



The Challenges and Future Aspirations of Implementing Global Sustainability Assessment System (GSAS) in the Urban Facilities of Mega Sport Events [MSEs] in Qatar

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Abstract

Sports facilities are built for a specific function and purpose. Once the demand for such purpose no longer exists, it is important to know how both the buildings and the city will adapt to the existence of such megastructures as to prevent turning them into ‘*white elephants*’ in the city. This paper aims to study the environmental impact assessment tools and techniques used in promoting and implementing sustainability in mega sports projects in Qatar. The investigation focuses on assessing the cultural impact of the architectural design of sports facilities in Qatar using the global sustainability assessment system (GSAS) as a sustainability/EIA assessment tool. Most of the sports facilities in Qatar are GSAS-certified at the design and build (D&B) level and are ongoing their operational assessment. Data collection involves desktop and literature review of the current Qatar EIA methods. The findings of this paper include an objective overview of the global sustainability assessment system (GSAS) and its linkage to holistic sustainability. The recommendations involve the inclusion of mixed-methods analysis to integrate the long-lost concept of ‘culture’ in the realm of sustainability to prove that behind the modern exteriors of these newly-built structures lies a deep culture and a vernacular tradition. This study would be significant in the region and worldwide and a promising overview of utilizing local tools on an international level.

Keywords: GSAS; Sports facilities and stadiums; Mega Sport events; Sustainability; Environmental Impact Assessment

1 Introduction

Mega Sports Events (MSEs) is an international event which has many challenges, including how the city is planning to provide and build enough infrastructure that would take in this large load within a specific period of time. Infrastructure of the city used to host any major international event has many challenges, including designing effective quality and quantity of stadiums for the use of the games, in the case of the Mega Sports Events (MSEs). Achieving sustainable development is a key objective of any city’s built environment that aims for excellence. In this regard, Global Sustainability Assessment System (GSAS) is the Middle East and North Africa’s (MENA) first performance-based, independent green building certification system., which was designed and developed for evaluating and rating green buildings and infrastructure ((GORD), 2021). Such areas of research could help in filling the gap between practice and theory, by addressing local case studies and finding their position in the global context. Contemporary urban sustainability research frequently focuses on

environmental problems by investigating urban architecture as well as technology that is more efficient and decreases energy waste (Wiedmann, Salama, & Mirincheva, 2014). This paper presents a review of the Qatar EIA method and its cultural and economic value.

1.1 The Evolution and Development of Environmental Impact Assessment Tools

The progress in science and technology had great advantages to humanity, allowing various projects in building and infrastructure to provide people opportunities of liability. However, it began to have negative effects in terms of its environmental impact, as a result of compelling designers and planners to seek and think about alternatives. These adverse effects had made many organizations counter them by introducing laws to protect the environment, which emphasized the significance of Environmental Impact Assessment (EIA). The first country to prioritize EIA was the United States with the National Environmental Protection Act (NEPA) of 1969. However, a large number of countries followed, as was demonstrated in the table earlier.

Columbia was the first developing Latin American country to implement an EIA system in 1974. In Asia and the Pacific, Thailand and the Philippines have long-established EIA protocols, for example, EIA was mandatory in Sri Lanka. Whereas in Africa, the EIA process is continuously growing, despite the fact that several nations, including as Rwanda, Botswana, and Sudan, have some experience with EIA. The European Community mandated EIA in July 1985 (Ramachandra, 2012). And on the universal level, the integration of environmental considerations in development was pinpointed by The World Conservation Strategy in 1980; and in 1987, In accordance with World Bank policy, environmental problems must be addressed as part of a comprehensive economic agenda (Ramachandra, 2012). The general stages of EIA development have emerged in the following sequence, to be a decision-making method and tool around the world:

Table 1: Stages of EIA development

Stage	Development Description
Stage A	The major emphasis is on economic development. Decisions are made based on interest group lobbying and engineering feasibility. No formal accounting.
Stage B	The main concern is still economic development. Traditional cost-benefit analysis. Focus on efficiency criteria and engineering feasibility
Stage C	One of the goals is to promote economic growth. Innovative cost-benefit analysis. The utilization of numerous objectives and discount rates, as well as creative proxy pricing systems.
Stage D	The fundamental goal remains economic development. EIA is primarily concerned with describing the effects of proposals on biophysical processes.
Stage E	Economic development is not the sole objective. EIA with a greater emphasis on socio-cultural as well as bio-physical systems.

What can be observed from the stages above is that the main account of the EIA was the emphasis on economic development and engineering feasibility, followed by cost-benefit analysis. It was later followed by some focus on biophysical processes concerning the natural environment. It was only recently and in the latest stage of EIA development that the socio-cultural aspects of sustainability were taken into account, which shows an interesting transition worth investigating.

1.2 GSAS: Global Sustainability Assessment System

The Global Sustainability Assessment System (GSAS), which was previously called QSAS, is the first performance-based approach for assessing green buildings and infrastructures in the Middle East and North Africa (MENA) area ((GORD), 2021), and the development of its rating schemes is a ground-up approach that provides a smooth integration of the country's requirements with global sustainable goals (Fadli, Sobhey, Asadi, & Elsarrag, 2014). The assessment of the effect of new buildings on the environment and urban fabric is regarded to be the primary objective of QSAS/GSAS. Comparative improvement techniques advocated by QSAS may be the most applicable building design standard in the Gulf area, since it seeks to assess the different components of building design that may impact the natural and built environment (Ferwati, Saeed, Shafaghat, & Keyvanfar, 2019).

Sustainability and Environmental Impact Assessment Techniques have become a buzzword for some time in the industry and academia in architecture and engineering fields. Follow the GORD-GSAS framework developed by the Gulf Organization for Research & Development-GORD through its GSAS 2019 (v.4). The Benefits of the GSAS Approach are that they use a bottom-up approach and therefore allows for optimal integration of environmental measures and regional needs. Therefore it combines the greatest characteristics of the world's most renowned sustainability rating systems. In addition to being performance-based therefore relies on a method that is quantitative and results-oriented rather than feature-oriented. It is also flexible; where individual components can be applied to any project of any size without compromising the system's integrity.

1.3 Research Priorities

EIA's primary goal, as part of any organization's developmental decision-making, is to assist the methodical consideration of environmental concerns (Fadli et al., 2014). Sustainability and resilience are buzz words highly used in urban and environmental studies. However, this trend did not come from anywhere. This suggests and stresses its importance in the global context. The current research priorities in the context of place and time, are addressing the changes happening in that context and finding a way to better understand the most efficient techniques used to respond to them. The challenges are happening worldwide but are specific to a certain period, such as the challenges of Global Warming and the challenges which accompanied the Covid-19 pandemic. Other challenges are more specific and related to a certain place and time only, and are more temporary, such as international events including Qatar 2022 Mega Sports Events (MSEs). Focusing on research priorities could help us navigate the issues which are worth investigation, and also help in determining the most efficient research methods and methodologies to tackle the issues using the limitations of time and resources.

EA's practice can vary widely in quality and rigor. However, its theoretical foundation has grown in complexity and diversity (Mahmoudi, Sayahnia, Esmailzadeh, & Azadi, 2018). To address the challenges mentioned earlier, there must be an intellectual framework to follow. Such intellectual frameworks could sometimes manifest in certain architectural movements and buzz words, such as sustainability, adaptability, and resilience. Regarding the focus areas related to the techniques of environmental impact assessment, it includes main three aspects of sustainability, which are the environment, the society, and the economy. Therefore, the main focus of environmentally-friendly built areas is in relating these aspects in designing and evaluating the built environment includes studying energy efficiency and renewable energy, as well as the study of materials choice: building

materials and their relation and impact on building efficiency, sustainability, and resilience. Although the theoretical foundation of Environmental Assessment has become more broad and complex, but its implementation differs considerably in terms of quality and rigor (Mahmoudi et al., 2018). In this regard, Environmental Impact Assessment techniques could be considered from the most important laws and regulations which implement environmental regulations, laws, and other measures to grant environmental approvals in most countries that propose to establish spatial development projects (Alrikabi & Abbas Oudah, 2021).

1.4 The History and Chronological Growth of EIA

To understand the notion of measuring environmental effect more precisely, it is required to understand the concept of environmental impact (Alrikabi & Abbas Oudah, 2021). In dividing the years 1970 to 1999 to three phases. The table below summarizes the evolution and development of EIA in various countries, sorted ascendingly by year of initiation:

Table 2: The Historical Development of EIA Laws in Different Countries Worldwide

Country	Policy Name/ Description	Year	Phase I (1970-1979)	Phase II (1980-1989)	Phase III (1990-1999)
United States	US Environmental Policy	1969-1970	x		
USA (California)	California Environmental Quality Act (CEQA)	1971	x		
Australia	Environmental Protection (Impact of Proposals)	1974	x		
Philippines	Environment Policy	1975	x		
West Germany	Cabinet Resolution	1975	x		
France	Law on the Protection of Nature	1978	x		
Thailand	Environmental Quality	1978	x		
China	Environmental Protection Law	1979	x		
Canada	Federal Environmental Assessment and Review Process Guidelines Order	1984		x	
Japan	Environmental Agency Principles for Implementing EIA	1984		x	
India	Environment Protection	1986		x	
Sri Lanka	National Environmental	1986		x	
The Netherlands	EIA Policy	1986		x	
Western Australia	Environmental Protection	1986		x	
Malaysia	Environmental Quality (EIA) Order	1987		x	
New Zealand	Resource Management	1991			x
Vietnam	Environmental Protection Law	1994			x
Bangladesh	There was a declaration that all large development projects should undergo EIA. However, there is no specific EIA legislation.	1995			x

What could be observed from the table above is the tendency of each part of the world in implementing the laws of environmental impact assessment. The impression of this pattern suggests that the laws and policies regarding preserving the natural environment and its impact on human use of land first started in developed countries, mostly in the Western part of the world, in countries such as the USA and Western Germany (in 1975). Such policies were then shortly followed by Asian-Pacific countries due to high demand in land use and not efficient laws and policies to regulate them, therefore there was a high need

to solve problems related to pollution, urbanization, and population growth while maintaining the natural resources available. These laws were later officially implemented in other parts of the world such as the UK, New Zealand and Bangladesh. At the national level of EU member states, There have been a variety of policies and laws enacted to address and resolve the problem of land consumption, which are issues that are now being considered by the various EU member states. For instance, Germany, the Netherlands, and the United Kingdom place high importance on the environmental politics agenda and discuss methods and mechanisms to prevent the continued expansion of settlement and transit regions (Nuisl, Haase, Lanzendorf, & Wittmer, 2009).

2 Methodology

As Environmental Impact Assessment tools deal with a complex phenomenon that includes human beings and their behaviour, tackling problems could become a challenge since they are ever changing and continuously growing. Therefore, obtaining an objective approach could help researchers identify important issues and to navigate them through quantitative data feasible to be read and interpreted while limiting personal interpretation and intervention, thus creating a framework of analysis that is accurate and consistent. which is a commitment to the significance and practicability of monitoring scientific understanding of any phenomenon, whether it is social, cultural, or other disciplines; thus being able to tackle it into what could be comprehensible. To constantly improve this scientific objective approach, an understanding of the limitations of objective knowledge is essential, because it is continuously changing and growing, therefore prioritizing the need to differentiate credible information from more speculative knowledge claims (Hammersley, 2019).

Following the steps, details, and explanations related to the EIA process, the GORD GSAS training courses site visits, lectures-presentation and guest-lectures wrap-up sessions (DB+O), this study aims to cover the following stages in the EIA of a case study in Qatar:

Stage 1: Screening, Scoping Project Identification.

Stage 2: Impact Identification: Project Investigation.

Stage 3: Assessment: Project Assessment.

Stage 4: Mitigation: Project Analysis.

Stage 5: Mitigation Measures through Recommendation Guideline: Concluding an EIA Summary Which Would Include Mitigation and Development Recommendations in the studies project.

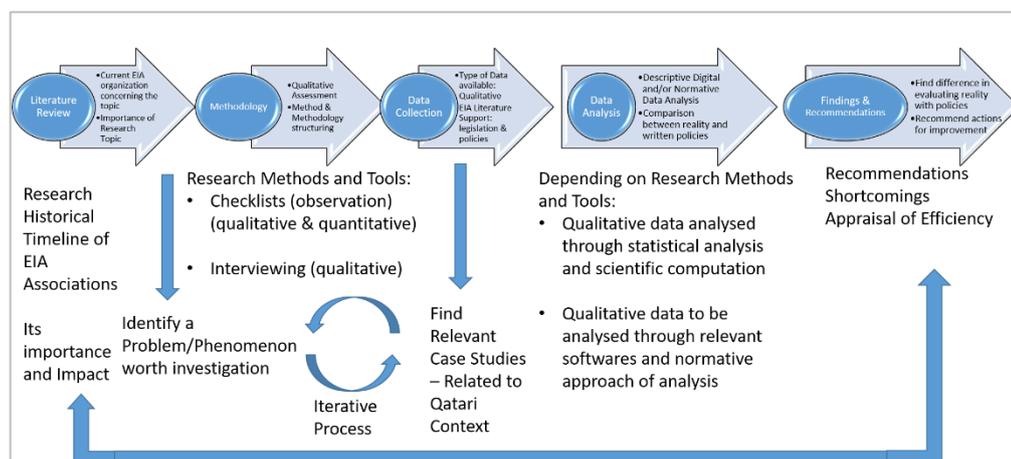


Fig. 1: Research Methodology and Approach

3 Literature Review

3.1 EIA Techniques in Qatar

To focus the research on the local context: the Case of Qatar, we must consider additional information about the geographical environment in which this portion of property is located (Nuissl et al., 2009). That is, to evaluate the “effect at the context level” of land-use transformation. Since it is insufficient to examine a single parcel of land experiencing land-use change, we must consider the whole landscape (Nuissl et al., 2009), rather we must look at it from different scales and dimensions. It is important to mention that complete sustainability in an urban environment is possible if the social, economic, and environmental factors are comprehended in connection to one another. (Wiedmann et al., 2014). Therefore Aside from ecological balance, the viability of urban environments depends greatly on economic expansion and social justice (Wiedmann et al., 2014). A significant challenge for urban governance nowadays is the mediation of multiple landowners’ interests and newly constructed legal frameworks (Wiedmann et al., 2014). Building on this statement, analysing the current urban developments in Qatar could help us tackle which major issues are observed with regards to policies of EIA and how can they be solved in the governmental and private sector. More recent studies must be done to survey the urban developments in Doha, however, the picture below can give a glimpse of the priority of urban developments that were most important in 2014, which can be developed and compared to the current situation in 2021 for future studies.

The current focus on urban planning in Doha can be shifted towards everything related to Mega Sports Events (MSEs) in 2022; therefore developing studies concerning this special event could be of high importance. Which could be analysed from various aspects, including the socio-cultural disciplines, since it was started and showed earlier with the different stages encompassing the development of EIA with time, it is observed that previously, the development of sustainability tools did not include social issues and qualitative criteria, therefore future attention must be placed on this, and also backed up with recent studies who also recommend this transition (Fadli et al., 2014). In addition, recent studies show that the built heritage might be seen not just in terms of its individual disciplines pertaining to history and architecture, but also as a systemic, sustainable totality. This reasoning for cultural heritage protection through sustainable discourse views the built environment and space as a whole (Fadli & AlSaeed, 2019). Therefore, cultural values are not apart from environmental and energy-consumption reduction strategies and can go along hand-in-hand. To illustrate this, recent studies focus on the importance of implementing vernacular and local building and planning strategies to show that reusing and incorporating locally accessible building materials and bioclimatic design ideas drawn from existing vernacular buildings into contemporary residential building retrofitting projects can increase knowledge of energy-consumption reduction measures. (Ozarisoy & Altan, 2021).

3.2 Categories Explorations and Development

To state the purpose and rationale of this study, it is important to point that the GSAS Trust manual has the value that is given for Urban Connectivity and Cultural & Economic Value to be from the lowest values, as shown in the figure below. Such low weight for these categories can be concerning for architects who can argue on its significance and importance. Therefore, the purpose of this study is to find the reason for such low values and to find ways to increase their weight in the assessment, in case we find justifiable arguments.

Category	Sub-categories	
Cultural and Economic Value	Heritage and Cultural Identity	Support to National Economy



Fig. 2: GSAS Categories for Design and Build. The below on the right highlights the selected categories for this study

3.3 Cultural and Economic Value

The Cultural & Economic Value category focuses on cultural effects on the design of the built environment as well as contributions to the national economy ((GORD), 2021). In this regard, the architecture of the physical environment may aid in preserving the cultural identity and legacy of a community, where the design expression must be compatible with and interwoven into the existing cultural fabric. Furthermore, the utilization of local resources and skills helps the growth of the national economy ((GORD), 2021). The weight of Cultural and Economic Value has changed from 13% to 8% to 4% within few years. This huge drop in percentage is worth investigating, to know whether the tools of assessment are not functioning or whether cultural and economic value is not from the priority of the stakeholders involved. It is worth mentioning that there is increase in assessing intangible qualitative value in architecture and urban planning in the last few years, which signals an important paradigm shift into qualitative and mixed methods research. Additionally, the affirmation of the significance of intangible values of Cultural Heritage is one of the current goals of the World Heritage List (WHL) (reinforced by the adoption of the UNESCO Convention of 2003), as well as one of the goals of many governments that seek to foster a sense of national or local identity (Mezzino, 2017).

4 Findings

The findings of this case study analysis shows that improvement in assessing the qualitative-related categories might benefit from a mixed-method approach in data collection and analysis. And although this study does not provide the legislative background and way to achieve such outcomes, the recommendations rely on involvement of educational institutions in the process of evaluating and assessing buildings, as a way to include a bottom-up approach more effectively and engaging, especially for young and aspiring professionals.

4.1 Barriers to Sustainability Adaptation

The barriers to sustainability adaptation are many and interrelated. This study focuses on the technical and social factors as a wheel of change to the methodologies used from a technological and cultural point of view, by relying on research done in highly reputed institutions including Qatar University.

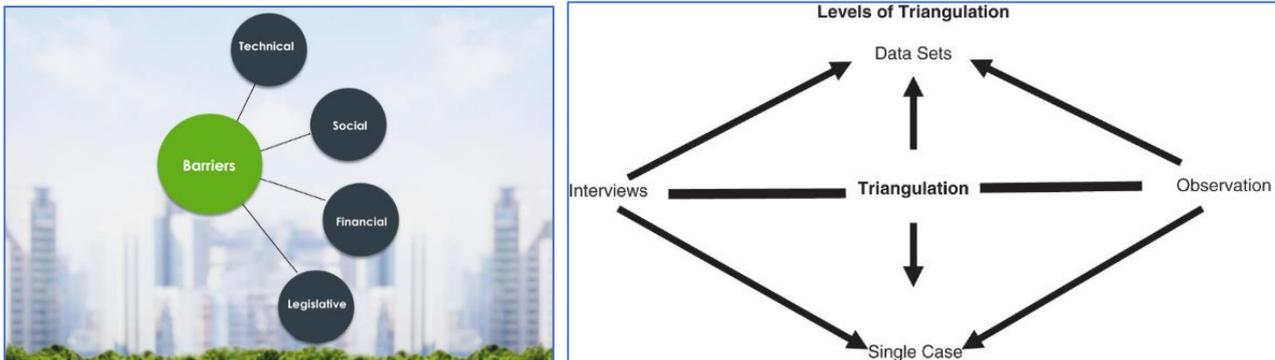


Fig. 3: (Left) EIA Barriers. (Right) Levels and Methods of Triangulation in Mixed-Methods Research

4.2 Conclusive Remarks on Argumentative Recommendations

On GSAS Design and Build (D&B) Toolkit and Calculators, which are considered the methodology in which data is collected and analysed, the results obtained through the case study assessment using the EIA model toolkit GSAS shows that mixed-methods research approach could help validate the data collected and provided more accurate conclusions, as part of the Triangulation Approach in social sciences studies, as shown in Figure 3. And although the EIA techniques confirms to scientific objectivity and quantitative results, this does not mean that qualitative data cannot be converted to quantitative measures. Therefore, providing perspectives for GSAS expansion and enhancement in terms of methodologies used rather than being feature-oriented, which would be an interesting project to be expanded in the future.

Therefore, in the category assessing Urban Connectivity, data collection and analysis could go beyond descriptive analysis, and behavioural mapping, space syntax could be suggested as a methodology, research, and analysis tool in understanding urban connectivity on a deeper and more profound level. In the category of Cultural and Economic Value, it would be worthwhile to include public participation and inclusion in evaluating heritage and cultural values, which can be achieved by collecting data through surveys, questionnaires, and interviews. A straightforward approach to achieve this is by introducing standard surveys templates with qualitative criteria about the heritage and cultural aspects. Revising methods and methodologies used in environmental impact assessment techniques on urban connectivity and cultural value: in the case of stadiums in Qatar would be an important topic to address in future research. Additionally, clearly drawing the distinct lines between what is objectivity and what is subjectivity in the current intellectual realm is of high importance, in order to restructure our perception of what is of objective value and what is of subjective. This attempt is of high value due to the increase number of post-modernist theories which erases the distinction between the two. Therefore, this is an attempt to balance the shifting paradigms and enhancing the academic tone to be rigorously scientific yet culturally sensitive and appropriate.

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