Land Cover Dynamics As A Result Of Charcoal Production: Use of Remote Sensing and Gis

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Abstract
Charcoal is the most important energy source for middle and low-income people in many African cities. Its consumption shows no sign of decrease for the reasons of cost, convenience and availability. The use of charcoal, however, has been blamed for deforestation and degradation of natural forests and woodlands. To increase the understanding of the effects of charcoal use in three countries in Southern Africa: Tanzania, Zambia, and Mozambique, a collaborative project, CHAPOSA (Charcoal Potential in Southern Africa), was conducted. One of the project objectives was to assess the extent of environmental degradation due to charcoal production and to identify indicators that can quantify and locate such degradation. To meet this objective, an integration of remote sensing, using Landsat Thematic Mapper (TM) data, and Geographical Information System (GIS) tools was used to quantify and locate land cover changes, particularly degradation and regeneration of woodlands that had occurred in the study area between 1991 and 1998. The results reveal that, in the study period, much of the closed woodland has been converted to either open woodland or other cover types including agricultural farms. However, in some locations regeneration of woodlands has been observed. This precludes the presumption that cutting down trees for charcoal production must result in irreversible degradation. Given the fact that charcoal is and will remain, at least in a foreseeable future, the main domestic energy source, sustainable use of the woodland coupled with more use of other energy sources seems to be our best strategy if we want to sustain the remaining woodland.