

Climate change has emerged as one of the global concern over the recent 30 years and it affects aspects of the society such as health, food security, international peace and security. This study was governed by Resilience and System theory and a conceptual framework linking climate change to fishing-based livelihoods. The objective of this study was to assess resilience to climate change by fishing-based livelihoods along Lake Victoria beaches in Siaya County, Kenya. The significance of this study was to generate new knowledge that were to be beneficial in providing solutions on how best resilience to climate change by fishing-based livelihoods along the beaches in Siaya County could be achieved. This study adopted a cross-sectional research design with a sample of 385 household heads (proportionately selected from a population of 885,762 persons) being used. It used primary and secondary data. The first objective was to analyze rainfall and temperature variations overtime 1986-2015. The Mann-Kendall test results from mean annual average temperature, and mean annual rainfall indicated that Siaya County had variation overtime (1986-2015) with consecutive years having no specified trend on the variation. This indicates that climate change is real and will continue to be there in the coming years whether through natural or man-made causes. The second objective was to determine vulnerability to climate change by fishing-based livelihoods and was analyzed using thematic analysis. Malaria was ranked the most common disease and a source of vulnerability at the beaches. There was damage and loss of gears, boats, landing sites and lives, and changes in fish catches and sizes, income and fish consumption during the perceived floods and droughts seasons. Women, children and fishers were ranked the most vulnerable groups to climate change. In this case the indicators for vulnerability were diseases, poor health provisions and loss and change of livelihoods with changing of seasons that is floods and droughts. The third objective was to evaluate fishers' perceptions on climate change. With a logistic regression model having coefficients which provided the relationship between the probability (socio-demographic characteristics) influences on predictors (perception on climate change), fishers had perception on climate change. They were aware of changes in climate manifested by unpredictable seasons, floods and droughts and these perceptions were majorly influenced by their socio-demographic characteristics. The fourth objective was to assess the adaptation and mitigation strategies to climate change by fishing-based livelihoods which was analyzed using content analysis. The fishers adapted to the changes through increasing time on fishing grounds, migrating, changing target species and fishing gears and diversifying to non-fishing livelihoods like trade and farming. Mitigation measures included planting trees, protection of wetlands and riparian zones, providing low interests for credit and ensuring food security. Adaptation and mitigation measures were constrained by limited credit, awareness, inadequate enforcement of laws and poverty. The required interventions included improving access to credit, increasing awareness, providing low interest for credit, and ensuring food security. The meteorological department of Siaya County should ensure that rainfall and temperature variations of the county is made available to community members. There is need to sensitize community members on the importance of fishing-based livelihood activities and how their sustainability can be ensured even with changes in climate. There is need to improve on the health sector by making health facilities and providers available at the beach to help fisher communities with climatic shocks resulting on deaths and accidents.

#### ABSTRACT