

**ASSESSMENT OF IMPACTS OF ROAD INFRASTRUCTURE USING
GIS AND REMOTE SENSING**

A CASE STUDY OF YATTA SUB COUNTY, MACHAKOS COUNTY

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MASTERS OF SCIENCE

(GEOSPATIAL INFORMATION SYSTEM AND REMOTE SENSING)

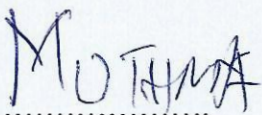
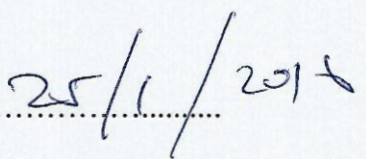
DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

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Declaration


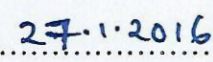
I declare that this research project is my original work and has never been presented to this institution or to any other for examination or for any other purpose.

Peter Muli Muthama
G221-003-0004/2014

Sign.....  Date..... 

I certify that the above-mentioned student carried out the work detailed in this report under my supervision.

Dr. Kenneth Mubea

Sign.....  Date..... 

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Abstract

Roads play an important role in infrastructure and services in rural development. This is well established in the development literature. There is a direct link existing between productive investments and growth, social and economic infrastructure (such as roads, electricity, water and sanitation, and communications) facilitates and integrates economic activities. The purpose of this study was to assess the impact of road infrastructure in Yatta Sub-County. Descriptive research design was used for the study. GIS and remote sensing were used to capture images on road infrastructure while questionnaires were used to collect data from farmers and business owners. Simple random sampling technique was used to sample respondents for the study. A total of 50 respondents were sampled for the study where all responded giving 100% response rate. Descriptive statistics such as frequencies and percentages were used to analyze the quantitative data collected through questionnaires. Qualitative data collected through open ended questions were analyzed thematically. Pre-processing of images involved: layer stacking, radiometric correction, pan-sharpening, atmospheric correction and sub setting while post-processing of images involved: Image classification, creating training sites, generating statistical tables, accurate assessment and ground survey using GPS for ground truthing. The study found that roads which cover the Sub County are not sufficient to serve the people of Yatta Sub County effectively. Most of the in-roads in this sub County are in very poor conditions whereby people need to use motor cycle to reach their destinations. The findings revealed that most of the vehicles avoid using earth surface roads as they spent more money on maintaining the vehicles. Where roads are in good conditions, growth of towns such as Matuu, Kithimani and Katangi has greatly been realized. The poor road conditions led to high costs of living and doing business with more time spent on movement from one place to another and difficulty in accessing social facilities. The study recommended that the roads in Yatta Sub-County should be upgraded to facilitate movement of people and goods and that the County Government of Machakos should embrace use of GIS in decision making and planning.