

DECLARATIONS

**LANDUSE DYNAMICS AND THEIR IMPACTS ON THE
ENVIRONMENT: AN EVALUATION STUDY OF
MUTHENGERA LOCATION, LAIKIPIA DISRICT, KENYA**

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**A THESIS SUBMITTED TO THE SCHOOL
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ABSTRACT

Landuse and landcover changes are dynamic and vary from one region to another depending mainly on anthropogenic factors. These changes are ever increasing due to increase in population growth. The changes that result often have negative impacts on the environment.

This study therefore attempted to identify the main types and causes of changes, evaluate the extent of these changes and identify their impact on the landscape and natural vegetation that have emanated from the changing landuse/landcover patterns for a period of nearly 30 years. This was achieved through visual interpretation of three time-series aerial photographs taken in 1961, 1976, and 1989. In addition, ground truthing was carried out to confirm the information obtained from the interpretation; and more than 85% interpretation accuracy was achieved and accepted. Questionnaires, oral interviews, key informants and other relevant data were used to obtain the main socio-economic activities in the area such as agriculture and saw-milling. PC ARC/INFO version 3.5.1, which is a GIS software package was used for data capture through digitizing landuse/landcover maps derived from the interpretation of aerial photographs, while ARCVIEW software was used for data manipulation and analysis. This involved data set overlays to assess landuse/landcover changes that had taken place during this period.

Data analysis showed that the rate of change in landuse/landcover ⁱⁿ the area is about 60% per year. It was further shown that there is a strong positive correlation between population growth and landuse/landcover change and between increase in the number of sawmills and population growth. The results also revealed that there is a strong negative correlation between forest cover and population growth, expansion of small-scale farming and landuse/landcover change, and increase in number of saw-mills and forest cover.

In conclusion therefore, the research findings revealed that population growth, saw-milling and agricultural activities are the main causes of landuse/landcover changes in Muthengera location.

It is in this light that continuous monitoring is recommended in order to establish present trends ⁱⁿ landuse/landcover changes and consequently ecological changes to provide necessary data for future landuse planning and management.