

Lessons from two long-term hydrological studies in Kenya and Sri Lanka

Mungaia, D.N.

Abstract:

The rate and characteristics of land use change in tropical watersheds due to changing demographic, economic and policy factors have important consequences for catchment health and environmental services. Few tropical watershed studies have lasted long enough to facilitate a credible analysis of the long-term effects of land use change on the environmental services provided by watersheds. This paper examines the driving forces and patterns of historical land use change in two long-term watershed studies in Kenya and Sri Lanka and their hydrological impacts. The upper Ewaso Ng'iro north basin is located to the north and west of Mt. Kenya, and has experienced dramatic changes in both land ownership and land use due to rapid population growth of 7–8% per annum. The upper Nilwala basin is located in the south of Sri Lanka and the area has undergone serious deforestation over the last 50 years, for agricultural land uses mainly for tea and home gardens. The loss of watershed functions associated with the impacts of land use change and their socio-economic dimensions are discussed, along with lessons that can be drawn from these studies. These case studies confirm the importance of long-term monitoring of the interaction between land use changes and catchment health. Moreover, the involvement of all stakeholders is crucial for problem identification through to the research and the search for any viable ecological, social and economical solutions. A holistic approach involving relevant disciplines in watershed studies is vital. The paper concludes that use of models that integrate both biophysical and socio-economic data should be encouraged to derive decision support tools for farmers and managers alike who are faced with resolving conflicts and other issues related to limited land and water resources