

Vulnerability assessment of rain-fed agriculture to climate change and variability in semi-arid areas of Tanzania: the case of Tabora Urban and Uyui District

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This study assessed vulnerability of rain-fed agriculture to climate change and variability in four clustered villages, three from Uyui district and one from Tabora district. Villages studied in Uyui were Mbola, Isila and Mpenge while in Tabora urban was Tumbi. Both secondary and primary data on biophysical and socio-economic aspects were collected using different approaches including structured interviews, focus group discussion, documentary review and field observations. Structured interviews were administered to 7% of all farmers selected at random from the four villages and 30 research and extension officers obtained through accidental purposeful sampling. Simple regression and t-test analyses of numeric data for rainfall and temperature collected over the last 35 growing seasons were performed using MS Excel and SAS respectively. Non-numeric data were coded, summarized and analyzed using SPSS spreadsheet. Results showed that overall rainfall amount was declining and distribution was varying both in time and space. Inter –seasonal dry spells between January and February appeared to increase both in duration and frequency. Increase in temperature was highly significant ($p \leq 0.01$), however, with minimum temperature increasing much faster than maximum. Farmers, research and extension officers also perceived these changes by the help of a series of indicators. Nevertheless, perception on the climate change indicators varied depending on the type of livelihood activity most affected. Major implication on rain-fed agriculture included possible shrinking of the growing season, increasing moisture and heat stress to common food security. Basing on the results above, this study concludes that there is strong evidence demonstrating the vulnerability of rain-fed agriculture to negative impacts of CC&V in the study area. Among recommendations made is a need for multi-level interventions on adaption to climate change and variability taking into account a wide range of stakeholders' involvement.