

TREE PLANTING TREND AND ON-FARM MANAGEMENT PRACTICES FOR CARBON SEQUESTRATION IN KAREMO DIVISION IN SIAYA COUNTY: KENYA

Tree planting and on-farm management practices has been taking place annually in Karemo Division for several years, however, density, and the amount of carbon that trees can significantly sequesters and has not been determined. There are challenges posed by climate change, which has attracted a lot of attention to develop mitigation strategies such as carbon credits. This thesis sought to find out if tree planting trend and on-farm practices has improved farm forestry and carbon capacity that trees can sequesters. The study based on Planned Behavioural, System and Transactive Theories. Overall objective aimed at finding the number of trees on the farms, on-management practices in relation carbon sequestration and the role of rural forest development institutions. Specific objectives were: assessing the average farm size and number of trees contain in relation to carbon sequestration, assess tree planting trend from 1985-2014, on-farm management practices in relation to survival rate and role rural forest development institutions on farm forestry. The hypothesis were: (H_0) on-farm management practices has no significantly effects on tree planting trend in the study area, (H_0) tree survival is not associated with the type of tools used by farm forestry management and (H_0) role of rural forest development institutions has not improved farm forestry in Karemo Division. Tools used were as per objective includes: Current average farm size: Field visit and questionnaires, carbon amount: Field visit and questionnaires, on-farm tree management practices: Field visit and questionnaires. Rural forest development institutions: Field visit, group discussion and questionnaires. Survey research design was employed and sample size of 234 farmers was selected from a target population of 600 farmers from register in county forest office, Siaya. Normal distribution: Shapiro-Wilk test; standard normal distribution. Current average farm size, carbon amount: Descriptive statistic and CO2FIX V.2 model; results shows that they are 35 trees per acre and present trees sequesters 8.8% of carbon dioxide from the atmospheres, tree-planting trend modeling with differential equations, Euler's method shows that 3.7% trees has increased in the last 28 year and Land sat images from 1985-2014. On-farm management practices: Regression analysis; finding was that management practices has improved survival rate and χ^2 ; tool management has improved survival rate. Role of rural forest development institutions two-way ANOVA; results indicates institutions has improved farm forestry management in the study area. Tree planting trend, has significantly increase trees in the farms. Study recommends Participatory Planning for Eco-Commercial Tree Farming (PPECTP) as a concept for afforestation strategies by all stakeholders.