

Study on Changes of Land Use impacting the Process of Urbanization, by Using Landsat Data in African Regions: A Case Study in Kigali, Rwanda

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Abstract : Human activities on land use make the land-cover gradually change or transit. In this study, we examined the use of Landsat TM data to detect the land use change of Kigali between 1987 and 2009 using remote sensing techniques and analysis of data using ENVI and ArcGIS, a GIS software. Six different categories of land use were distinguished: bare soil, built up land, wetland, water, vegetation, and others. With remote sensing techniques, we analyzed land use data in 1987, 1999 and 2009, changed areas were found and a dynamic situation of land use in Kigali city was found during the 22 years studied. According to relevant Landsat data, the research focused on land use change in accordance with the role of remote sensing in the process of urbanization. The result of the work has shown the rapid increase of built up land between 1987 and 1999 and a big decrease of vegetation caused by the rebuild of the city after the 1994 genocide, while in the period of 1999 to 2009 there was a reduction in built up land and vegetation, after the authority of Kigali city established, a Master Plan where all constructions which were not in the range of the master Plan were destroyed. Rwanda's capital, Kigali City, through the expansion of the urban area, it is increasing the internal employment rate and attracts business investors and the service sector to improve their economy, which will increase the population growth and provide a better life. The overall planning of the city of Kigali considers the environment, land use, infrastructure, cultural and socio-economic factors, the economic development and population forecast, urban development, and constraints specification. To achieve the above purpose, the Government has set for the overall planning of city Kigali, different stages of the detailed description of the design, strategy and action plan that would guide Kigali planners and members of the public in the future to have more detailed regional plans and practical measures. Thus, land use change is significantly the performance of Kigali active human area, which plays an important role for the country to take certain decisions. Another area to take into account is the natural situation of Kigali city. Agriculture in the region does not occupy a dominant position, and with the population growth and socio-economic development, the construction area will gradually rise and speed up the process of urbanization. Thus, as a developing country, Rwanda's population continues to grow and there is low rate of utilization of land, where urbanization remains low. As mentioned earlier, the 1994 genocide massacres, population growth and urbanization processes, have been the factors driving the dramatic changes in land use. The focus on further research would be on analysis of Rwanda's natural resources, social and economic factors that could be, the driving force of land use change.

Keywords : land use change, urbanization, Kigali City, Landsat

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