IMPACT OF LAND USE LAND COVER CHANGE AND CLIMATE VARIABILITY ON PASTORAL GRAZING RESOURCES.

Case Study: Kajiado County

ANNE WAMBUI MAINA

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Department of Geomatic Engineering and Geospatial Information Systems

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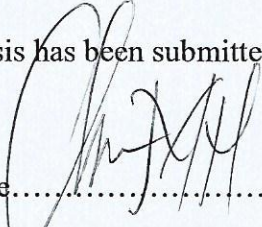
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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

Signature: --------------------- Date: ----1/2/2016----------------

Anne Wambui Maina

This thesis has been submitted for examination with our approval as the university supervisors.

Signature.........................Date... 4/2/2016

Prof. Charles Ndegwa

Dedan Kimathi University of Technology

ABSTRACT

Kajiado County of Kenya was initially occupied by Maasai pastoralists. During the last few decades important land tenure changes have occurred that were mainly characterized by sub-division and fragmentation of communal grazing into individual smaller parcels. On the other hand, overgrazing and ecological succession of the grazing lands had led to further vegetation degradation in form of bush encroachment and thickening. These types of vegetation degradation have had an overall effect of loss of grass cover and hence loss of grazing capacity by livestock.

The objective of this study was to analyze both land use change and climate variability and their relationship. Climate variability is one among a number of important drivers of change in the region. It has both direct and an indirect impact on the ecological and socioeconomic components of the grazing resources at different spatial and temporal scales. Remote sensing is an effective tool for classification of land cover and NDVI. In this paper statistical analysis, Remote sensing and Geographic Information system were used to identify the relationship between NDVI, rainfall and temperature. Supervised classification was carried out with change detection to evaluate the changes that have taken place in the last 30 years and different land cover classes were identified. NDVI values were also calculated while the temperature and rainfall surfaces were generated to understand better their performance in the last 30 years and how they have affected pastoral resources.

The overall results indicated that there has been a downward trend in vegetation condition over the last 30 years which has affected the livestock productivity of the area. There has been reduction of pastoral resources while the temperatures have become high with low records of rainfall. This has given rise to low values in NDVI which show that the remaining grassland have poor performance. This implies that well defined policies should be formulated that will help secure pastoral livelihoods since a continuation of this trend would mean that in the near future there will be no pastoralists in this region. These pastoral lands should also be monitored to monitor the factors that affect them either positively or negatively. Early warning systems that will predict short, medium and long term climate changes should be used.

Key Words: Climate variability, NDVI, pastoralists, Remote sensing.