Towards Sustainable Urban Futures: Evaluating Urban Sustainability Performance of the Gold Coast, Australia

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Creating sustainable urban environments is one of the challenging issues that need a clear vision and implementation strategies involving changes in governmental values and decision making process for local governments. Particularly, internalization of environmental externalities of daily urban activities (e.g. manufacturing, transportation and so on) has immense importance for which local policies are formulated to provide better living conditions for the people inhabiting urban areas. Even if environmental problems are defined succinctly by various stakeholders, complicated nature of sustainability issues demand a structured evaluation strategy and well-defined sustainability parameters for an efficient and effective policy making. Following this reasoning, this study involves assessment of sustainability performance of the urban settings mainly focusing on environmental problems caused by rapid urban expansion and transformation. By taking into account land-use and transportation interaction, it tries to reveal how future urban developments would alter daily urban travel behavior of the people and affect urban and natural environment. The paper introduces a grid-based indexing method developed for this research and trailed as a GIS-based decision support tool to analyze and model selected spatial and aspatial indicators of sustainability in the Gold Coast. This process reveals parameters of site specific relationship among selected indicators that are used to evaluate index-based performance characteristics of the area. The evaluation is made through an embedded decision support module by assigning relative weights to indicators. Resolution of selected grid-based unit of analysis provides insights about service level of projected urban development proposals at a disaggregate level, such as accessibility to transportation and urban services, and pollution. The paper concludes by discussing the findings including the capacity of the decision support system to assist decision-makers in determining problematic areas and developing intervention policies for sustainable outcomes of future developments.

KEY WORDS: Sustainable urban development, planning decision support systems, geographic information systems, spatial indexing