

Creation of an International Green Building Accessibility Index

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As the concern to preserve our planet's natural resources grows, society has turned to sustainable practices in order to lessen the demand. These practices have infiltrated all major industries, including the construction industry. Sustainable construction or "Green Building" has become a global trend, supporting the reduction of the demand for natural resources. The problem is how to assess the sustainability efforts achieved within the green building industry. Many assessment systems exist to measure sustainability of individual buildings such as Leadership in Energy and Environmental Design (LEED), Building Research Establishment Environmental Assessment Methodology (BREEAM), German Sustainable Building Council (DGNB) and so on. There are also assessment systems that measure countries' sustainability levels such as Environmental Performance Index (EPI). There are currently no assessment systems to measure the sustainability of a country's building industry. This study introduces the concept and calculation of the Green Building Accessibility Index (GBAI) to measure the sustainability of the building industry on a countrywide basis. Authors aim to create the GBAI, which represents how accessible green buildings are to a country's residents by including a Population Density Factor that accounts for accessibility of the buildings. Authors will present their results by illustrating their calculations for a small sample of 10 countries. The GBAI consists of a green building rating, a density factor and a normalization process. The green building rating represents the total square footage of certified sustainable buildings from the two most frequently used rating systems in each country. The density factor represents the average residential square footage per person in each country being assessed. Research assumptions are that the residential density norms would correlate with commercial density norms and that square footages of certified buildings from the various systems represent green buildings. The GBAI score initially obtained through the green building rating and the density factor serves as a Raw GBAI. Through a normalization process, researchers arrive at a Scored GBAI rating. This normalization consists of setting the highest score to 100, and scaling the other countries proportionally. The result of this research is a functional formula for the GBAI. In order to test the formula, authors conducted a trial run with 10 countries. Authors used the 10 countries with the highest GDP, and with public sustainable rating systems, population, and population density data. Authors are in the process of collecting pertinent data from the rating systems for each country being studied. One limitation to this study is looking at the square footage from only the top two most used rating systems in each country as opposed to total certified building square footage in each country. Future research will focus on identification of prevailing green building rating systems in each country and incorporating those into the GBAI calculation. Through the calculation of the 10 countries' Green Building Accessibility Index, the performance of the green building industry in a country may be compared to others. Authors hope that the comparison will drive competition among various countries towards a positive impact in the global green building industry. Future research to include more sustainable rating systems and expanding the number of countries presented in this study to a larger group of countries.