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Develop a flexible method to assess buildings hosting major sports events environmentally through the world



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Abstract Specific international institutions are responsible for managing and organizing major sports events besides choosing the hosting city for those events which is a difficult task, as there is a need for an appropriate decision using highly credible and justifiable mechanisms. Assessing the hosting city includes the assessment of sports buildings used in those events; however the diverse characteristics of countries aiming to host sports events raises the problem of obtaining fair environmental assessment results for the submitted projects. There are already a number of environmental assessment methods of buildings around the world and some were used to evaluate a group of major sports buildings in their countries. A particular version of Building Research Establishment Environmental Assessment Method (BREEAM) was used to assess the sports buildings hosting the Olympic Games in London 2012. However, it cannot be used outside England without the presence of several defects in the evaluation process, especially when dealing with different regional characteristics. Many countries are still without environmental assessment methods of their own, besides the unfairness in the comparison of results from available assessment methods among countries. Difficulty finding a standardized assessment method appears because of the spatial and temporal variables. The paper aims to show the importance of having a flexible method that could adapt to all the variables affecting environmental assessment of buildings with different characteristics and conditions of the countries hosting sports events as well as the different time periods, to get the utmost justifiable and precision results when choosing the hosting city.

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Introduction

People around the world, with their different cultures, are looking to sports events with great interest, as a source of excitement, joy, and mutual experiences, besides leading to social communication and cultural cooperation among

countries. Various countries are interested in hosting sport events because of its economic, political and social benefits. It is considered a great opportunity for the hosting country and city to upgrade and to present itself to the world. It helps introducing them internationally, leading to a positive impact on business and tourism. Hosting sport events increases the attention to provide appropriate places and infrastructure to host those events, giving a positive impact on citizens as a result of close contact with other communities by gaining social and cultural experiences [1,2]. Choosing the hosting city of sport events is not an easy task. The duty of managing and organizing sport events depends on assessing the submitted applications to pick the hosting place carefully. Evaluating the projects is necessary according to specific criteria and guidelines. In the end, choosing the location is strongly related to the ability of the institutions in charge of taking an appropriate decision, in addition to the availability of the facilities according to a clear, credible, fair and highly accurate methodology.

There is a common relationship between the environment and sports, in terms of global attention upon influence. In other words, if sports attract people for fun and excitement, then linking environmental concerns with sports interest reflects the growing environmental awareness across the globe and raises the percentage of the active participation in both activities. When a city hosts international sports events, this will pay back several benefits in exchange for what is spent to host the event, including upgrading and adding value to the environmental constructions which can be monitored and evaluated. The environmental assessment of buildings is considered an integral part of the overall assessment of the urban environment, as it is associated with the effectiveness of those buildings to fulfill the users' needs, in addition to encouraging the demands for sustainable buildings, ensuring the best environmental practice integrated into the buildings. Besides all that, developing standards and levels beyond the ones required by traditional systems and providing innovative solutions would ensure minimizing the environmental impact of buildings on the environment [3].

Cities desiring to host sporting events are not obligated to provide an environmental assessment of their buildings within the introduced project, so they may provide that assessment voluntarily in the way they assume is appropriate, which is often in line with the different methods used in each of them. The above shows the existence of detractions in credibility and fairness of the evaluation results comparison, as well as the neglecting of the environmental assessment role in general, especially with the absence of a unified authority responsible of that assessment and an appropriate mechanism to compare the results. One of the most obvious examples of the weakness of the environmental assessment role when choosing the host cities for major sporting events is what happened in Rio de Janeiro 2012. There is no doubt that the incident which took place in downtown of Rio de Janeiro which is preparing to host the soccer world cup in 2014 and the Olympic games in 2016 increased the importance of the environmental assessment of buildings in the cities hosting such events, as three buildings collapsed in the city center, which sheds light on its aging infrastructure [4].

From the previous, the paper's objective is emphasizing the importance and capability of creating a flexible method that could spread throughout the world, with time to get the utmost justice and precision when choosing the hosting city. This objec-

tive can be achieved according to a number of steps. First of all, by determining the current status of the environmental assessment of sports buildings, then determining the problems in comparing the assessed results using one or more environmental assessment methods of buildings, then explaining the challenges facing a fair comparison for these results, hence, determining the current solutions for such challenges. Finally, proposing a solution with a flexible assessment method which can adapt with the impact of spatial and temporal variables to avoid the current defects and to ensure the utmost justice, credibility and transparency of the assessment results.

Organizing and managing major sports events

International institutions are entrusted to manage and organize different sports events, for example, the International Federation of Football (French: Fédération Internationale de Football Association) (FIFA), is the organizing institution for football around the world, based in Zurich, in Switzerland [1]. The International Olympic Committee (IOC), which is based in Lausanne, in Switzerland also, is the organization responsible for managing and running Olympic Games. Those institutions are handling many tasks, including choosing the location where the sports events are to be held, making sure of the preference of those sites compared to others, and to ensure the validity of the country and city for hosting such events [2].

Environmental assessment of buildings

Environmental assessment methods of buildings emerged across the world to determine the principles and standards that are targeted in the relationship between buildings and their environment. They are used in issuing assessment certificates granted for buildings that confirm their commitment to the environment according to specific classifications that puts them in competition with other buildings. The assessment includes assessing indoor environmental quality, sustainable sites selection and management, water and energy consumption efficiency, materials and resources selection and consumption efficiency, the potential re-use and recycling, besides other criteria which are used to judge the efficiency of the environmental performance of buildings. Building Research Establishment Environmental Assessment Method (BREEAM) is considered the first assessment method, which has been established through the Building Research Establishment (BRE) in the United Kingdom [5]. Several different methods appeared later in different places around the world, such as Leadership in Energy and Environmental Design (LEED) in the United States (1998), which was developed by the American Green Building Council (USGBC) [6]. There is also the Green Star which appeared in Australia in 2003 [7], and the Comprehensive Assessment System for Building Environmental Efficiency (CASBEE) which appeared in Japan in 2004 [5,8]. The previous four methods are considered to be the most famous and widespread methods in the world. Several versions of the assessment methods were issued to cover different building types, in terms of their functions and age. It is noted that different methods include environmental issues with different weights that represent the environmental importance of these issues according to specialized groups of construction specialists and academics [3,5,9].

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