A GIS and indexing scheme to screen brownfields for area-wide redevelopment planning

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In this study, we present an indexing scheme to screen large numbers of brownfield sites in wide areas (municipalities, counties, states or other types of districts) in order to develop initial planning strategies for fund allocation and redevelopment. The scheme entails three dimensions, socioeconomic, smart growth and environmental, for each of which an index is constructed on the basis of location-specific variables irrespective of the target end use. Socioeconomic variables include population density, property values and unemployment which collectively represent the potential contribution of brownfield redevelopment to economic growth. The smart growth or livability index was developed on the basis of the LEED ND evaluation scheme of the U.S. Green Building Council, isolating location-specific

features. Finally, the environmental index incorporates variables that represent the potential source of contamination (past use), pathway of exposure (soil permeability) and receptors (zoning, proximity to water bodies, parks, critical habitats, open spaces, wetlands and floodplains). The application of the indices to the City of New Haven, Connecticut as a case study yielded four priority sites out of 47 in the city inventory. Even though the indices were sensitive to the chosen weights, prioritization of sites in clusters reduced the effect; the top four sites were identical in the case study and 31 out of 47 sites were present in the same cluster regardless of the weighting scheme.