

## **Abstract**

In the past few years, Kenya has been experiencing a high population growth rate. Kisii County has had a growth of infrastructure over the years to accommodate the growing population. This research focused on the use of remote sensing tools to detect land use and land cover change. Multispectral images from Landsat 8 were used for the years 2000, 2005, 2010, 2015 and 2020. The images were analyzed by the use of ARCGIS software.

The research largely involved digital image classification of satellite images by supervised classification. The results showed that built up areas are increasing at an alarming rate as the vegetation cover in Kisii County, reduces. For instance, built up areas in the year 2000 covered a total area of 14400 m<sup>2</sup>, which was 0.304009% of the total land cover. In the year 2020, the total area covered by built up areas was 2847600 m<sup>2</sup>, which translates to 73.8% of the total land cover. On the other hand, vegetation cover in the year 2000 had covered an area of 4017600 m<sup>2</sup> this translates to a percentage of 84.8%. In the year 2020, the total area covered by vegetation was 796500-m<sup>2</sup> translating to a percentage of 20.6% of the total area.