

Population Dynamics and Land Use/Land Cover Change on the Chilalo-Galama Mountain Range, Ethiopia

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Abstract : Changes in land use are mostly credited to human actions that result in negative impacts on biodiversity and ecosystem functions. This study aims to analyze the dynamics of land use and land cover changes for sustainable natural resources planning and management. Chilalo-Galama Mountain Range, Ethiopia. This study used Thematic Mapper 05 (TM) for 1986, 2001 and Landsat 8 (OLI) data 2017. Additionally, data from the Central Statistics Agency on human population growth were analyzed. Semi-Automatic classification plugin (SCP) in QGIS 3.2.3 software was used for image classification. Global positioning system, field observations and focus group discussions were used for ground verification. Land Use Land Cover (LU/LC) change analysis was using maximum likelihood supervised classification and changes were calculated for the 1986-2001 and the 2001-2017 and 1986-2017 periods. The results show that agricultural land increased from 27.85% (1986) to 44.43% and 51.32% in 2001 and 2017, respectively with the overall accuracies of 92% (1986), 90.36% (2001), and 88% (2017). On the other hand, forests decreased from 8.51% (1986) to 7.64 (2001) and 4.46% (2017), and grassland decreased from 37.47% (1986) to 15.22%, and 15.01% in 2001 and 2017, respectively. It indicates for the years 1986-2017 the largest area cover gain of agricultural land was obtained from grassland. The matrix also shows that shrubland gained land from agricultural land, afro-alpine, and forest land. Population dynamics is found to be one of the major driving forces for the LU/LC changes in the study area.

Keywords : Landsat, LU/LC change, Semi-Automatic classification plugin, population dynamics, Ethiopia

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