

Investigation of the Effect of Transportation Network on Urban Growth by Using Landsat Images and Geographic Information Systems

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SUMMARY

More than half the world's population is living in urban areas. Each passing day world's population is becoming increasingly in urban areas. Rapid increase in urbanization cause global climate changes, losses in vegetation, tropical deforestation, and land-use change. At the same time urbanization exposed to urban growth and urban growth affects transportation. Remote Sensing (RS) and Geographic Information Systems (GIS) technologies are use together for developing urban development strategies for understanding the transportation and urban dynamics. With these technologies, many development strategies can be evaluated together quickly and spatial analyses can be easily implemented.

Transportation and urban growth are strongly related with each other. In this study to provide a better understanding of this relation, we use GIS and RS technologies for determination of urban growth changes based on road network and urban area in Konya Province. Landsat imageries have been used for the years 1999-2005 and 2010 to calculate the urban areas and roads lengths. Land classes such as urban area, agricultural area and other areas were determined and accuracy analysis was performed according to the controlled classification method. According to obtained values, accuracy for the year 1999, 2005 and 2010 are respectively 79.48%, 85.77% and 84.80%. Road lengths and the population data are compared with urban areas according to years. As a result, the correlation coefficient between road length and urban areas is 0.9991. The correlation coefficient between population and urban areas is 0.664. It is determined that there is a positive linear relationship among population, urban areas and road lengths. According to these results, one of the important factors that are effective in Konya's development is transportation routes.

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