

**CLIMATE VARIABILITY AND FARMER ADAPTATION STRATEGIES IN KAKAMEGA COUNTY, KENYA**

**ABSTRACT**

Climate fluctuates naturally on all time scales diurnally, seasonally, annually and decadal. The short-medium term fluctuations around some mean state on climate scales, is referred to as climate variability. Impacts of climate variability include amongst others: increase in extreme weather conditions; land degradation, changes in rainfall trends and patterns, diminishing natural resource productivity; and in some areas, irreversible loss of biodiversity. Agriculture is inherently sensitive to climatic conditions and hence vulnerable to climate change. In this context, climate change has increased production risks in many farming systems and reduced the ability of farmers and rural communities to produce food for their communities. The severity of these impacts depends in large part on the extent of adaptation to the impacts of climate variability. Adaptation has the potential to substantially reduce many of the adverse impacts of climate variability and enhance beneficial impacts. These needs should be assessed at the level of farmer household, so that poor and vulnerable people dependent on agriculture can be appropriately targeted. The study will therefore assess farmer adaptation strategies to the impacts of climate variability. It seeks to gain insights from the farmers and hence is based on farm household survey in Kakamega county, Kenya. The county is the second most populous in Kenya with 51% of its population living below poverty line and mainly relying on subsistence farming for food and livelihoods. The study objectives are to; explore the trends in climate parameters, rainfall and temperature over the period 2001-2013; assess the impact of the changes in the climate parameters, rainfall and temperature, on crop and livestock production and evaluate farmer adaptation strategies towards these impacts. It will adopt three designs; longitudinal survey, correlational and evaluative. Multistage sampling strategy will be used to obtain the geographical areas from where four hundred farmers will be randomly sampled. Key informants will be purposely sampled from; Ministry of Agriculture, Livestock and Fisheries officers, stakeholder sector such as the sugar industry, Kenya Forest Services (KFS), Kenya Forest Research Institute (KFRI), Lake Basin Development Authority (LBDA), Kenya Agricultural Research Institute (KARI), Kenya Sugar Research Foundation (KSF), National Environment Management Authority (NEMA), International Livestock Research Institute (ILRI), Kenya Meteorological Services (KMS), NGO's and Stockists. Questionnaires, focus group discussions, key informant interview and observation check lists will be used to collect data. Data will be analyzed both descriptively and inferentially by use of SPSS and excel Microsoft office suite. Specific analytical techniques will be; time series analysis, correlation, regression, analysis of variance (ANOVA) and Chi test. It is envisaged that the findings of this study will enrich existing knowledge, inform crucial policy decisions aimed to reduce vulnerability of the agricultural sector to climate variability. Further, farmers will be actively involved in climate change and variability adaptation and hence enhance food security.

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