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A Modified Green Building Rating System to Evaluate Sustainability Aspects in Residential Apartments in Sri Lanka

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Residential apartments have been identified as the most popular solution for the rapid increase of population in urban cities. However, in some cases, sustainability aspects (environmental, social and economic) of these apartments are abandoned. Further, there is no unique system to evaluate the sustainability of these apartments in Sri Lanka, and most international green building rating systems have unequal point distribution among sustainability subsets, which causes heterogeneity among subsets. Thus, this research was designed to develop a modified sustainable rating system for residential apartments in Sri Lanka, thereby reducing the sustainable subset heterogeneity by introducing modified point distribution percentages (Environment [40%], Social and Economic [30%]). The apartments certified under the GREENSL rating system for the built environment were selected as three case studies. The claimed points for GREENSL certification by GREENSL Platinum, Gold and Silver-rated apartments were evaluated under the three sustainability subsets. The results revealed that three subsets were not equally considered in the GREENSL rating system (Platinum-rated: Environment [50%], Social [21.6%], Economic [28.4%]; Gold-rated: Environment [50%] Social [29.5%) Economic [20.5%]; Silver-rated: Environment [47.6%] Social [27.8%] Economic [24.6%]). Further, the sustainability status is satisfactory in the social dimension, irrespective of the level of certification. Based on the findings, a modified rating system was developed for residential apartments by adopting new sustainability criteria including compartmentalisation, interior moisture management, air purification, enhancing acoustic performance and disaster risk reduction. The study revealed that sustainability practices of residential apartments in Sri Lanka need further improvement, while providing more weight on social and economic pillars.

Keywords: *GREENSL for built environment, residential apartments, sustainability subsets, sustainable subset heterogeneity*