Relating People, Land and Environment in Lake Naivasha Watershed, Kenya.

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Abstract

Kenya is regarded as Africa's only 'Newly Agriculturalzing Country' (NAC), mainly because of the very rapid rise in horticulture production. The horticulture and flower farms appearing in the last 15 years around Lake Naivasha depend primarly on the availability and quality of water. The growth of large scale commercial activities in the form of a booming flower industry along with the existing small farms around the lake have implications for the demand for resources of Lake Naivasha ecosystem. Population pressure, intense land utilization in the catchment and informal settlements in Naivasha town due to lucrative economic activity are the major challenges of the basin economy. More and more people from different parts of the country are being driven to the basin, seeking employment opportunities. In addition, demand for food increases thus promoting intensive farming practices, and causing destruction of forest cover to open steep slope cultivation in upstream parts of the catchment, together with charcoal burnings in the surrounding area. The growing population in this area creats an enormous pressure on the natural resource base of Lake Naivasha watershed. As a result, timely and accurate estimation of population distribution and density is of considerable significance for decision makers in order to manage ecosystem services and a better understanding of the interactions between population growth and social, economic and environmental conditions.

Linking remote sensing and social science is a new approach to understand human impact on biophysical environment and to respond environmental impacts on human economic activities. Integration between social sciences and natural sciences is vital for better understanding of the Naivasha economy that changed so drastically and reflecting complex socioeconomic settings. Human population in general and population density in particular are often used as proxy measures to estimate land use and land cover changes and other spatial changes. Therefore, in this paper, an integrated approach is developed to reveal the multifaceted relationship between human and environmental interactions using remotely sensed data and socioeconomic data in Lake Naivasha watershed. In addition, an innovative approach is presented to assess land fragmentation,and to estimate population for different land use types so as to explore the relationship between population distribution and other physical variables (slope, soil, land use, rainfall, altitude and distance from the roads).

Investigating land use and land cover changes and estimating the population densities inhabited on the different landscapes, as well as examining the factors affecting population distribution, are essential in formulating appropriate management strategies for sustainable use of natural resources and it helps in examining the risk of natural resource degradation.

Key words: Lake Naivasha watershed, population distribution and density, land, physical variables, remote sensing, environment and natural resource degradation.

Project website: http://www.itc.nl/Pub/services/Major-projects/EOIA_Lake_Naivasha.html