MULTI-TEMPORAL LAND USE AND LAND COVER ANALYSIS DURING 30 YEARS PERIOD IN SAKAERAT BIOSPHERE RESERVE, THAILAND

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**Abstract**: The Sakaerat Biosphere Reserve (SBR) is the first leading biodiversity hotspot in Thailand and covers the total area of 1,632.48 sq.km. It is one of four biosphere reserve areas which are created and established under the support of United Nations Educational, Scientific, and Cultural Organization (UNESCO) on Man and the Biosphere (MAB) programme in order to sustain and balance for conserving, maintaining, and developing of natural resources utilization. The reserve was established into three management zones which were core, buffer and transition zones. The zone concept was designed to be flexible and implementable in a variety of ways to facilitate local needs and conditions. The objective of this research aims to investigate land use and land cover (LULC) changes in the SBR, by which classify and assess changes of multi-temporal of remotely sensed datasets on LULC classes during 30 years period as of 1980, 2002, and 2010. Classification and assessment of changes were applied on 9 different LULC classes, including paddy field, field crop, orchard/tree, natural forest, disturbed forest, forest plantation, urban/built-up, water body and miscellaneous. LULC classification in 1980 indicated that the dominant LULC classes were natural forest (46.23%), field crop (27.79%), and paddy field (8.84%), which occupied large parts of the study area whereas in 2002 indicated the top most 44.38 % of natural forest, 27.83% of field crop and 7.40% of paddy filed. Moreover, in 2010 natural forest, field crop, paddy field, and orchard/tree covered the area of 44.40%, 27.68%, 7.35%, and 6.33%, respectively. Change detection assessment between two periods of 1980 to 2002 and 2002 to 2010 founded that the fluctuation of changes appeared mostly within forest classes in which decreasing of natural forest in 1980 to 2002, but tended to be stable in 2002 to 2010. Meanwhile, severely disturbed forest appeared in 1980 to 2002 and was gradually decreased in 2002 to 2010. Additionally, urban/built-up and water body classes showed distinctively increasing from 1980 to 2010. Furthermore, LULC status in SBR management zones revealed that in the core zone which was securely protected sites natural forest occupied 93.52%, 96.37%, and 97.20% of the area in 1980, 2002, and 2010, respectively while in buffer zone showed that all forests classes still appeared dominant over other classes. This indicated well manage activities in the buffer zone. Additionally, in transition zone, result showed significantly change in urban/built-up class with highly increasing change from 1980, 2002 to 2010 at 1.51%, 2.59%, and 3.31%, respectively. It was evidenced that urban/built-up class had dramatically expand during the 30 years period.

Keyword: Land use and land cover/Classification and assessment/Biosphere reserve**/**Management zones