Abstract No: 250 ***Earth and Environmental Sciences***

CLASSIFICATION SYSTEM FOR URBAN GREEN SPACES: A CASE STUDY FROM COLOMBO CITY, SRI LANKA

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Urban Green Space (UGS) is a land area that is partly or wholly covered with grass, trees, shrubs, or other vegetation in urban areas. These UGSs provide multiple ecosystem services such as air and water purification, climate regulation, disaster risk reduction, habitat for species and biodiversity enhancement. Further, they present diverse opportunities to mediate the adverse effects of climate-induced disasters while simultaneously improving human health, well-being, and economic and social benefits. Strategic planning and management are vital in obtaining the optimal benefits of UGSs, and the absence of clear demarcation and proper classification of UGSs makes sustainable development goals unachievable. Thus, this study spatially mapped existing UGSs with clear demarcations using Sentinel 2 Level-A satellite images and ArcGIS 10.2. A systematic classification system was also developed for UGSs in Colombo city, Sri Lanka as a model. This would enable planners to devise effective urban management plans to create a climate-resilient city in the future. Based on the past literature, field observations, topographic maps, land-use maps, and high-resolution satellite images, a list of criteria and sub-criteria was used to develop the UGS classification system. The main criteria used for the classification are the structure and functionality of urban UGSs. Normalized Difference Vegetation Index (NDVI; using Band 8 and Band 4) technique was utilized for UGS extraction. Vegetated areas were further classified based on their vegetation density by using NDVI threshold values. The extent of UGS in the Colombo Municipal Council area is 35.4% of the total land extent. The analysis defined four categories of urban green spaces: parks and conservation green spaces (15% of total UGS), shadings and greenways (21%), community green space (13%), and residential and amenity green spaces (51%). This systematic classification of UGSs can be a first step towards categorizing urban green spaces and addressing issues in sustainable city development in the future.

Financial assistance from Senate Research Committee Long-Term (Grant No SRC/ LT/ 2021/ 07) is acknowledged.

Keywords: Climate-resilient city, Green space classification, Natural and semi-natural areas, Sustainable city development, Urban green spaces