



IMPACTS OF TOURISM DEVELOPMENT ON THE CLIMATE AND SURFACE HYDROLOGY OF OBUDU RANCH RESORT, OBANLIKU LOCAL GOVERNMENT AREA, CROSS RIVER STATE, NIGERIA.

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ABSTRACT

The quality of the environment, both natural and man-made, is essential to tourism. However, many activities can have adverse environmental effects. The study aimed at identifying the impacts of the development of Obudu cattle ranch as a tourism resort on the biophysical environment of the area. Findings reveal that there has been land and forest loss to urbanization; while agriculture, animal grazing and fuel wood extraction has increase bare rocks. Weather/climate has changed, and there has been threat of species extinction and eco-system alteration. All pointing to the current developmental strides of the area. Many of these

impacts are link with the construction of general infrastructure such as roads, and of tourism facilities, including resorts, hotels, cable car, restaurants, shops, golf courses and many others. The negative impacts of tourism development can gradually destroy environmental resources on which it depends. However, tourism development has also encouraged conservation activities. It is against this background that the study recommends that for sustainable tourism on the ranch, operators should de-emphasize economic gains but rather guarantee environmental sustainability. The need for local participation in tourism operation was recommended and policy for regulation of tourist activities and the reinvestment of proceeds for local structural/ amenities provision considered necessary.

KEY WORDS: IMPACTS, TOURISM DEVELOPMENT, CLIMATE, SURFACE HYDROLOGY, OBUDU RANCH RESORT, OBANLIKU

INTRODUCTION

In Cross River State, the green vegetation and the rising sun, escort many people from the capital city of Calabar, through the mangrove swamps to the tropical virgin forests of Akamkpa, Ikom and Boki, then to the mountain savanna of Ogoja and Obudu. In addition, the ambience of the temperate environment existing in Obudu plateau is a great tourism potential that is under international limelight. This great ecotourism potential has offered several tourists and visitors a unique opportunity to see the beauty of the physical features of an enticing bride called Cross River State. Today the over whelm, beautiful landscapes, colorful folks, an overwhelming serenity and the agreeable climate has made Obudu Ranch Resort a natural paradise. This does not go on without the impact of such visits and activities on the socio-economic, political and physical environment of the host communities and visitors themselves.

There have been so much research on the socio-economic and cultural benefits of the development tourism on the ranch, including it's multiplies effects at even the spatial sale. However, not much has been done empirically on the challenges of the environmental change arising from the development. Aniah et al. (2007) examine the livelihood and environmental

challenges arising from the construction and implementation phases of the development of the ranch. Nothing in concrete terms was identified as the major environmental aspects, indicators and impacts arising from the development. The development has no doubt over the years transformed the physical landscape and the biophysical implication could be wide ranging.

Despite increased awareness of the economic and environmental significance of tourism, it is only in recent years scientific researchers have emerged (Lama and Aattar, 2002). This research provides an addition to the existing knowledge which focuses, in particular on environmental impacts of tourism. Negative impacts from tourism occur when level of visitor use is greater than the environment's ability to cope with the carrying capacity. Uncontrolled conventional tourism poses potential threat to many natural areas around the world. It can put environment pressure on an area and lead to impacts such as soil erosion, increase pollution, discharge into the stream/ rivers natural habitat loss, increase pressure on endanger species and height strain on water resources, and it can force local populations to compete for the use of critical resources.

It is upon this background that the research work aims at examining the impact of tourism on the biophysical environment of the Obudu cattle ranch resort.

Obudu Cattle Ranch is face with a problem of potable drinking water. Water, especially fresh water, is one of the most critical natural resources. The tourism industry generally overuses water resources for hotels, swimming pools, golf courses and resources use of water by tourist. This can result in water shortages and degradation of water supplies, as well as generating a greater volume of waste water. The inception of tourism industry resulted to the extinction of the streams that the six villages were using. Streams like Okpazange shutdown because of the building of Africa hut, Kegol was blocked because of the construction of the market and Keji-Okwu also dried off because of the road construction, all these made the villagers to over depend on grotto the only source of drinking water now.

STUDY AREA

The Obudu plateau is a mountain environment, is a critical watershed that supports many communities outside the mountain top with fresh-water portable for domestic consumption.

The plateau is the headwater zone of many streams and rivers in the axis of Cross River and Benue states. Several streams and springs, which provide natural high quality domestic water for the local inhabitants cascade the slopes and feed the down valley communities as they flow through them.

Construction works on the ranch has affected the headwater supply and the hill slope hydrology. The loss of perennial streams due to construction materials are other possible environmental concerns.

Some other streams are presently shut down as a result of development and urbanization. These streams includes the Okpazange stream shut down for the building of African huts, the Kegol where the new market is situated and the Keji-Okwu stream shut down for the road that linked the ranch urban and other villages.

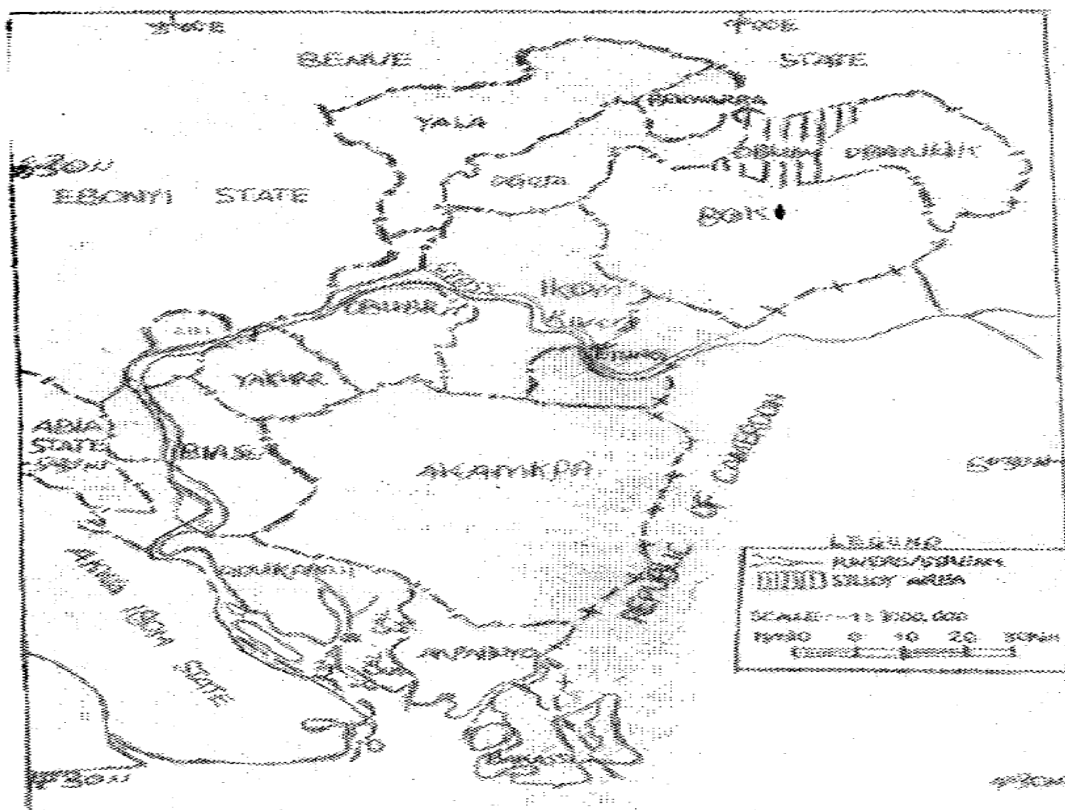
LAND USE

The pattern of land used at the top of the hill is different from the one down the mountain. At the top of the mountain is a beautiful scenery of flowered streets and roads, the up cable car station, the ranch reception hall full of monument, the ranch bar, the diary farm, the gorilla camp, the honey farm, the canopy walkway, the education center, the international hotels, the presidential villa, the conference center, the Becheve nature reserve, and air strip station, a golf course, the gym, the grotto natural swimming pool and the holy mountain.

ENDANGERED SPECIES

Animals like leopard, African elephants *loxodonta Africana* habitat loss, Antelope species (Bovidae), pythons (Biodae) birds like white toothed mountain babblers, yellow breasted booboo are endanger as more and more people visit the mountain specifically the Becheve nature reserve for sight see, to trek through the valleys, for birds watching and research and the noise making has scared the species and they are likely going extinct.

Obudu cattle ranch is close to the Cameroon border in the North-Eastern part of Cross River State of Nigeria, approximately 110km east of Ogoja Town and 65km from Obudu Town. It falls within the Obanliku Local Government Area, situated on a relatively flat plateau on the Oshie Ridge of the Sankwala hills, Obudu cattle ranch is approximately 134 square kilometers in extent as represented in figure 1.



SOURCE: AUNOIS WORKS

RELIEF

The relief of Cross River State falls into two broad categories, the high land and the low land. The Obudu cattle ranch is located in the high lands with a general elevation of 1,576m, but with odd peaks rising to almost 2,000m. It is the highest peak in Cross River State.

CLIMATE

The climate here is comparable to that of the temperate high latitude region, with low temperatures for most of the year. It enjoys a temperate climate, an area of idyllic tranquility, beauty and breath taking views. Temperature is usually lowest between June and September (as low as 4.4°C to 10°). Generally sunshine hours are low with average of 5 hours but could reduce to as 2 hours in some days. It is this weather conditions that was the initial attraction for the exploitation of the plateau for cattle ranching.

Annual rainfall is generally high, more than 4000mm with the intensity most of the times characterized by drizzles. Rainfall is double maxima with the highest peak in August. Humidity is equally high mostly during the raining season where it could be high as 80-90%. This could drop as low 50-55% during the dry season.

One fascinating thing about the ranch is the near absence of some disease insect vectors such as mosquitoes and Tsetse flies. The discovery of the ranch in 1949 by McCaughley, a British veterinary doctor and its choice for ranching was on the basis of this suitable environmental condition. From a purely livestock ranch however there have been tremendous shift towards tourism and this is what the ranch is known for today.

In this chapter the methods that were used to gather data for this study is discussed. The following are also discussed, types of data, population and sample, method of data collection and method of data analysis technique as well as presentation.

MATERIALAND METHODS

The objective is to collect data that will be sufficient to enable us make inference in respect of the overall philosophy of this study. The data required for this study were both primary and secondary data. The primary data include data on stream loss and degradation, land and forest loss to urbanization, weather pattern in temporal context, exotic species introduced and species specific to the area, the extent of pollution and how species have been endangered. The secondary from various published reports and documents.

POPULATION AND SAMPLE

Six major communities (settlements) make up the ranch resort. Three of them were selected using a simple random sampling technique. Before this, the area was divided into two zones or strata on the basis of closeness to the resort. Out of these, one community was sampled from the zone further zones and two from the closer area. Within the ranch are indigenous Becheve people whose population estimate is put at about 1,000 (1991 census estimate/projection). A total of 100 indigenous people were administered with the questionnaire while 20 were interviewed. Also 30 workers and visitors were administered with the survey instrument. A total of 140 instruments were duly completed and returned, representing 93.3% return rate.

The six (6) communities are; Keji-Okwu/ ranch urban, Apejili, Okpazange, Kegol, Anape, Okwanu

While the sampled areas were; Ranch Urban,Okpazange, Kegol
The data were generated from structure questionnaire and semi- structure interviews.

The questionnaires were administered to literate respondents and the same were used as the basis of interview with some of the older and illiterate respondents.

Statistical tools were employed. These descriptive tools were purely percentages systematic maps of different lines resolutions were also analyze while the change deflection was expressed in percentages.

Photographs of important land marks depicting the facilities of the resort and the damages or destruction done to physical/natural features were presented and described to showcase the level of development and probable environmental change.

FINDINGS AND DISCUSSION

PERCEIVED IMPACT ON CLIMATE AND SURFACE HYDROLOGY

Table 1: The plateau (Ranch) as the headwater zone of many streams and rivers has been altered by construction work

Experience	Frequency	Percentage
True	131	93.6
False	5	3.6
No idea	4	2.8
Total	140	100

Source: Field work 2010

The Obudu plateau, being a mountain environment, is a critical watershed that supports many communities outrides the mountain top with fresh water portable for domestic consumption. The plateau is the head water zone of many streams and rivers in the axis of Cross Rivers and Benue States. But 93.6% result to the loss of perennial streams due to construction because of urbanization the table 4.3.1 shows that the hydrology of the ranch has been altered, 3.6% state that it is false while 2.8% said it had no idea.

Table 2: Is there are changes in weather because of the tourism activities on the ranch?

Experience	Frequency	Percentage
Yes	76	54.29
No	35	25
No aware	29	20.71
Total	140	100

Source: Field work 2010

The Obudu plateau is an area once noted for its mosquito free nature, but currently these insects have invaded this hitherto free ecosystem. This implies that the weather pattern is fast changing or has change thereby culminating in the variations witnessed. This is why table 4.3.2 above shows that the weather has drastically change with 54.29% though 25% is saying no but 20.71% is maintaining that it is not aware of the change. This is to say that the weather is changing.

Table 3: How did the pattern of rainfall change?

Experience	Frequency	Percentage
Regular	55	39.29
Irregular	41	29.28
Conventional	44	31.43
Total	140	100

Source: Field work 2010

Table 3 shows that 39.29% of the rainfall is regular, while 29.28% is irregular and 31.43% is conventional.

The pattern of rainfall duration has changed, the volume of rainfall is less and there is conventional rain now because of the various activities that has taken place such as urbanization, deforestation, farming, bush burning and construction activities has affect rainfall pattern.

That environmental impact of infrastructure, support facilities in the development of tourism has caused land clearing, removal of vegetation and alteration of water supply sources cannot therefore be over emphasized. Increased demand for fuel wood because of the prevailing temperature which requires heating also could have accounted for the increased rate of deforestation. Loss of perennial streams due to construction because tourism urbanization is one way tourism affects surface hydrology of the ranch. The implication of urbanization is the rapid

runoff given the undulating nature of the terrain and steep slopes. To this end, most of the streams, particularly those down streams will be short of having supply of water at off rain period because of lack of percolation and contribution from the head water. The weather has changed according to respondent. It is this change in weather that has resulted to the presence of mosquitoes in the region, as is now notice.

The alteration of the environment are due to the environmental aspects of the construction and usage of these facilities are quite variable and complex Stroud (183) views environmental impact of large recreational protects and urbanization to include severe erosion while Lama and Aattar, (2002) are of the view that tourism could attenuate local air quality.

There are also observed positive environmental aspects of tourism development in the ranch. This is exemplified clearly in the conservative priority on the Becheve forest reserve. The impact of tourism on environmental conservation has been in daily reported globally and the case of the ranch supports the recognition of the positive of tourism in this direction.

CONCLUSION

The construction of roads, buildings and recreational facilities, which intensified from 1999, has been characterized by myriad activities. These range from bulldozer operations, grading of roads, crane operations, supply trucks and movement of containers, excavation, and concretion and so on. These activities has its environmental concerns and has results to caused soil erosion, water quality degradation/extinction, habitat destruction/species loss, increased runoff, increased risk of land slippages and disturbance of endangered species

The Obudu plateau is not an exception to tourism onslaught and the possibility of degradation of this biologically diverse and environmentally sensitive area is high. Though many have considered tourism as vital for the conservation and development of mountain regions, once isolated, tourism development has the potential to degrade the environment. As pointed out by

Lama and Satter (2002), tourism which hither to brought about laudable economic opportunities, to isolated and underdeveloped mountain regions is ironically the same activity that imposes inordinate stress on natural resources, compounded by unrestrained human activities and development.

On the contrary tourism development, which involves spatial reorganization and restructuring, has its environmental cost. As noted by Lama and Aattar, (2002), the first major source of environmental stress, resulting from tourism development, is permanent restructuring of the environment, brought about by a variety of major construction activities such as urban development, construction of roads, airports and building or recreational facilities which Obudu is not an exception.

RECOMMENDATIONS

Taking a holistic approach, both positive and negative environmental and socio-economic concern of the rapid urbanization at the top of the plateau were investigated from interviews with the locals as well as expert opinion. Results were presented in tables and all points to the fact that the current developmental strides and operations if allowed to continue may not be completely of benefits to the environment and the people's livelihood. This therefore calls for a more detailed environmental assessment, which will provide quantitative evidences and sustainability.

Revenue leakages must be reduced as much as possible through the policy of protection of local investment opportunities against domination or profiteering by outside investors (Lama and Aattar, 2002, UNESCO, 2000). Policies for professional training of local people at middle and senior technical levels, to allow the replace existing outsider staff at the resort, the cable car and other establishments will help to reduce leakages and retain a higher proportion of tourist expenditure in the area.

Government and the private tourism operators should exercise their social responsibility fully. This is with regards to employment and pay practices casual staffing of locals/people's in available jobs should as much as possible be avoided. As a matter of fact preference should be given to the local population where employment does not require so much skill. Where possible local people can be recruited and trained. In conclusion tourism development on the Obudu Ranch as far appears to be towing an unsustainable path. However, this does not mean that sustainability is unachievable. A holistic approach to its management needs to be adopted, where the government policy must gear towards participation of the host communities in the running of the resort. The indigenous people should be made to actively protect their environment, while the private sector should not only think for immediate gratification but sustainable profit from the business.

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