

Simulation and Prediction of Future Land Use-Land Cover (LULC) Change in Limbe City, Cameroon



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Before the design and implementation of a development plan, monitoring and assessing are critical parts of adaptive management. Using past LULC changes, it is feasible to develop a model that can forecast land use trends over a certain time in a region. The coastal city of Limbe, Cameroon, is fast growing and there is a need for the local government to forecast the trend of LULC. This paper aims to stimulate and predict 2040 LULC change in Limbe based 2002 and 2013 LULC data using CA Markov models in MOLUSCE plugin in QGIS. Four spatial variables including elevation, slope, distance to road and distance to neighborhoods acting as major driving forces of land use change were considered in this study. The prediction results indicate that urban and forest are projected to increase by approximately 64.73 % and 0.07 % while agriculture is projected to decrease by 34.42% from 2020 to the predicted 2040. The spatial distribution of the LULC also depicts that most of the urban growth will occur predominantly in agriculture and forest areas. The study demonstrates that the ANN-CA model can be successfully used to run several LULC change simulations within a single CA model while considering the complex interactions and competition between different land use classes.

Biography:

Lucy deba, an Environmental Planner/Urban Geographer with research interests in spatial and data analysis as well as land use modelling, policies, and decision-making processes. She is currently a GIS lead data analyst at Exzeo, FL. Lucy has a PhD degree in the Geography and Environmental Sciences & Policy program at the University of South Florida (USF), USA. Lucy also has a first Master's degree in Environmental Sanitation from Ghent University, Belgium and a second Master's degree in Urban and Regional Planning from USF. Her Bachelor's degree was in Environmental Science from Buea University, Cameroon.