

# Customization of GBTool in Hong Kong

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## Abstract

In Hong Kong, there has been increasing public demand for developers to pay greater attention to the development of sustainable buildings. A creditable assessment scheme that provides targets and methods and recognition of the efforts that are made in this direction is considered to be an effective way to achieve the goal of construction sustainability. GBTool is by far the most comprehensive building environmental assessment framework and has been developed over the past 6 years through the efforts of 21 national teams. This study aims to address the customization of GBTool as a scheme to assist in the development of more sustainable buildings in Hong Kong. The general principle of triangulation is adopted in the customization process and the initiatives of the Hong Kong government and of voluntary bodies are reviewed. The gaps between the Hong Kong situation and the philosophy of GBTool are identified and a questionnaire survey and a series of in-depth interviews to elicit the attitudes of the parties involved toward the inclusion of additional issues into the customized scheme are conducted. The correlation of several major issues and the weightings across issues and criteria are identified. The results form a good basis for the development of a building sustainability assessment scheme for Hong Kong.

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## 1. Introduction

Over the past decade, various voluntary schemes for assessing the environmental performance of buildings have emerged in various parts of the world [1–3]. The first building environmental assessment method, BREEAM, which was launched and operated by the Building Research Establishment in the UK, came to prominence in the early 1990s [4,5]. It is the best-known scheme and covers 15%–20% of the new office building market in the UK [6]. BREEAM was taken as a reference model when similar schemes were developed in Canada, New Zealand, Norway, Singapore, and Hong Kong [7]. Some assessment schemes that have been developed and adopted in other territories include LEED [8], CHEERS [9], and the green building

program [10] in the US, and the eco-management and auditing scheme (EMAS) in the European Union [11].

All of these assessment schemes share the same primary objective: to stimulate market demand for buildings with improved environmental performance. Recently, a second-generation of assessment schemes has evolved from the green building council (GBC) project [11], which is collectively known as GBTool. The GBTool project is the outcome of an international collaboration of 21 national teams that aimed to develop a comprehensive and generic assessment framework that includes a set of default assessment scales and weightings that will be customized by the national teams to reflect regional practices and goals. Such a scheme will also facilitate international comparison [12,13]. The latest version of GBTool, which has been revised to address the critiques that were presented at the 1998 and 2000 conferences of the GBC [12,14], has made some progress in the transformation of an assessment framework into a market-applicable assessment tool [13].

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As society becomes more aware of the need to address increasingly urgent environmental and social concerns, sustainable development has gained a great deal of attention. Although the achievement of sustainability requires efforts to be made at all levels, from governments down to individuals, most countries have set up high-level commissions or committees to promote sustainable development. The general idea is to shift domestic schemes for the assessment of buildings toward a more “sustainable” approach that will provide targets and methods and recognize the efforts that are made in the development of more sustainable buildings [13].

GBTTool is currently the most comprehensive environmental assessment framework for building that explicitly includes the core elements of sustainable development [15] and thus the most effective way to establish a “sustainable” assessment scheme is to customize GBTTool. In the process of customization, a series of key issues need to be legitimately defined, which includes the key criteria and features that are to be included in the assessment scheme, the selection of the appropriate weightings across environmental issues, the benchmarking principles that are to be adopted, and the development of an assessment method that is applicable to the market.

However, after almost 6 years of development, very little customization has been carried out on GBTTool by the participating teams. According to Cole, this is due to the rather sophisticated format of GBTTool, the tendency to transfer scores directly from domestic assessment schemes into relevant locations within the GBC assessment architecture, and insufficient familiarity in the industry with the issues to make changes [14]. This is a fairly clear acknowledgement that there is insufficient industry discussion and momentum to trigger a shift to customize GBTTool.

In customizing GBTTool in Hong Kong, it is not only necessary to identify the key criteria and features that are to be included in the scheme, the scoring and weighting systems to be adopted, and the assessment method that is to be used, but also to initiate debate and discussion. The complex nature of the building process, which concerns environmental, social, and economic issues, cannot be solved purely based on questionnaire data or the opinions of a few experts. In this research, the general principle of the triangulation method is adopted, in which “multiple methods” that involve quantitative and qualitative approaches are employed [16]. The study consisted of three main stages. Firstly, the initiatives of the Hong Kong government and voluntary bodies were reviewed. Secondly, the structure and constraints of GBTTool were studied, and the gaps between the Hong Kong situation and the philosophy of GBTTool were identified. With reference to the identified gaps, the third stage of the study comprised a questionnaire survey followed by structured interviews

to gain a broader understanding of the parties that are involved in the GBTTool project, and to find out the industry consensus for its customization.

## 2. Hong Kong context

Although the rapid growth in the world’s industrialized economy in the past century has led to tremendous improvements in the living standards of many people, the consequent rate of non-renewable resource consumption and damage to the environment are too high to be sustainable. Sustainable development is well accepted as requiring the integration of social and environmental factors with economic factors. Hence, the balanced development of these three issues should become a common goal for all kinds of development worldwide. It is encouraging that in Hong Kong two key local studies on sustainable development were recently initiated by the government. In 1997, a working group was formed to study Hong Kong’s role in the Sustainable Development for the 21st Century project (SUSDEV 21) [17], with the mission of developing guiding principles, indicators, and criteria for the sustainable development of Hong Kong. The working group published a final report in 2000 [18], in which key sustainability indicators were identified. The preliminary focus of this project is on the promotion of public discussion of sustainable development, rather than the development of an actual strategy for implementation. The second initiative was started in August 2002. A consultant was commissioned by the government to design a comprehensive environmental performance assessment scheme (CEPAS), which is intended to provide a common yardstick for the measurement of the environmental performance of buildings in Hong Kong [19], and to provide goals, measures, and incentives to help the construction industry in Hong Kong to achieve a higher standard of sustainability in building development. Part 2 of the preliminary report was published in January 2003 and the final report is yet to be completed. However, apart from the scope of the proposed assessment scheme and a broad environmental performance message, the preliminary report lacks an overall framework and the methodology that is to be adopted to formulate a comprehensive assessment scheme. Although an opinion survey has been proposed for the next stage of study, the objectives and implementation details of this exercise have not been explicitly discussed.

In addition to government initiatives, the Real Estate Developers Association of Hong Kong initiated the development of a voluntary private sector environmental assessment scheme for buildings in Hong Kong. The resultant scheme, known as the Hong Kong building environmental Assessment method (HK-BEAM) [20],

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