

A model for sustainable site layout design of social housing with Pareto Genetic Algorithm: SSPM

Yazgı Badem Aksoy, Gülen Çağdaş and Özgün Balaban

Istanbul Technical University

yazbadem@hotmail.com, cagdas@itu.edu.tr, ozgunbalaban@gmail.com

Abstract. Nowadays as the aim to reduce the environmental impact of buildings becomes more apparent, a new architectural design approach is gaining momentum called sustainable architectural design. Sustainable architectural design process includes some regulations itself, which requires calculations, comparisons and consists of several possible conflicting objectives that need to be considered together. A successful green building design can be performed by the creation of alternative designs generated according to all the sustainability parameters and local regulations in conceptual design stage. As there are conflicting criteria's according to LEED and BREEM sustainable site parameters, local regulations and local climate conditions, an efficient decision support system can be developed by the help of Pareto based non-dominated genetic algorithm (NSGA-II) which is used for several possibly conflicting objectives that need to be considered together. In this paper, a model which aims to produce site layout alternatives according to sustainability criteria for cooperative apartment house complexes, will be mentioned.

Keywords:Sustainable Site Layout Design, Multi Objective Genetic Algorithm, LEED-BREEM.