

**The role of geospatial techniques in assessing mangrove forest change and restoration conflicts: a case of Menai Bay Mangrove Forest, Unguja Island, Tanzania**

**Mohamed Khalfan Mohamed**

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The aim of this study was to assess the role of geospatial techniques in examining mangrove forest change and restoration conflicts at Menai bay mangrove forest, Unguja Island, Tanzania. To accomplish this, the study was conducted in five villages namely unguja ukuu kaepwani, tindini, ng'ambwa, uzi, and pete. A total of 129 respondents in the study area were selected as sample to represent the entire population. In order to investigate the mangrove forest change, this digitized, processed and analyzed aerial images of 1978, 1985, 2005, 2012 and 2017. The semi-structured interview with participatory mapping technique was also used to examine community perception on factors that contributed to mangrove forest change and in identifying mangrove forest restoration conflicts. Other data collection technique involved were focus group discussion and field observation: Both spatial and nono-spatial techniques such as SPSS and GIS were used to analyses the data while tables, graphs and maps were used to present the findings. The results of this study showed that socio-demographic factors such as household size, income, educational level, marriage and occupation have substantively influenced the deforestation of mangrove forest. In addition to that this study revealed that increasing population, poverty, fewer varieties of livelihood occupations, poor commitments ad low level of literacy contributed to mangrove forest deforestation. Perception of respondents are also supported by scientific analysis of aerial images of 1978, 1985, 2005, 2012 and 2017 using GIS which also supported that mangrove forest have experienced positive and negative changes from 1978 to 2017 due to utilization of mangrove resources. GIS analysis also found that dense mangrove forests in 1978 occupied 323 hectors but in 2017 only 163 hectors remained to be dense mangrove about 154 hectors turned to low dense mangrove and 59 hectors were deforested. Deforestation of mangrove forest have negative socio-economic and cultural implications on the community livelihoods in the study area since it has reduced availability of various forest products upon which local communities solely depended such as wood materials for house construction and cooking fuels. During rehabilitation of mangrove forests, there are various categories of conflicts emerged due to individual interests. Findings also revealed that there are some areas which are very prone to

such conflicts and there are other areas of potential conflicts. The study puts the following recommendations; the local government should formulate the strong management's policy by involving local people who have a stake in conservation and management of mangrove forests in their areas. In the same time small scale community-based fisheries must be encouraged in all five wards as the majority of coastal population is engaged in this activity since the interests and rights of local communities must be also safeguarded.