pressured area remains affected long time. Compacted soil does not allow infiltration. Nor does it allow penetrating plant roots. If the off road driving continues then the area completely changes its outlook and looks like a road. In Masai Mara reserve there are thousands of such roads and gullies made by off road driving. Wheel rolling affects soil not only by pressing it, but also by making the gullies and tracks, which lead to soil erosion, water erosion and landform changes. In the light soil type, big gullies can be formed. Such big gullies can be the source of physical obstruction for the movement of the animal or human being.

### **Airstrips and their effects**

The existing road condition of Masai Mara is not good and some visitors prefer to travel via the aeroplane to the reserve. Within Masai Mara including the area outside reserve, there are eight airstrips handled by hotels (information from warden office during fieldwork). The tourist flow via the aeroplane is 8 to 10% of the total annual entry. In most of the cases, for their safari vehicles are driven from Nairobi. These visitors do not prefer to be in-groups in safari drive so two to three persons use one vehicle. Off the road driving and high speed driving are very common with these passengers because they stay for a short period and they are eager to see many animals within a shortest possible time (information based on the interview).

Eight airstrips within the Mara and the area occupied for airstrips are noticeable. One airstrip for small aircraft's needs at least 500 by 50 meters area to land and take-off. So one airstrip equals to 2.5 hectares and 8 to 20 hectares. The noise is more than 100 dB up to 100 meter around the runway during take off and landing (IIEE-1991). This may have affected wild animals within significant distance.

### **Stakeholders in park management**

Hingston first stated the importance of the reserve in 1931. He recognised it as an area designed to protect common plain game. In 1958 F-Fraser Darling stated again its importance, when he carried out the first ecological reconnaissance of the Masai Mara area (Gakahu-1992).

Since its gazettelement, Mara has been owned and managed by the Narok County council. On the 4rth of August 1994, TransMara District was created and this automatically paved the way for the establishment of the County Council of TransMara. Having had the Mara River as the natural boundary of TransMara sub-district, the reserve lies between the two councils. The Mara triangle, an area of 690 square kilometres west of the Mara river is owned and managed by TransMara County Council, while the east of Mara river that includes both Kekorok and Musiara sectors, an area of 820 square kilometres, is owned and managed by the Narok County council.

Masai Mara is dually managed by the two councils that collect their revenues from tourists and lodges and camps from respective sides (Sindiyo-1996). Directly or indirectly followings are the **Stakeholders in the park management**:

- Kenya Wildlife Service (KWS)
- Department of resource survey and remote sensing (DRSRS)
- Narok county council
- TransMara county council
- Park personnel (staff) (management and security)
- Masai group ranches (peoples in the surroundings)
- Owner of hotels safari, camp etc.
- Tourists.

### **Previous research on off road problem**

Off road driving (ORD) in the national park has been defined as driving outside the road to look wild animal in the reserve. It includes any vehicle not driving along the road or designated path (Conservation Environment 1988, vol.13).

The scientific community has not ignored the off road vehicles problem. Many studies conducted by geologists, engineers, ecologists, sociologists, anthropologists, psychologists and other have investigated on off road vehicles problems (Mccool 1981). Many writers have also focused on off road driving problems in the national park and recreationally valued areas and they have also tried to measure the degree of damage. The scientific communities have also grouped the problem of ORD into behavioral, administrative, environmental, economic, safety, resource and facility needs, technological and land use conflict (Mccool 1981). However millions of people are participating in recreational activities (Sheridan 1979), there is not sufficient systematic research into it in the case of national reserves. Many questions and comments with respect to ORD research are necessary. Available literatures do not cover many impacts. However Baldwin and Stoddard (1973) have provided a popular review of ORD impacts and regulations. Likewise, Brander (1974) has reviewed ecological effects while, Bury (1978) has studied the effect on snow wildlife. Many scientists have also tried to evaluate the impact on soil mainly

soil compaction, vegetation damage, change of infiltration rate, erosion, wildlife and ecological setting.

### **Park-people interaction and tourist inflow**

Nature, culture, environment and development are closely related. Every manager seeks to ensure a balance among these processes. Nature and culture have history; they are the product of millions of years of Mother Nature's interaction with mankind. The customs, norms, behaviour and values of the society are directly directed by nature. The cultural heritage of a society is based on nature. The folklore includes the song of bravery of a hero who fought with lion, elephant, cheetah or who crossed the deadly area alone.

A tourist is interested in watching or feeling closely these inherent social phenomena and wilderness of nature. He tends to admire the majestic landscape, wild flora and fauna, cultural heritage and, consequently can have a positive influence on the domestic economy. A strong domestic economy is the backbone of a country. So, now many developing countries from the third world are after this process of tapping hard currency via tourism development.

Tourism brings some ethical questions. For instance, it is ethical to portray a human being as a strange who possess a unique culture, customs and tradition. A country can exploit its scenic beauty, natural and cultural heritage in terms of pollution and over exposure in the name of tourism development.

The state of marvelousness, uniqueness, suspense, mystery and thrill associated will be wiped out as the same is more and more available to the world community by way of retrieval audio visual systems. The mystery of Masai culture or the thrilling experience in seeing a lion in wilderness is gradually diminishing it is being unraveled in front of the world community.

There is a school of thought which believes in the world neighbourhood theory and states that the world heritage are the property of the world community, so everyone has equal right to see and admire the beauty.

The above mentioned contradiction is also observed in the Masai Mara National Reserve and surrounding group ranches. The people look upon tourists as the principal source of foreign currency for the state. They are equally concerned with the negative impact tourism has rendered on wild animals and their cultural values.

A new concept in the field of tourism and nature conservation is eco-tourism. This is a practice of tourism without disturbing the nature or watching nature without disturbance. In the case of Masai Mara, tourists can travel by light vehicles. This has two fold possible negative impacts.

The impact of off road driving in the vegetation and the frightening of wild animals by the noise and speed of the vehicles is visible in these places. Another important aspect, although not mentioned by the locals and park personnel, is the supremacy of the tourist. Tourists with nice vehicles give the impression to the local that they prosperous, richer and powerful people. So to some extent the local people do not question what tourist and property holders (like owners of hotels and camps) do and why they cause an impact especially by off road driving.

### **Acknowledgments**

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