DETERMINING SUITABLE AREAS FOR DELIBERATE AFFORESTATION USING SATELLITE IMAGERY IN ULAANBAATAR CITY OF MONGOLIA

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Earth's surface temperature is continuously increasing, and the land cover is changing the amount of bare land in recent years. Besides, the amount of impervious surface and surface heat is increasing due to human activities, especially in the city. Therefore, we need to identify suitable areas to increase the amount of vegetation and forest cover. This study aims to determine the suitability of deliberate afforestation in Ulaanbaatar city. Ulaanbaatar city is located at an average height of 1400 meters above sea level and covers 470444 hectares. Landsat OLI8 and ASTER satellite images were applied in this study. Normalized Difference Moisture Index (NDMI), Land surface temperature (LST), and Normalized Difference Vegetation Index (NDVI) were calculated using Landsat OLI8 imagery to determine the forested area of Ulaanbaatar city. The Analytical Hierarchy Process (AHP) method was applied to determine the suitability of deliberate afforestation arrangements. It was defined as unsuitable, highly unsuitable, moderate, suitable, and forested which is classified into 5 categories. The results are shown in 72030 ha of unsuitable, 139500 ha of highly unsuitable, 89670 ha of moderate, 45785.35 ha of suitable area for afforestation and 97280 ha of forested area in Ulaanbaatar city. Mongolia has seen an increase in the number of days with strong winds and soil degradation in arid lands due to global climate change in recent years. As a solution to this process, we are faced with the need to afforest a large area based on a scientific basis to define suitable areas. Therefore, this study is an important research work that introduces the methodology of selecting suitable areas using the AHP method.

Keywords: AHP, afforestation, remote sensing, GIS, Ulaanbaatar city