Vulnerability of biophysical and socio-economic systems in the Mau Forest Complex to climate change

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ABSTRACT

The effects of climate change whether economic, social or environmental have been felt by not only environmentalists, but also small farmers; rural and urban poor; women, children and the elderly who are the most vulnerable and hit the hardest; as well as communities which may be forced to relocate. The effects of climate change are not simply environmental, a holistic approach must be taken to understand its effects. This study was carried out within the precincts of Mau Forest Complex (MFC) to assess the vulnerability of biophysical and socio-economic systems to the impacts of climate change and variability (CCV). A household survey with particular emphasis on gender, age and marginalized groups was carried out. Household sample size was calculated based on probability proportional to estimated size and proportionate stratified multistage clustered sampling design and purposive snowball sampling for key informant interviews were used to determine the sample respondents. The data which was collected using questionnaires, key informant interviews, field observations and desktop reviews was then analyzed using SPSS software and excel spreadsheets. The results from 405 respondents revealed that biophysical and socio-economic systems especially the forest and water resources, food production (farm produce and livestock products), women, elderly, children, sick and marginalized groups are greatly vulnerable to the impacts of CCV as indicated by existence of climate related food insecurity, diseases, infections, deaths and livelihood sources uncertainties. The findings revealed that 84 % of the respondents were aware of CCV and that their perception of CCV was influenced by the occurrence of extreme weather events such as floods, drought, landslides, heat and cold waves; and persistent reduction in the forests composition in terms of water resources (rivers, swamps, spring, marshes and wells); forests coverage (number of trees, Pasture, flowering plants, wild fruits and medicinal plants), wildlife, birds, beehives and fuel wood. As a result, afforestation, reforestation, agroforestry, home solar systems, energy efficient appliances, improved cook stoves, adoption of drought tolerant breeds, drip irrigation, conservation tillage, community environmental conservation awareness and proper waste management have been adopted to help cope with the changes. In order to inform decision on formulation of appropriate and adequate adaptive strategies and policies, there is dire need to strengthen forests and societal adaptive capacities, response strategies, resilience and gender parity.

***Key words**: Climate change; Climate Change Variability (CCV) Environmental Conservation*