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A comparative analysis of site planning and design among green building rating tools

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11 **Abstract**

12 Appropriate site planning and design (SPD) is a key solution for effective land
13 use on construction sites. A Green Building Rating Tool (GBRT) includes systematic
14 assessment criteria to evaluate whether a building is “green” or not. The effectiveness
15 of GBRTs have been explored in energy use, waste management, and indoor air
16 quality in green buildings. However, no investigation has been made to evaluate the
17 effectiveness of GBRTs in site planning and design aspects. In this research, five
18 international GBRTs were selected for a comparative analysis, to better understand the
19 measures that help improve SPD in green buildings. Content analysis was applied to
20 record and compare the relevant significance of SPD-related items in the selected
21 GBRTs. The comparative study revealed that in terms of SPD, Building
22 Environmental Assessment Method (BEAM) Plus allocates the highest importance
23 while Green Mark (GM) allocates the lowest. Each GBRT emphasizes different
24 aspects of SPD in green buildings, and BEAM Plus involves the most SPD related
25 items. In addition, the main variables for effective SPD were identified and a
26 theoretical framework was further proposed. The proposed theoretical framework can
27 serve as a foundation for successful SPD in green buildings. The application and
28 potential limitations of the theoretical framework were also discussed.

29 **Keywords:** Construction site, Green building rating tool, Site planning and design,
30 Theoretical framework

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