Assessing local drivers influencing Land Use Cover Change (LUCC) in Southwestern Ghana: A Mixed-Method Approach (MMA) Analyses.

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Abstract

Changes in land cover have persisted throughout the history of mankind, and are the direct and indirect consequence of human actions to secure essential resources. Understanding direct and indirect factors that influence land use cover change (LUCC) is essential for modelling future LUCC in developing countries. The study analyses local drivers of LUCC in Southwestern Ghana using the mixed-method approach. The approach aided in identifying key drivers of LUCC, using different research strategies for comparisons through confidence level analysis and Analytic Hierarchy Process (AHP). We used expert interviews, literature review and geostatistical tools to ascertain causative factors triggering such unprecedented changes. Geospatial analysis depicted a decline in forests (-1.65 km2yr-1.) and areas covered by water bodies (-0.55 km2yr-1.). A remarkable increase in built-up (+25.77 km2yr-1.) and farmlands/shrubs (+7.4km2yr-1.) areas were also observed. Population growth, expansion of settlements and infrastructure, coupled with agricultural expansion are at the centre of the LUCC-environment nexus, based on the confidence level table. A steady increase in surface temperature can be attributed to the unprecedented LUCC over the past 50 years. Socio-economic development in Southwestern Ghana is fuelling interest in the relation between LUCC and environmental change. Biophysical, cultural and technological factors are also considered key drivers despite the "medium-to-very low confidence" in results generated. They could potentially impact climate-sensitive sectors that significantly modify land-use systems from the pessimists and optimist's perspective. We, therefore, propose further analyses of LUCC drivers with medium to very low confidence levels.

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