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Household Climate-Resilience Index Development for the Health Sector in Tanzania: Use of Demographic and Health Surveys Data Linked with Remote Sensing

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Abstract : There is strong evidence that climate has changed significantly affecting various sectors including public health. The recommended feasible solution is adopting development trajectories which combine both mitigation and adaptation measures for improving resilience pathways. This approach demands a consideration for complex interactions between climate and social-ecological systems. While other sectors such as agriculture and water have developed climate resilience indices, the public health sector in Tanzania is still lagging behind. The aim of this study was to find out how can we use Demographic and Health Surveys (DHS) linked with Remote Sensing (RS) technology and metrological information as tools to inform climate change resilient development and evaluation for the health sector. Methodological review was conducted whereby a number of studies were content analyzed to find appropriate indicators and indices for climate resilience household and their integration approach. These indicators were critically reviewed, listed, filtered and their sources determined. Preliminary identification and ranking of indicators were conducted using participatory approach of pairwise weighting by selected national stakeholders from meeting/conferences on human health and climate change sciences in Tanzania. DHS datasets were retrieved from Measure Evaluation project, processed and critically analyzed for possible climate change indicators. Other sources for indicators of climate change exposure were also identified. For the purpose of preliminary reporting, operationalization of selected indicators was discussed to produce methodological approach to be used in resilience comparative analysis study. It was found that household climate resilient index depends on the combination of three indices namely Household Adaptive and Mitigation Capacity (HC), Household Health Sensitivity (HHS) and Household Exposure Status (HES). It was also found that, DHS alone cannot complement resilient evaluation unless integrated with other data sources notably flooding data as a measure of vulnerability, remote sensing image of Normalized Vegetation Index (NDVI) and Metrological data (deviation from rainfall pattern). It can be concluded that if these indices retrieved from DHS data sets are computed and scientifically integrated can produce single climate resilience index and resilience maps could be generated at different spatial and time scales to enhance targeted interventions for climate resilient development and evaluations. However, further studies are need to test for the sensitivity of index in resilience comparative analysis among selected regions.

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