



SBE16 Tallinn and Helsinki Conference; Build Green and Renovate Deep, 5-7 October 2016,
Tallinn and Helsinki

A rating system for integrating building performance tools in developing countries

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Abstract

The increasing attention on the environment impacts of the activities of the companies is a phenomena that arise from many industrial sectors. Regarding the construction and property industries, in last decades the acknowledgement of their responsibilities for the environment caused a shift in how buildings are designed, built and operated.

The requirement of always more innovative and sustainable technologies and materials for buildings takes shape from two different point of view of the global construction industry. The basis of these two different orientations of the world construction sector would be found in the divergent demand of the developed and developing Countries.

The measurement of the environmental performance of new and existing buildings is fundamental to weigh up the effects and the potential improvements of the building energy regulations. In last decades many building performance assessment tools were developed in order to sustain the “Green Building philosophy”. The Leadership in Energy and Environmental Design (LEED) system is considered one of the most popular green building certification program used in worldwide. In the developing countries scenario many tools rose from the LEED system, that is one of a reference framework for researches. In this paper we propose a short review on the researches of the role of the buildings energy regulations in developing countries and the development of building performance assessment tools in Colombia, Qatar and Jordan. The aim of this analysis is to propose the integration of Building Rating Value (BRaVe) system to the existing tools developed in the developing countries. The BRaVe system would contribute to upgrade the variables used for a comprehensive evaluation of a building thanks to the application of a “cross-disciplinary” criteria that embrace different thematic or scientific areas.

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Peer-review under responsibility of the organizing committee of the SBE16 Tallinn and Helsinki Conference.

Keywords: Building performance evaluation; Developing Countries; Rating systems; Environment impacts; Innovative and sustainable technologies; Green Building.

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1. Introduction

In last decades, the acknowledgement of the responsibilities of the construction and property industries for the environment, caused a shift in how buildings are designed, built and managed. In according with [1] this new attitude comes from the conscious public policy decisions imposing requirements on industrial and economic activities and, also, from a growing market demand for environmentally sound products and services.

The requirement of always more innovative and sustainable technologies and materials for buildings takes shape from two different point of view of the global construction industry. Therefore, the building energy regulations and polices are raising in two different ways. The basis of these different orientations of the world construction sector would be found in the divergent demand of the developed and developing countries[†].

The analysis of the construction investments in the global scenario, see Fig.1, highlights that before the global crisis the developed countries were the main actors in the construction investments, but during the global crisis the new “customers” of the world construction sector are the developing countries. An interesting data is show for the 2016, where the construction demand of the developing countries exceeds those of the developed countries.

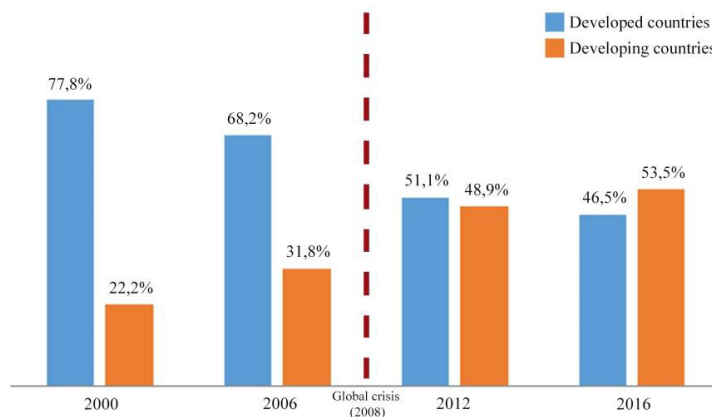


Fig. 1 The evolution of the construction investments in the developed and developing countries.

The economic and population growth of the developing countries will have to be supported by requalification of the existing urban areas as well as the construction of new infrastructures, commercial and business spaces and housings. The energy consumption produced by the growth of new buildings has led to serious environmental problems in these countries, such as increasing energy demand, global warming, air pollution and acid rain [2]. An important issue highlighted by [3], concerns the energy prices and the market conditions of the developing countries that often do not encourage the use of efficient technologies. This sentence takes in evidence one of the most bigger paradox of the contemporary construction planning: the new building philosophy, that has also called “Green Building philosophy”[‡], is not yet perceived as attractive construction project method for builders of developing countries, because most of them associate green features with expensive technologies that add cost (e.g., photovoltaic panels, greywater reuse systems) [4,5].

[†] The World Bank classifies the Countries using the Gross National Income (GNI) criteria and it divides them in four categories. The developing countries are included in the low- and middle-income types. It is important to take in evidence that the World Bank notes “The use of the term is convenient; it is not intended to imply that all economies in the group are experiencing similar development or that other economies have reached a preferred or final stage of development. Classification by income does not necessarily reflect development status.” [22]

[‡] The Green Building philosophy has emerged in order to mitigate the impact of buildings along their life cycle.

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