

THE ROLE AND CONSEQUENCES OF CLIMATIC FLUCTUATIONS
AND SOME ANTHROPOGENIC FACTORS IN THE PROCESS OF
DESERTIFICATION IN A SEMI-ARID ENVIRONMENT. A
CASE STUDY OF MARIGAT DIVISION, BARINGO DISTRICT.
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ABSTRACT

Desertification which is a global environmental problem has attracted the interests of many scholars. Some of the scholars have identified and grouped the causes and consequences of desertification depending on their interests and areas of study as follows:-

The Climatic School, the anthropogenic School and the 'dual'- Process School.

This study adopted the 'dual' process School of thought in trying to assess the role it has played in the process of desertification and the immediate consequences in Marigat Division, Baringo District. Two types of data were collected. These were (i) The Climate data which included rainfall, temperature, actual surface evaporation, relative humidity and windspeed. (ii) Anthropogenic data, where structured and unstructured questionnaire was administered to a randomly selected 180 respondents from 8 purposive randomly selected sites in Marigat Division. The questionnaire was prepared on selected topics, namely pastoral activities, deforestation practices, cultivation practices and population trends.

Empirical findings established that Marigat experiences severe and prolonged droughts. Of the 30 year annual rainfall data analyzed, 13 years of the period which is 43.3 per cent received markedly below average rainfall. Six years which is 20 per cent received marginal rainfall above average. The severe and prolonged droughts have led to poor vegetation ground cover, high animal mortality due to hunger and thirst, and insufficient stream flow. Rainfall in Marigat is both erratic and variable. This has led to the formation of rills and gulleys. Very high temperatures have led to soil desiccation and rock disintegration, while high windspeeds in areas with poor ground cover has led to disastrous wind erosion. Low relative humidity coupled with very high evaporation rates have resulted in low and scanty rainfall, high water deficiency and insufficient stream flow.

Large livestock numbers which are far beyond the carrying capacity of the area were found to have been the cause of overgrazing, soil pulverization and soil compaction particularly around permanent water sources. Wanton tree cutting and poor cultivation practices have led to the creation of many open structured ecosystems which in turn have caused (i) accelerated water and wind erosion (ii) high surface albedo (iii) increased heat loss and (iv) reduced soil moisture content. All these may have contributed to the reduction of rainfall, a direct reflection of the operation of the moisture, the albedo and the dust theories in the study area. The three theories link land use practices and climatic changes, thus, stressing the fact that 'it is not easy to disentangle man-made from natural climatic changes.' The study further revealed that human population has not played a significant role in the process of desertification in Marigat.

The factors discussed above have led to low yields, low incomes, persistent food shortages for both man and animals, increased malnutritional diseases and high mortality rates in both the animals and the resident human population, all culminating in misery and poverty.