

Review

Sustainability in Mega-Events: Beyond Qatar 2022

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Abstract: Hosting a mega-event such as the 2022 FIFA Men's World Cup is a defining moment for Qatar, a country that is in transition, small in size and population, and rich in natural gas reserves. It is a unique opportunity to host a universal event and leave a sustainable positive legacy for the country. However, the preparation, execution, and after-effects of such events are challenging initiatives with significant long-term impacts on the economy, society, and environment in the hosting country and nearby region. This study addresses the intersection between mega sports events and sustainability, to systematically compare and learn from past mega-events and apply that to the case of the Qatar 2022 World Cup. The Qatari bid proposed a new FIFA Men's World Cup (WC) spatial compact model around just one city area and the goal of achieving the first carbon-neutral WC. Herein, the challenges, opportunities, and progress in this scenario are evaluated accordingly, showing that local organizers are applying green technologies, urban development concepts, and strongly upholding the idea of legacies based on the Qatar National Vision 2030, which envisions sustainable development of the country. However, additional work is still needed to reduce environmental impacts and on several reported social issues.

Keywords: Qatar 2022; sports mega-events; sustainability; FIFA Men's World Cup; Olympic Games; legacy

1. Introduction

The next FIFA Men's World Cup (hereafter WC) will be held in Qatar in 2022, a unique event in the history of Sports Mega-Events (SME) and the FIFA World Cups. In addition to all the hype, popularity, and importance, one of the main aspects to consider is the sustainability of the event, in a time in which environmental and social inclusion issues are sensitive topics of relevant significance before undertaking any large project of any kind. The WC is a mega-event of unique features, recalling a sustainable framework, and searching for a sustainable legacy in the host country.

Beyond all the magnificence and tremendous popularity of the event, as the largest of its kind and focusing the eyes of the whole world in one country, the FIFA WC 2022 will be located in a small country, Qatar, with an area of 11,581 km² [1] and an estimated population of 2.747 million people [2]. Moreover, Qatar is not a destination with multiple large urban centers to locate scattered sports venues, but almost all of its economic, urban, and administrative activity is located in Doha, the capital city [1]. Unlike any other WC (with the exception of Uruguay 1930, the first WC), all the venue stadiums are located in one city, Doha and the surrounding suburbs [3], making the event in need of special planning and careful execution in a small area, in a very specific timeframe due to weather restrictions and with a multitudinous public gathering.

Such features lay the landscape to undertake specific challenges never before seen for any WC, or indeed in any city welcoming any major sports event. As such, this paper aims to tackle the problems,

challenges, and legacy opportunities that lay ahead of Qatar during all the preparation, execution, and post realization of the WC. The research topics involved the examination of how sustainability issues were addressed in past SMEs, not only in WCs but also in the Olympic Games (OGs). This study aims to address three specific questions:

1. What is the body of literature addressing the relationship between SMEs and sustainability? How has it been evolving learning from past events, global awareness, and climate change necessities?
2. What are the key subjects and areas of sustainability applied to the accomplishment of the WC Qatar 2022? Where should we focus on maximizing positive legacies?
3. What are the challenges, conflicts, opportunities, and progress related to the sustainability of WC Qatar 2022?

About the originality of the article, this paper is the first to address the literature gap on sustainability when applied to the case of the future Qatar 2022 WC, i.e., the bidding organization, execution, and post-operation of the event. In the following section, we provide some necessary definitions in addition to a general historical review of past SMEs under the action of sustainability; Section 3 provides a review of the body of literature to explore the main subjects studied when addressing sustainability in sports events and their importance/evolution, setting the context to be applied for the Qatari case. Section 4 starts with the analysis of Qatar 2022, providing details about the country, the background of the mega-event, and the sustainability challenges, legacies, and impacts that Qatar could face on the way to the event. In Section 5, we relay the opportunities by which Qatar can make the most of the WC organization and progress to date; Section 6 concludes with suggestions and conclusions.

2. Background: A Historical Timeline of Sustainability and Sports Mega-Events

Before delving into the historical frame of sustainability and sports, it is necessary to provide some definitions. First, a Sports Mega Event (SME) is an event with unique and special characteristics. Roche [4,5] provided insights into the concept by stressing that an SME is a worldwide sports event that is extremely popular, of short-lived duration, with wide media global coverage, and long-lasting national and international significance, requiring long preparation and involving multiple dimensions including economic, social, environmental, and other structures. Sola [6] elaborates more on the definition by underlining the multiple consequences for the host region/country, with impacts on tourism, travel, infrastructure, social, education, and other sectors, which in turn could catalyze extensive changes in that region, both positive and negative. In the sports arena, a few events fall into the category of SME, among the most popular the Summer/Winter Olympic Games and the FIFA World Cup. Lienhard et al. [7] and Muller [8] developed the differences between these Mega-Events and others classified as Major Sports Events, with a smaller size, popularity, and impact but still sufficiently large to be broadly recognized and remembered. In both cases, Mega and Major events had multiple impacts that could help delineate sustainability experiences and issues according to their experience.

Very correlated to the sustainability and multisectoral impacts of SMEs is the concept of legacy. Legacy is often a confusing term and is usually used with positive connotations to point out positive changes after a mega-event has taken place. Indeed, according to Preuss [9], legacy is “*all the planned and unplanned, positive and negative, intangible and tangible structures created through a sports event that remain after the event.*” Multiple types of structures are evident when thinking of events such as the next WC in Qatar that will remain for Qatar after 2022, including anticipated and unanticipated effects, both positive and negative, changing Qatar in profound ways.

Then, as established by Cavagnaro et al., sustainability applied to SMEs management is the achievement of positive impacts on the people, planet, and profit, with a holistic contribution to meet the economic, socio-cultural, and environmental needs of all the involved stakeholders in the event, including the host community [10]. Consequently, the most important long-term challenge is to maximize the sustainability of the event, capitalizing on the positive legacies of Qatar 2022 for future generations, a path similarly established for the Qatar National Vision (QNV).

Historically and for several decades, entertainment, sport, cultural, and economic interests predominated in the organization of large-scale tournaments and games. In the 50s and 60s with the growth of media coverage, the importance of hosting SMEs rose as a proxy for international recognition and a complementary reason to enable urban planning, as it occurred with the Rome 1960 OGs [11]. The economic profitability of the games came under question in the Montreal 1976 Summer Games and was under the spotlight for the remaining OGs in the 80s [12]. However, those OGs mostly overlooked environmental, sustainability, and legacy issues. That oversight started to change in the 1990s when the International Olympic Committee (IOC) assumed matters and developed the idea of greening the games. After the environmental demonstrations against the impacts of the Albertville Winter Games in 1992 and the Rio Earth Summit the same year, there was a change in the IOC mindset, which addressed the environmental sustainability topic in the Centennial Olympic Congress of 1994 [12]. In parallel, based on the ideas and contributions of sustainability set by the ex-Norwegian prime minister Gro Harlem Brundtland [11], the Norwegian authorities recognized the importance of the environment and sustainable development in the organization of the Winter Games of 1994, [13]. That year, the Lillehammer Winter Games (Norway) were the first ones to embrace the sustainability concept and declare their green environmental commitment [14]. Subsequently, a big step was taken in 1996 when the IOC stated a declaration in the Olympic Charter about environmental protection and sustainability, implemented into practice as a mandatory requirement for all future Olympic host bidders as part of their candidacy and meeting the commitment to the environment as the third pillar of Olympism [11,12]. A little later, in 2003, the IOC demanded the creation of the Olympic Games Impact Assessment with more than 100 indicators to measure the impacts associated with the execution of the games [13].

The 2000 Sydney Olympic Games (OG) was the first to incorporate the environmental dimension into their bidding process, measure the impacts of the games, and show environmental achievements as part of their outcome. Sydney 2000 contributed with many successful initiatives and projects, as a result of the robust collaboration between the Sydney organizers and Greenpeace Australia, making a strong case for the early collaboration between organizers and Non-Governmental Organizations (NGO) [12]. Athens 2004 and Beijing 2008 followed suit, proposing environmental impact assessments and remediation plans [15]. However, Athens was reported to fail to meet several of its initial environmental proposals, such as a 100% renewable energy supply [16], whereas China was recognized as a sustainability-attracting event, embodying several cutting-edge innovations to decrease impacts but also problems in terms of policies, procurement, and report transparency [12,16], symptoms of varying difficulty between proposing and implementing measures in the OG organization.

London 2012 proposed a sustainability plan of five points, including climate change and social inclusion, setting high benchmarks for future games, while Sochi 2014 worked around the topics of carbon neutrality and zero waste [13]. The last OG in Rio 2016 provided a challenging ground for SME sustainability incorporation in the context of a developing country such as Brazil. Accordingly, the bidders proposed a plan in which the games were to contribute to the economic, social, and environmental transformation of the city; however, there are already some indicators that the Olympic event failed to meet its goals [17].

In general, the OG history in the sustainability frame showcases the early attempts of the SME organizers to coordinate and meet the sports, cultural, and universal values of Olympism with environmental and sustainability concerns, with several degrees of success. The main take away is that positive outcomes come along with the early and thorough planning of sustainability applied to SME, involving strong collaborations with third parties such as NGOs, acting as watchdogs, supervisors, and consultants, and in which transparency and serious engagement between all parties are key enablers.

For the FIFA World Cups, Germany 2006 was the first recognized WC to propose and implement a sustainable long-term greening agenda, with five points or “Green Goals” relative to energy, water, waste management, climate change neutrality, and efficient transport [18]. The final balance after the WC stated that Germany 2006 was a carbon-neutral event for the environment, a remarkable achievement (however Germany 2006 did not count the carbon offsetting of all the emissions related to international journeys of spectators and other participants for the World Cup, a large part of the real total carbon emissions [13]).

The bar raised by the German WC, in terms of sustainability, ecology, and other aspects, was difficult to surpass in South Africa 2010, a developing country with many cities ravaged by poverty and social inequality. South Africa organizers tried to emulate Germany with the implementation of a “Green Goal 2010” program, but focusing much more on social and economic issues such as infrastructure, job creation, and a national economic boost rather than on environmental impacts, with many piecemeal projects in the several host cities without a strong and coherent direction until very close to the WC event [14]. Publications discuss that South Africa 2010 showed some good performance in terms of the green proposed goals but never reached the desired potential and lacked a more organized and integrated direction [13,19].

Brazil 2014 was, to some extent, a similar experience as South Africa. Another developing country with multiple indexes of high poverty, economic crisis, and widespread corruption, Brazil saw the preparation and execution of multiple sports projects for the WC, among demonstrations of the people and community complaining of the use of such resources instead of leveraging them for country development [20]. Again, the environmental aspect of that confrontation was the most neglected and, in some ways, a lost opportunity from what was announced to be the greenest WC.

Russia 2018 is still a very recent WC, and the sustainability results remain to be evaluated, but some reports are stressing how the Russian organizers supported green building projects, trying to avoid “white elephant” experiences [21] as in USA 1994 and South Africa 2010. Additionally, Russia 2018 was analyzed [22] as an event that tried to show Russia as a reemerging power in need of revitalize cities away from Moscow, developing them urbanistically, a strategy coherent with the realization of the Sochi 2014 Winter Olympic Games. By comparison, Preuss [23] compared the FIFA bidding requirements for Russia 2018 and Qatar 2022 vs. the IOC requirements for the 2020 OGs. While the OGs already require sustainable development structures in the OG bidding and preparation, the FIFA WCs are more restrained to the carbon-decrease/neutrality footprint of the tournaments and environmental impacts; however, the FIFA Cups also require more specific environmental participation and structures from the managerial side. With all this background, Qatar wishes to rise to the occasion in terms of sustainability in 2022.

3. Evolution of Studies Trends, Subjects, and Events in Sustainability and SME

3.1. Methodology

The present study seeks to explore the sustainability issues when applied to the case of the Qatar 2022 WC as an empirical case study. As such, as stated in the research questions, it undertakes first a methodological survey of the intersection between sustainability and legacy issues and SME, trying to surface the main trends and fields of research on the pertinent topics, as well as some tentative frameworks, under which to evaluate the case study of the Qatar 2022 WC. The steps taken in the literature review are described in Figure 1:

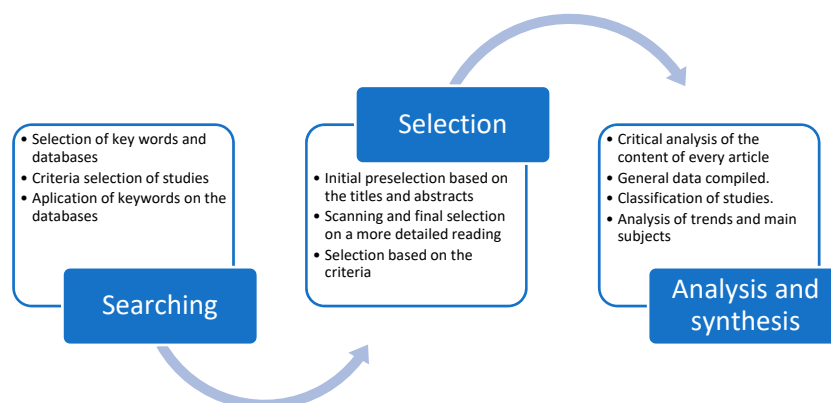


Figure 1. Steps taken in the literature review.

The literature review was performed using six major journal databases and two international databases such as Web of Science and Scopus—Table 1. These databases were chosen because of the extensive coverage of studies they have on sustainability/legacies and SME. In these databases, the following keywords of research were used: (1) Sustainability and “Olympic Games” (2) Sustainability and “World Cup” (3) “Sports Mega-Events” and Legacies, chosen because they potentially cover most of the topics and studies related on the intersection between SME and sustainability issues.

Table 1. Selection criteria for the literature review.

Conditions	Inclusion Parameter	Exclusion Parameter
Article types	Journal Articles Reports Books/Book Chapters Working paper Conference papers Another type of scientific documents/communications	Non-scientific studies Non-professional studies
Sources	Scientific databases Journal databases International sports institutions databases (FIFA)	Non-scientific sources Newspaper and magazines Others
Type of event	Sports Mega Event FIFA Men’s World Cup Olympic Games	Other mega-events Other non-sport events
Subjects	Sport Mega-Events and sustainability Economic issues of SMEs Environmental issues of SMEs Social-human issues of SMEs SME legacy issues related to sustainability	Other SMEs issues out of sustainability
Language	English	Other languages
Availability	Online (Internet Access)	No online

Once the keywords were introduced into the databases, the following criteria were used to accept/reject the studies for the literature review.

The first review was a shallow one aimed to filter out studies by analyzing their titles and abstracts. With an initial group of preselected studies, the review went deeper by analyzing the content of the studies. The body of scientific and professional studies included consisted of a total of 129 works, including journal papers, books, reports, and others, as shown in Table 2. The scientific literature reveals the great interest between sustainability and SMEs, reflected in 103 journal articles of the 129 works, coming mainly from journal databases.

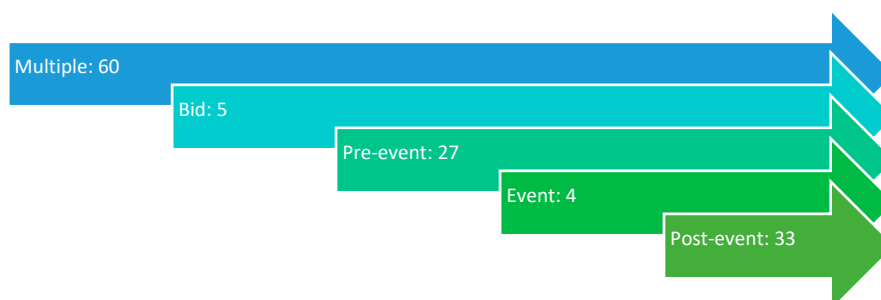
Table 2. Database sources and type of studies used.

Databases Sources	Type of Work					Total Sources	Keywords
	A	B	C	D	E		
Taylor and Francis	17	0	1	0	0	18	
Springer Link	4	0	0	1	0	5	
Science Direct	9	0	1	0	0	10	“Olympic Games” and Sustainability,
SAGE	6	0	0	0	0	6	“World Cup” and Sustainability,
MDPI Sustainability	11	0	0	0	0	11	“Sports Mega-Events” and legacies
ICE	3	0	0	0	0	3	
FIFA	0	8	0	0	0	8	
Web of Science	26	0	0	0	1	27	
Scopus	17	1	0	5	0	23	
Others	10	6	0	0	2	18	
Total works	103	15	2	6	3	129	

Type of works: A = Journal Articles, B = Reports, C = Research Notes, D = Books/Book Chapters, E = Working papers and Conference papers. MDPI: Multi-Disciplinary Publishing Institute. ICE: Institution of Civil Engineers.

3.2. Analysis of the Literature on SME and Sustainability

Regarding the development of SME, we must analyze the different stages under a sustainability framework, with policies, initiatives, programs, impacts, and legacies taking place, from the initial proposals with sustainable strategies presented to the organizers to the evaluation of post-event legacies with potentially positive or negative long-term effects. The bulk of studies consulted were distributed in such SME timeframes, as shown in Figure 2.

**Figure 2.** Timeframe distribution of the studies.

It is noticeable that the event phase, the core part of all SMEs, receives fewer studies and, thus, less attention, even though that phase incorporates high concentrated impacts in a short period of days or weeks [4]. Under the concepts of sustainability, this reduced attention is because the effects (positive or negative), are considered in their complete dimensions through time. The effects are not restricted to the event operation of a few weeks, but they span over the years, during which the pre-event preparation and the post-event legacy take place on the infrastructure, economy, society, environment, and other structural areas, a timeframe that could easily last decades [6]. The topics that are usually studied are listed in Figure 3.

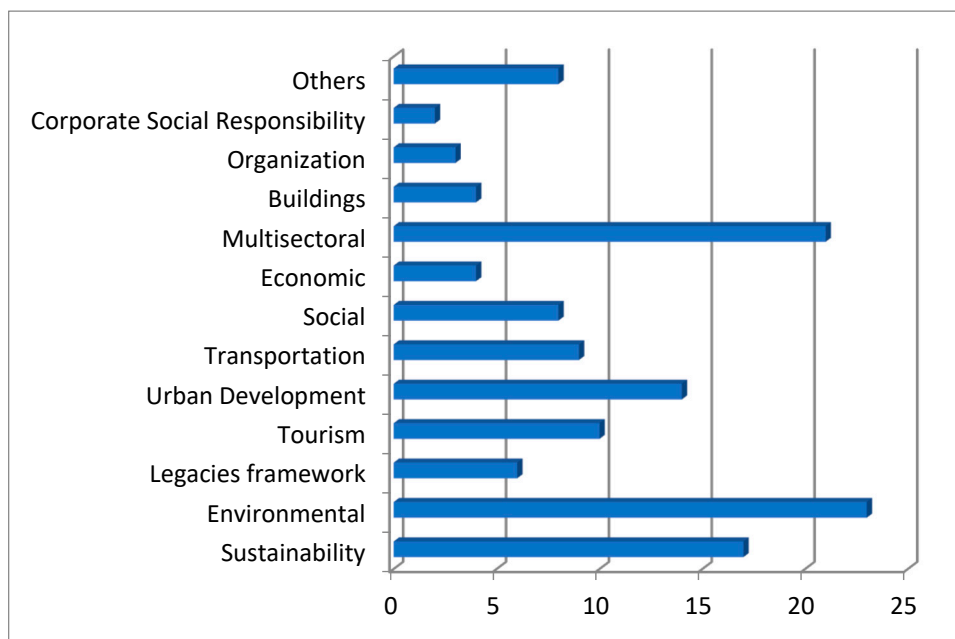


Figure 3. Main topics addressed in the studies.

About the subjects addressed in the body of studies, the legacy frameworks were considered first as the structures under which stakeholders evaluate the different SME [9,24–28], even though they differ in their dimensions and criteria, and there is not a unique standard of evaluation. Sustainability in all its dimensions is considered in 17 studies [7,11–13,15,23,29–39], usually encompassing the historical integration of the sustainability movement, especially in the OGs and, in a later and even smaller reach, in the WCs. The studies reflect how the sustainability structures progressively permeated the SME organizations, becoming, for instance, the third pillar of the OGs and a liable requirement for the hosts. As expected, environmental sustainability is one of the most important subjects [16–18,40–59] stressing the quantification of impacts on the shape of indicators such as the carbon/ecological footprints, the green goal programs implemented for the WCs, and the environmental strategies and green reports promoted by FIFA since 2006.

Urban development was evaluated in 14 studies [60–73], from wide diverse angles, considering the progress that SMEs may bring to the urban centers where they take place and stressing how they may fail to deliver positive legacies, especially in developing countries. Tourism [74–83] receives special attention as a specific activity that is greatly boosted with a large number of travelers attending the events; transportation [20,84–91], one part of urban development, is also placed under the light because SME organizers address how transportation systems can be revamped or redesigned under the boost of SMEs.

Other pillars of sustainability, such as the economic [92–95] or social sustainability [96–103], attract less individual attention, even though they are equally important to consider as the environmental issues because they are all interrelated. However, several studies consider these topics under the study approach of multisectoral legacies [3,14,19,22,104–120], with “legacy” as one of the most important concepts in the conception of SMEs. Other subjects considered are buildings [121–124], business [125], education [126], climate [127], and organization [128–130]. One last trend to consider in the studies is the role, expectation, and importance of volunteering in the success of the SMEs, specifically in the OG [131,132].

Examining the SME studies from the perspective of the type of sports event they study, we obtained the graph shown in Figure 4. Forty-eight studies were directed towards evaluating or informing about topics related to the WC event; the OGs with 60 studies represent the largest group to consider, probably because the sustainability-legacy issues have had a longer application to the case of the OGs

and also due to the stronger commitment of the IOC into sustainability as the third pillar of Olympism. Focusing on the WCs, the study numbers per WC are in Figure 5.

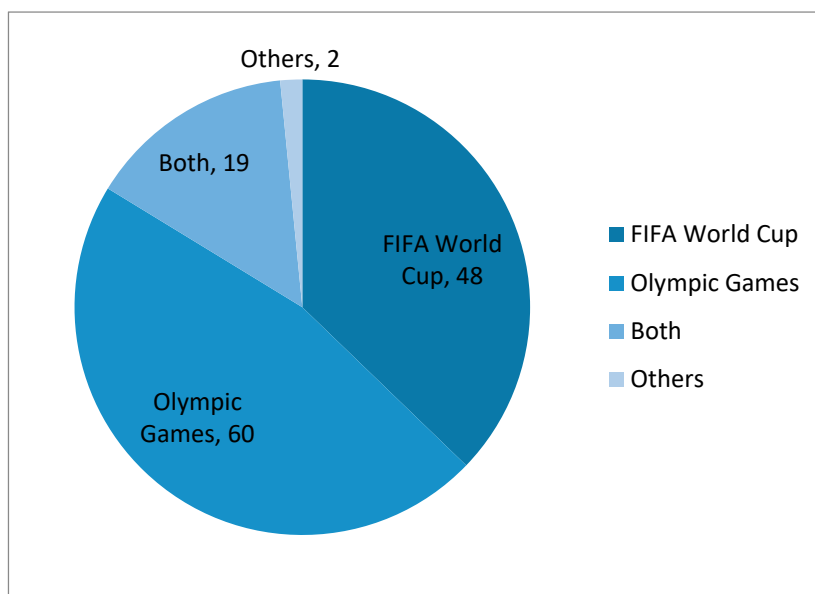


Figure 4. Type of sport mega-events studied.

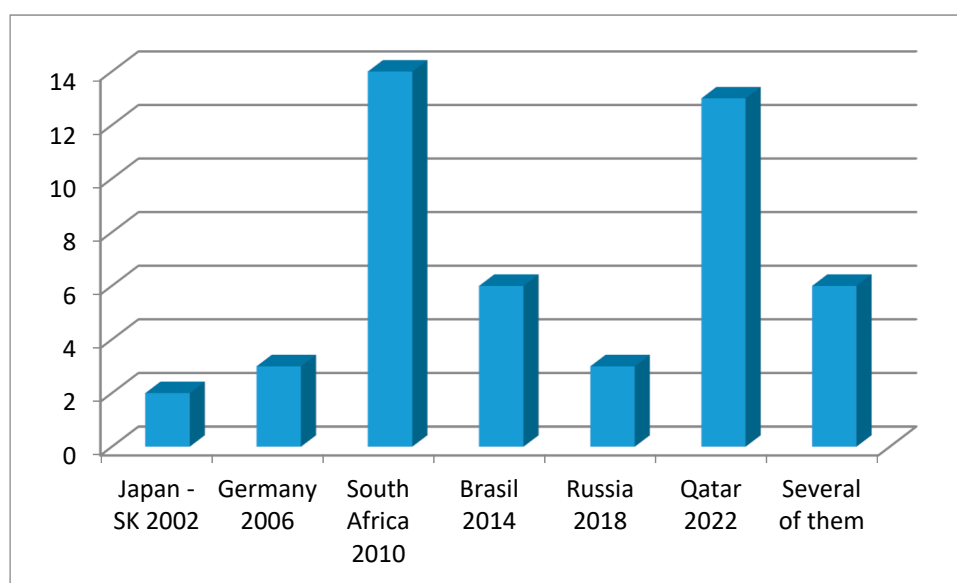


Figure 5. World Cup distribution of the studies.

South Africa 2010 [14,19,48,49,54,66,69,71,82,96,99,115,116,123] and Brazil 2014 [20,30,38,50,51,133] prompted many studies, probably due to the realization of WCs in developing countries (unlike Germany [18,46,47]). Both 2010 and 2014 WCs could help assess how sustainability and legacies work in such contexts. The studies of Russia 2018 are still few [22,31,52,60], and we can expect more of them in the assessment of post-event legacies in upcoming years.

Surprisingly, Qatar 2022 is an attractive event for studies, despite still being years away from the occasion. Several of these studies are highly focused on urban development [67,70] experimentation in Doha, how Doha could benefit from the Cup projects and initiatives, the ongoing transportation system restructuring [91], and technical studies on the buildings (stadiums) [122,127] with requirements for cooling and strategies to use renewables energies. Potentially more remarkable is how the studies

focus on social topics in Qatar, how the Qatari society could change to be more inclusive because of the WC [67], the residents' perceptions and expectations of what could be changed [98], and the need to address problems related to migrant workers and labor abuses [97]. Additionally, we can see an interest in exploring how the 2022 WC could provide business opportunities through networking [125] on the field of tourism [74] and sports [22], turning Qatar into a new hub for global sports and tourism. The last two studies stress the importance of soft power, global influence and how Qatar is increasing its brand and attractiveness through hosting mega-events like the WC, but how allegations of workers abuse, human trafficking, social inequality, and others, could represent serious setbacks on such plans, unlocking a reversal process of soft disempowerment, opposite to the desired legacy by the Qatari organizers.

Nevertheless, none of these studies address these subjects from a general sustainability frame, but broadly detail some sustainability issues of the Qatar WC organization. Additionally, none of them show the link to the positive legacies stated as goals of the QNV 2030, to understand the sustainability/Qatar 2022 WC topic intersection, in an integrated and overarching fashion. The following sections tackle such an intersection.

4. Qatar 2022 World Cup

Given the literature review on the scientific body supporting sustainability applied to sports mega-events, the following sections apply such a framework to the case of Qatar WC 2022.

4.1. Qatar Profile

Qatar is a small country located on the Persian Gulf, with a population of 2.747 million inhabitants, out of which 333,000 are Qataris nationals, and the rest are expatriates from many nationalities [134] who were attracted to Qatar due to the economic growth over recent decades. Geographically, it is a small portion of the Arabian Peninsula, surrounded by the Persian Gulf; like the other Persian Gulf countries, the climate is very arid, and the territory is entirely deserted [1]. There is very little precipitation throughout the year, and the summer temperatures are extreme, with averages above 30–35 °C from May to October. The general data of the country are summarized in Table 3.

Table 3. Qatar's general data.

Qatar's General Data	
Surface	11,581 km ²
Population	2,747,282 (September 2019)
Population groups	Nationals (11.6%)/Expats (88.4%)
Capital	Doha (1,850,000)
Languages	Arab and English
Religion	Islamic
Climate	Dry, subtropical desert, with very little precipitation and very hot summers
Geography	Flat and barren desert of sand and gravel
GDP (PPP-2018)	Total: \$357,338 billion (Per capita: \$128,702)

The capital is Doha, the main urban center, which concentrates the economic activity of the country and has witnessed impressive growth from a mid-sized town to a new attractive hotspot in the Middle East for tourism and businesses [1]. The Qatari economy and growth are mostly based on revenues from natural gas exports, which have opened the country to world trade and provided support for other economic activities and initiatives [135]. Since Qatar is a desert, it possesses very few agricultural resources to support the population [136], relying highly on food exports from other regions and continents; water resources are scarce and complemented by the use of desalinated water from the sea. Likewise, and due to the extreme climate, the energy requirements are high to supply the ventilation and cooling of buildings, in addition to residential, commercial, and industrial demands [122].

4.2. Qatar 2022: The Event

On 10 December, 2010, the Qatar bid won the award to organize the FIFA World Cup 2022 and, likewise, the FIFA Confederations cup of 2021 [67]. After beating rivals such as Australia, Japan, South Korea, and the US, Qatar was able to attract the FIFA award to organize the first WC in all the Middle East and Arab World, with a very long lead time (12 years, unlike other prior WCs). Qatar hosting the WC was a notable choice: it is the smallest country to host the WC, comparable maybe to Uruguay 1930 and Switzerland 1954, but those WCs were many decades ago, with remarkably fewer participants (32 vs. 16), shorter event-time spans and smaller attendance. Qatar is 1/3 the size of Switzerland and has more challenging and unforgiving weather to undertake such a worldwide mega-event. To coordinate the actions for the WC, Qatar created in 2011 the “Supreme Committee for Delivery and Legacy” (SCDL) [21], which shows updates and news related to the event and all the sustainability and legacy initiatives undertaken thus far.

Considering the interests exposed by FIFA to reward the Qatar WC candidature, there are some innovative and risky aspects to consider. In the FIFA Bid evaluation report for Qatar [3], one of the most notable eye-catching offers, was the proposal of the most compact WC in decades, in a small area with a radius no larger than 60 km. This aspect entails a novel approach to event operations and future legacy, concentrating all the venues and key event sites in Doha and surrounding neighborhoods and suburbs. Furthermore, Qatar is engaged in organizing the first “carbon-neutral” WC, leveraging renewables energies, environmental construction practices, and new cooling technologies in the construction of all the stadiums, a commitment already observed in past WCs, but with different and disputable outcomes [13]. As usual, FIFA was also interested in expanding the soccer fan base to other continents. Organizing the first WC in the Arab world and the Middle East, where soccer is a very popular game, was a powerful drive to endorse Qatar’s candidature [3].

Understanding the motivations of Qatar behind organizing such an event is a way to capture the drivers behind challenges and opportunities to face future sustainable impacts. First, there is a common interest of countries and cities to host SMEs because of the prestige, branding, global exposure, and universal recognition as world destinations open to the world for multiple opportunities and sectors [6,7]. For developing countries, hosting an SME is an indication of stability and promising future roles as emerging players on the global stage [13]. In addition, it provides a catalytic boost for the local host economy, financial prospects [67], urban development, and other sectors. All these aspects are currently reinforced and tied together with the concept of sustainable development, in which such SMEs must meet sustainable requirements of a more environmentally, globally, and socially concerned world, in parallel to the economic development agenda [12]. Qatar’s motivations are encompassed in such a frame. The bidders saw for Qatar the chance to achieve a notable position and good international standing, recognized as features of soft power [21], while increasing cultural exposure and the buildup of an auspicious destination for business [94], key features into the Qatar development blueprint known as the QNV of 2030 [137].

However, Qatar’s performance for the FIFA WC 2022 has been called into question at times. There have been multiple allegations of international worker abuse or forced labor in constructing the stadia and even human rights abuse [138]; alleged accusations of bribes for obtaining the WC host award have also been raised [139]. Additionally, Qatar had to agree to build a millionaire sports infrastructure and related urban facilities in a country of little sports, soccer tradition, and few stadia, which could potentially lead to a white elephant infrastructure. Urbanistically, Doha is an area in development, fragmented in terms of growth and with signs of urban sprawl with the arrival of thousands of expatriates [70]. Despite all these constraints, Qatar has hosted some major tournaments in the past, such as the FIFA U20 WC (1995), the XV Asian Games (2006), the Asian Confederations Cup (2011), and other smaller games [91]. Qatar also participated in the bidding of the organization of other SMEs, such as the Olympic Games of 2016 and 2020 [91], but with unsuccessful candidatures, which were turned down because of health issues and weather seasonality related to organizing the Games on the Gulf in the summertime. Similar allegations were raised with time against the FIFA decision

to reward Qatar's WC bid, in a country of extreme temperatures around June/July. The stadium infrastructure to be developed for the WC is shown in Table 4 [3,140].

Table 4. Qatar World Cup stadium infrastructure.

Stadium	Location	Capacity (Seats)	Construction Stage
Lusail Iconic Stadium	Lusail, Al Daayen	86,250	Under construction
Al Bayt Stadium	Al Khor	60,000	Under construction
Al Rayyan Stadium	Al Rayyan, Doha	44,740	Expanded
Al Wakrah Stadium	Al Wakrah	40,000	Under construction
Education City Stadium	Al Rayyan, Doha	45,350	Under construction
Khalifa International Stadium	Khalifa city, Doha	40,000	Upgraded
Ras Abu Aboud Stadium	Port area, Doha	40,000	Planned
Al Thumama Stadium	Doha	40,000	Under construction

Initially, in the bid, Qatar proposed the construction of 12 stadia, but due to financial constraints and growing costs, the organizers requested that FIFA cut the number of stadia to nine or eight, which are the presently projected venues [141].

The timeframe of planning and legacy of the event is presented in Figure 6. One of the main changes observed between the present event timeline and the initial proposal is the new event execution dates, which were changed from the usual June–July to November–December. That was a wise decision, which countered the initial optimism to undertake the WC, under the extremely hot temperatures of the Middle East summertime. After initial discussions and reconsiderations [142,143], the new time event between November and December in autumn helps to significantly avoid health issues related to the heat and other cooling requirements for all the WC visitors and participants.

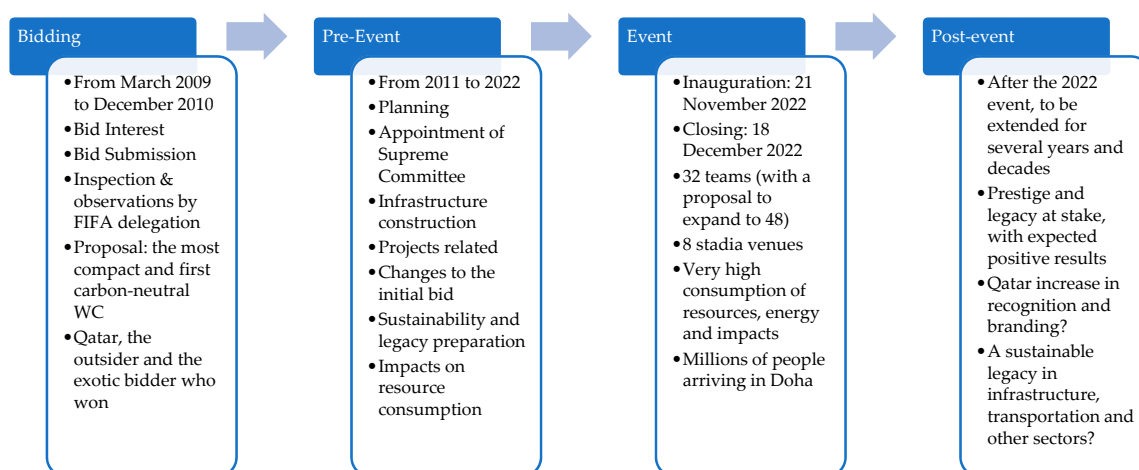


Figure 6. Stages and timeframe of the Qatar 2022 World Cup [3,142].

4.3. Qatar 2022 Sustainability and Legacy Challenges

It is contentious to establish a common legacy and sustainability frame to evaluate the effects of SMEs. Therefore, considering the three main pillars of sustainability (environment, social, economy), the four legacy pillars of the QNV 2030 (the three pillars of sustainability plus the human dimension) [137], the topics which are more relevant on the literature regarding SME and sustainability (Figure 3.) and the frameworks of legacy proposed in the literature for other past SME [9,24–28], we propose the fields in Figure 7. to discuss the sustainability challenges, legacies, and impacts related to the planning, operation, execution, and post-execution of the Qatar 2022 WC.

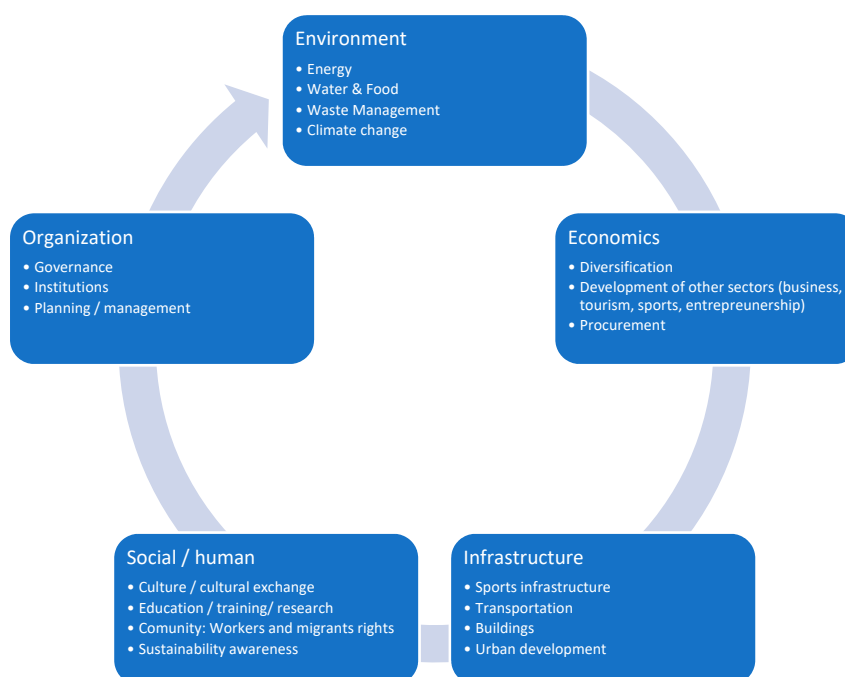


Figure 7. Framework of sustainability aspects for the Qatar 2022 World Cup.

In each of these fields, we explain below the associated legacies as the expected/unexpected structures to remain after the WC, either positive or negative, tangible or intangible, with long-term nature and which are the product of the WC achievement [9,27]. At times we point out the impacts as the quantified effects which are noticed on the WC organization [27]; also, we understand impacts as changes with an immediate nature on the different fields, while legacies recall long-term changes. Elaborating on the proposed fields:

Governance/organization: the preparation and successful execution of the WC depend on all the stakeholders' coordinated participation. FIFA usually cares for the profitability and attractiveness of the event, while the hosts are more interested in the long-term contributions, the prestige, and the legacy for the country [13]. At times, there are conflicts between these interests because the FIFA organization is quite vertical in terms of the power roles and how the WC should be prepared and executed following its entertainment business model, without a democratic consensus [13,111]. In the field of sustainability, the FIFA WCs have not followed the long route and principles established by the IOC for OGs [23], and the green goal programs for greening WC events have usually been executed without long-term preparation and relatively poor coordinated implementation, especially in developing host countries [13]. The challenge is to see if Qatar may meet and execute the commitment of a "carbon-neutral" WC with more harmonic governance between the hosts and FIFA.

Institutional: related to governance, the Qatari organizers need to build strong institutions to address the multiple challenges of the WC. With the creation of the Supreme Committee for Delivery and Legacy in 2011, Qatar centralized efforts to reach multiple objectives. In addition to the missions related to a successful and satisfactory accomplishment of the WC, the SCDL aims to "create a legacy for future generations." In doing so, SCDL is the competent authority to propose initiatives and projects, supervise them, follow up, assess and guide activities, propose policies, and many other tasks [144]. Related to the sustainability activities, the SCDL created the Josoor Institute to help build skills in sports and events through education, training, certification, and other tools [145]. It remains to be determined how the SCDL crosses the gap to create collaboration with NGOs and other third local parties to meet the sustainability and legacy challenges, initiatives that in Sydney 2000 helped to create a successful green event and sustainable collaboration [12].

Social: Qatar is the first Arab country to welcome the WC in a region such as the Middle East, which is usually portrayed as very conservative and traditional. Although there are differences among

the Muslim countries, Qatar is still a traditional country with high respect for the Arab culture and religious behaviors that should be followed by the nationals and respected by the immigrants and visitors. This aspect, in turn, clashes at times with the Western modernity approach that the Qatari government is embracing for future generations, and the immigrants/visitors' lifestyles [98]. The WC is expected to welcome thousands, if not millions of visitors, with different traditions that could produce some cultural clashes. For instance, such clashes could take place in the celebrations after numerous matches in a festive environment such as the soccer WC, with usually high consumption of alcoholic beverages (alcoholic consumption is forbidden in Qatar), which augments sports' passion and feelings. Qatar's challenge is to encourage respect, knowledge, and tolerance for traditions and habits in an environment that facilitates cultural exchange, understanding, awareness, and anti-discrimination, but at the same time, allowing room for the celebration of the event, which is expected to position Qatar in closer contact with the whole world, one of the most outstanding legacies.

Additionally, Qatar faces the challenge of social inclusion and human and labor rights equality, referring to accusations of abusive labor practices [97], with immigrants employed particularly for the construction of the stadia and other infrastructure related to the WC. The human/labor rights issues do not only refer to the WC, but also the vast construction boom in Doha, with labor practices that predate the WC. In 2013, it was reported that after Qatar awarded by the FIFA, 1200 migrant workers died in the construction sector, and 4000 more were expected to die until the event's realization in 2022 [146,147]. While the report did not state that the negative impacts of all these workers' demises were specifically related to WC works, most of the construction boom projects are related directly and indirectly to the WC, tarnishing in many ways the planning, preparation, and execution of such SME, Qatar state institutions, and the FIFA.

The human rights issues, abuse, human trafficking, and forced labor conditions are all spread along the migrant workers' life cycle (MWLC), which is defined as all the activities between the migrant worker and the labor migration system, from the moment he considers migration to work until his return and reintegration into his home country society [97]. Thereby, the MWLC encompasses stages such the recruitment, deployment, employment, and return. Different players such as national institutions in the country of origin (usually, South Asian countries such as India, Pakistan, Bangladesh, and others) and country of destination (Qatar), interact with the workers, using mediators (labor brokers), operators (employment/recruiting agencies), and employers, in a system which provides a legal frame to "protect" the workers' conditions. However, the system lacks proper supervision and legal enforcement, encouraging indirectly practices that weaken suitable working and living conditions, and tolerate abuses [97]. Framing the abusive practices, conditions, and human traffic along the MWLC, we have Figure 8:

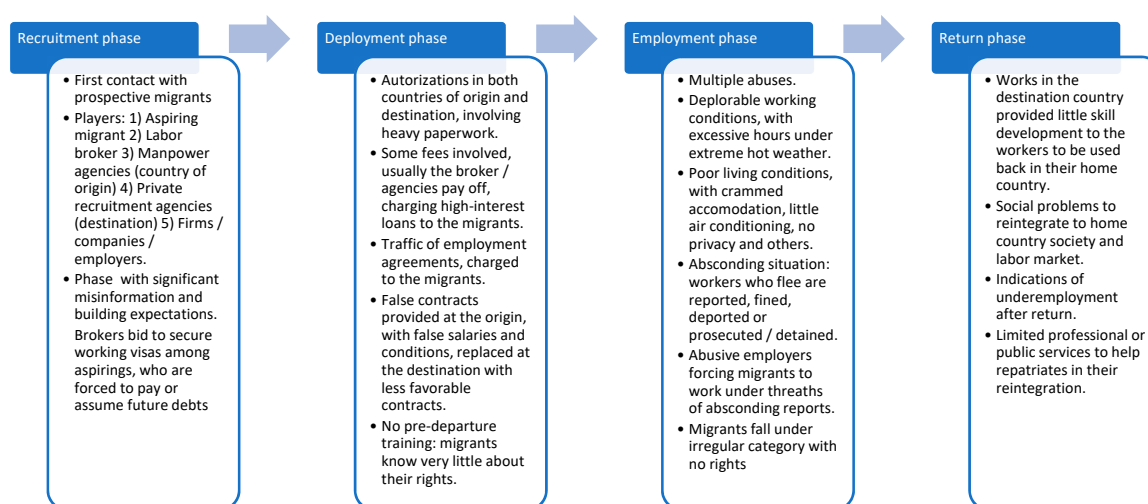


Figure 8. Mistreatments in the migrant workers' life cycles [97].

Watching the problem from Qatar and WC organizers (both FIFA and Qataris committees), this is one of the most challenging social/human problems because it affects the image of the country, and branding of the event significantly. For the FIFA and companies/contractors operating in Qatar, it is a matter of Corporate Social Responsibility, in which they are involved directly for tolerating such abuse and being permissive with subcontractors with such practices. For Qatar, it is a matter that reflects permissive, unregulated, and highly condemnable practices. It affects its national competitiveness, generating the perception of a country with risky practices and limited capacity to promote respect for legal labor rights, accountability, and transparency. It tarnishes its reputation as an attractive labor/business destination, affecting the international image and soft power (influence power) that Qatar has been trying to build up for many years, and where the WC is supposed to play a pivotal role to increase such power, not to decrease it, a counterproductive legacy [74,97].

Education, training, and research: the WC will be a huge social event, which could also serve as a catalyzer to promote sustainability campaigns, teaching both Qatari society and visitors about the importance, legacy, and impact of large events on the environment, prompting increased awareness and green habits. These effects will be experienced among children and students in general at the school level, encouraging sports values and sustainability awareness simultaneously, but also among adults through public campaigns for the general community, as in previous WCs [11,18]. Training should be accounted for this input in themes such as managing sports and events, for instance, through entrepreneurship and building skills. Last, but not least, the WC provides a wide area at the research level to investigate how to stimulate positive legacies, with programs, initiatives, and policies in an SME atmosphere, showcasing an example for other Middle East and North Africa (MENA) countries.

Economic: the economic sustainability of past WCs and OGs has been studied and called into question in some studies, which mainly demonstrated that several SMEs are indeed a large economic and financial loss for the host countries. A textbook example of a negative economic impact is the Toronto 1976 OG [12], which was a large financial drain for Toronto, with financial obligations being paid off more than three decades after the event. Similarly, Germany 2006 and South Africa 2010 left the respective countries with large obligations [13]. The challenge for Qatar 2022 is to ensure, if not a financially positive impact/balance after the tournament, a long-term economic boost for several sectors of the Qatari economy, playing an amplifying legacy role for growth, knowledge transfer, and diversification in Qatar for the next decades, in which business, new projects, and innovation can flourish sustainably. A high dependence of Qatar on oil and gas exports has served as the recipe for economic growth over the last two decades [135]; however, a change for healthy development of the economy into other economic areas is a coveted legacy, for instance, turning Doha into a tourist destination [74] or making Qatar an attractive sports destination [22].

Buildings: the most important building projects are the several stadia in all the Doha conurbation, with high material requirements for construction and energy demands for the operation [122], i.e., high environmental impacts. As shown in Table 4., most of the stadia have 45,000 seats on average, which are due to be fully used in 2022 because of the importance of the event, with 3 to 4 matches per day. There would be a high electricity demand for lighting, air conditioning for the public to provide adequate climatic conditions as promised on the bid [3], IT demands, and other services, in addition to the operation and maintenance of such an infrastructure. The challenge is to supply such energy more efficiently, from cleaner energy sources and with little consumption when not in use.

Transportation: there are different ranges of transportation effects to take into account for an SME. One is the aerial transportation of spectators/participants from all over the world, which according to different reports [13,49,51,52,91], has the largest impact on the carbon footprint; however, it is also difficult to decrease this component because it would involve worldwide coordination with all the airlines transporting people to the event. Another impact is introduced by interregional/intercity transportation, which is expected to be negligible since Qatar 2022 is planned to take place around the Doha conurbation only [91]. However, and due to this issue, high workload impacts of interurban transportation in and around Doha would occur. In addition to the large logistics challenge of the

daily commute between the stadia and accommodations/other destinations, there is the challenge of building a complete and effective urban transportation system of metro, buses, and other means [91]. This system should be large enough to ensure good public service among all the destinations during peak times and multiple rush hours before and after the games and celebrations. After the WC, the transportation system must remain as an urban legacy for Doha.

Urban planning and development: in general, well managed SMEs could lead to urban legacies in different areas, enhancing the urban services and infrastructure for the satisfaction of future generations [70]. Poorly managed SMEs could rush to a fever in which the event preparation captures hosts, resources, time, and projects for the sake of the event, without considering the future responsible legacy for the cities, eventually leading to several “white elephant” projects with an idle infrastructure after the event. The literature already describes this effect as “event seizure” [60]. Doha is a growing and young city with some urban sprawl due to the large numbers of new expatriates in the labor market. The challenge is to ensure the WC works as a catalyzer to correctly reformulate the urban planning of the city, contributing to the establishment of positive legacies with the best urbanization practices. This facet ensures knowledge transfer from other countries and experts in the area, which simultaneously can experiment with new prototypes, ideas, and templates on an urban scale, not only for the event but for Doha [70].

Environment: environmental sustainability for Qatar 2022 involves multiple challenges on different levels, which will be explained below, all of which are augmented by the Qatar arid environment, limited resources, and economic activities relying on fossil fuels [74]. The most explicit challenge was set by the Qatari organizers when proposing the first carbon-neutral WC [3], but this is just an expression of many other challenges that should be addressed first before tackling such a commitment.

Energy: Qatar relies highly on natural gas to supply most of its activities, as NG is the prime and abundant energy resource located on massive quantities of natural gas at the North Field Gas reservoir [135]. Since it is abundant, and the government provides subsidies for energy consumption, the gas price in Qatar is very low, leading to very high energy consumption per capita indexes (Qatar is, indeed, among the countries with the highest energy per capita consumption in the world, due in part to the gas production and in part to the high energy commercial and domestic consumption [91,148]). Without a mega-event and close to 3 million people, the energy consumption is high [148]. With an ongoing mega-event, the energy impact will unfold in several ways from the operational requirements of the stadia for the 64 matches, to the basic domestic services required to keep up with the event operation (electricity, transportation, cooling, IT, housing, etc.) and the commercial/housing services for all the visitors. Qatar should ensure that such energy consumption is operated with the help of cleaner technologies to reduce the carbon footprint and leave a legacy of energy clean technologies for the future.

Water: Qatar is a physically water-stressed area, i.e., with limited and few water resources, which are under depletion because of the high water consumption [136]. This consumption is growing at an alarming rate due to the millions of people living in Qatar, a demographic phenomenon without parallel in the country. One identified example is the depletion of the underground water, with consequences on lowering the water tables of the Qatar aquifers and which has led to the use of water desalination technologies, with high operational costs for the country and in general for all the Gulf countries [149]. The sudden arrival of millions of people for Qatar 2022 would put such resources under extreme stress; the challenge is to ensure that there will be no water shortage impact, with an adequate supply but without depleting more the remnant of underground water, a precious resource in arid rainless geography such as Qatar.

Food: like water, food is a resource of little production in Qatar due to the barren geography [136], balanced by the external dependence on exports. It is very likely to count on the cooperation of other countries to supply food for the millions of spectators, but this is just a reminder of the external dependence of the country for the food value chain and of the stresses inherent to feeding the Qatar population in a non-agricultural country. In this case, the food footprint would be transferred to importer countries, with additional costs on transportation.

Waste management: the WC consumption of materials and resources would generate millions of tonnes of waste during the pre-event and increasing amounts during the event. The projects and future operation of the WC should ensure the leverage of waste management policies with effective value chains that enable the reuse and reduction of waste streams and then recycling [18].

Procurement requirements: a method to generate significant sustainability changes is to motivate other stakeholders to follow sustainable practices. Such a scenario could be the case for the procurement and logistics chains, where WC promoters obtain products, services, and materials, and who could induce manufacturers to follow suit through the sustainable procurement policy, sourcing code, procedures and control, and enforcement mechanisms, maximizing efforts in favor of the procurement of products and services from Qatar and MENA [150]. For instance, a brokerage service matching buyers with local suppliers could enable access to business opportunities before and during the WC.

Climate change: most of the aspects discussed above are associated with the influence of climate change, usually expressed through carbon footprint estimations and impacts. Table 5. and Figure 9. [49,51,52,91] present the distribution and totals of carbon emissions for past WCs, showing the shares of different sectors, from which we can see that international transportation is the largest share of emissions, something difficult to decrease because of the airplane fuel technology and an activity out of control of the WC organizers. Additionally, the WC carbon reports address the carbon emissions of the event operations and logistics, but they do not focus that much on the preparation stage. Therefore, the “carbon-neutral” impact target set on the Qatar bid should first define the meaning of the “carbon-neutral goal and scope” and then guarantee that the decrease in emissions is from carbon reduction policies, leaving a legacy example for other WCs. This consideration may help to change the very high carbon emissions in Qatar (as with the high energy consumption per capita, Qatar also registers the highest carbon emissions per capita in the world [91], 2/3 of them attributed to oil and gas production activities and the rest to commercial/domestic activities), not only relying on carbon offsetting measures and the purchase of carbon credits on other sites (an activity that could potentially be labeled as greenwashing the event).

Table 5. Carbon emissions equivalents for the last four World Cups (tons) [49,51,52,91].

Emissions of CO ₂ Eq. Per World Cup (Tons)	Germany 2006	South Africa 2010	Brazil 2014	Russia 2018
International Transport		1,856,589	1,379,189	1,258,694
Intercity transport	67,456	484,961	802,397	377,600
Intracity transport	5544	39,577	98,464	35,553
Stadia Construction and materials	4140	15,359		
Venue energy use and consumption	2890	16,637	262,759	221,088
Accommodation	11,640	340,128	155,316	252,826
Others (logistic, merchandise, etc.)			25,631	92,778
Total	91,670	2,753,251	2,723,756	2,238,539

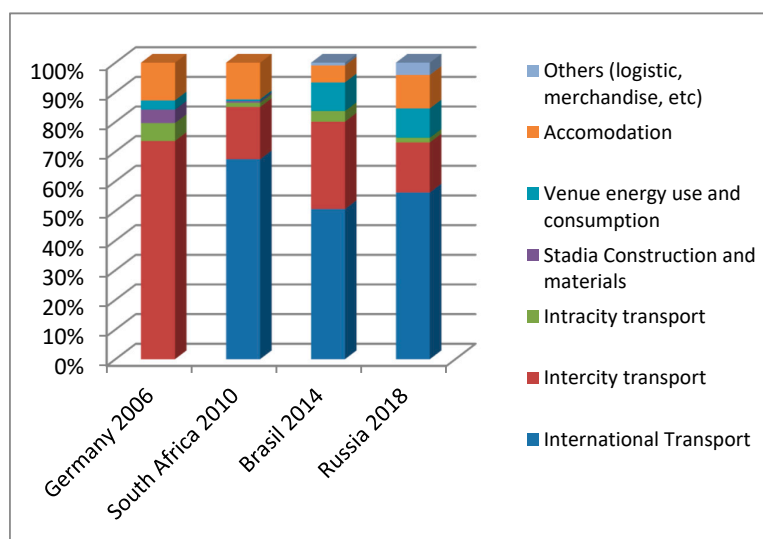


Figure 9. Shares of carbon emissions equivalents per World Cup.

5. Discussion: Opportunities and Progress Made

The challenges explored thus far are enormous, and the solutions to them are neither quick nor unique, i.e., there is not a unique solution that fits all the challenges. They involve changes through generations and strong leadership, but they are necessary to correct the unsustainable effects and impacts described. Qatar 2022 could work in two ways: one in which it stresses more the problems and leaves negative effects/useless initiatives for the future; the other in which a sustainable legacy is satisfactorily achieved, working as a catalyzer for positive effects/impacts aligned with the realization of the QNV 2030 [137].

Between Qatar and the FIFA organizers, they have the chance to advance the common subject of sustainability and WC organization by integrating the sustainability pillar as did the IOC into the OG organization, setting liable terms for the host's candidates. FIFA WCs started to become concerned about the subject later than OGs, and they have not fully integrated a sustainable framework beyond the initiatives of event-greening or greenwashing [13,23]. FIFA has been more concerned on the business side of the event, at times leaving the impression of seizing resources, time, and projects of the hosts, without an environmental concern for the world or long-term legacy concern for the hosts [13]. Holistic integration of the aims, with more democratic governance on the organization from the parties, plus looking for feedback from the community, other experts, and civil society has worked out in events like the OG to achieve satisfactory sustainable outcomes, as seen in Section 2. That experience could also be replicated in Qatar.

As the host, Qatar has the chance to leave a long-lasting positive legacy for developing the capital Doha, its most important city and political-economic center, with an event that tests a new spatial model of WC. This model was first described as the “most compact” WC ever, similar in many ways to the OG spatial models, concentrating all the matches in a small central area [3]. However, and unlike other Olympic cities such as Sydney 2000, Athens 2004, Beijing 2008, London 2012, Rio 2016, and any other any WC, this mega-event is going to take place in a new urban area undergoing plain development. Doha was a small city just three decades ago, fairly unknown to the Western World, and quite ordinary among Middle East cities [67]. Urban development progressed hand in hand with the outstanding growth of the Qatari economy, but when elected as the 2022 WC venue, many voices claimed its election as the outsider candidate, with a neighboring city such as Dubai presenting greater development into the “neoliberal Gulf model” [67] and attractiveness [13].

Nevertheless, this is an exceptional opportunity because Doha is growing quickly, urbanistically progressing thanks to the urban boom and economic push of multiple investments. Concentrating the WC or any mega-event in this type of city may tremendously facilitate its master planning, while

supporting the integration of policies, initiatives, and projects for the WC under just one-city umbrella, and not several with known coordination problems, for instance in South Africa 2010 [19]. A reflection of such master planning is the development of the Doha transportation system, which is relatively new, based on the foundation of Qatar Transport Company in 2004, and a city-bus system formed in 2006 [91], which is relatively small because Doha is highly characterized by private transport, wherein most dwellers own cars. Doha is building a new metro system, a project revitalized by the need to transport visitors under the extreme peaks of the WC games and subsequently left as part of the public transport infrastructure, reducing carbon emissions, traffic problems, and the massive commuting demand, growing in parallel to the Doha population. Qatari organizers are designing initiatives to facilitate the massive use of the future metro, the Lusail tram, buses, and other means of public transportation (free public transport tickets, multiple-journey tickets), decreasing the dependence on particular cars while creating in parallel a substantial dependence on public systems [151,152]. Other healthier and zero-carbon means such as cycling and walking could also be explored during winter and the most weather-friendly months [152].

Qatar has the chance to revitalize the idea of the “carbon-neutral” WC with this new spatial model and the technological advances applied to the field of energy, environment, waste management, water resources (desalinization), and others. In terms of spatial compactness, it omits the need for intercity transportation in other WCs such as Russia 2018, which were highly dependent on airline transportation and had high carbon emissions and energy consumption. This compact model also allows fans and participants to be hosted in one place for the whole WC or the whole stay at the WC, unlike other tournaments, reducing the corresponding expenses and raising the attractiveness of the Cup [3].

The WC organizers were wise to move the WC execution to late November/December, thus reducing cooling demands and subsequent energy consumption. Nevertheless, cooling will be needed, but Qatar organizers are emphasizing the application of innovative technologies, leveraging carbon-free technologies such as solar energy [144]. Additionally, the stadia are located to grow as future hubs of urban development in diverse neighborhoods of Doha and to be used not only as stadia but such as hotels, malls, and sports centers for soccer and other sports fans. To avoid idle capacity of the stadia, they are built under a modular, detachable design to be used at full capacity during the WC and then partially dismantled and donated to developing countries, to promote sports and build 22 other stadia [67]. Maybe the most striking and innovative design proposal is the construction of the fully modular Ras Abu Aboud Stadium, which consists of 40,000 seats in the waterfront area, set to be built with steel containers and other prefabricated, recyclable, and dismantlable parts, reducing waste materials [153]. Once the WC is done, the stadium will be completely dismantled and the materials used for other projects [154]. This stadium is a unique case in WC history, showcasing that a new construction model for WC stadia is possible, reducing construction costs, and eliminating operation and maintenance expenses after the WC, an overburden cost held by many ex FIFA WC hosts.

On the social side, Qatari organizers are thinking about the development of social capital building initiatives to integrate locals, expatriates, and visitors in a harmonic environment of friendly understanding, respect, and cultural exchange. Those initiatives are reflected in Figure 10.

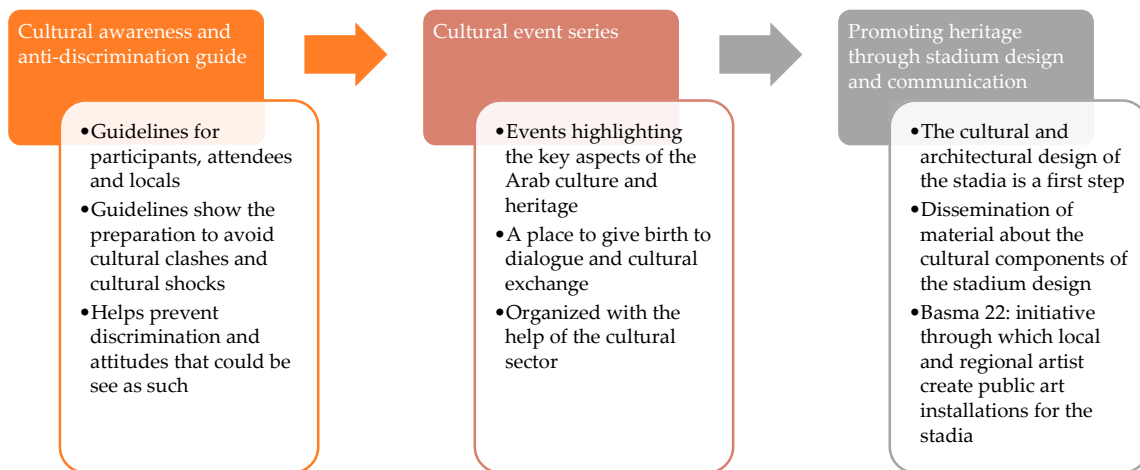


Figure 10. Cultural initiatives working for a social capital building [155].

If successfully applied, these initiatives plus others could lead to positive experiences, as part of the “collective memory of the event” [115], contributing to local and international long-term changes in perceptions regarding Qatar as the host WC country and promoting gains in other sectors.

Aiming to capitalize on the human capital development side through education, training, research, and other social programs, some potential initiatives are stated in Figure 11. These initiatives could help build skills and capabilities in the future for several sectors of Qatar nationals and expatriates.

Educational initiatives	Programs for teachers and educators	Innovation & entrepreneurship: education & training	Experiential research programs and partnerships
<ul style="list-style-type: none"> • Educational festivals before and during the WC • Sports values and sustainability in education in the K-12 system • Programs such as Generation Amazing and Green Generation, Healthy Generation, Inclusive Generation, promoting soccer, education and sports development with social inclusive purposes under the UN Millennium goals 	<ul style="list-style-type: none"> • Free education toolkit: a tool for teachers, parents, coaches and educators in general • Complementary educational material in the curriculum • Topics related to the WC: healthy lifestyle, sustainability promotion, green public transport and infrastructure • Generation Amazing working jointly to help educators 	<ul style="list-style-type: none"> • Aimed toward youths, women, adults and expats • Programs to build skills, capabilities, experience in managing, hosting, and organizing sports events • Institutions: JOSOOR Institute, Challenge 22, Qatar Innovation Capacity (QIC) • Programs for staff and volunteers for the WC and participation of community representatives 	<ul style="list-style-type: none"> • Aimed to stimulate research on sports and sustainability common areas • Institutions: JOSOOR Institute, Challenge 22, SCDL workers welfare • Application of the building of environmentally friendly stadia and surroundings: The Al Thumama experience

Figure 11. Human capital development side through education, training, and research [114,145].

Finally, regarding human rights and forced migrant workers’ issues, Qatar issued new procedures and mechanisms to control the abusive practices of employers such as non-payment, excessive hours, work under extreme conditions, confiscation of passports, and others [97]. Simultaneously, the Qatari government has been trying to improve the workers’ accommodation and change immigration mechanisms [97].

Nevertheless, it is still due to be seen if these measures could reform the migration workers’ system because that takes time, and also this is not only a problem of Qatar but a complete system involving several countries. The correction of such systems’ exploitations requires not only the criticism of first world countries and human rights institutions but their help and surveillance to implement a robust anti abusive workers system

As seen previously, Qatar 2022 organizers are working intensively on the urban, infrastructure, educational, social, technological, environmental, and other sectors. There is no doubt that the WC could potentially boost several Qatari economic sectors, such as tourism, sports, and, most importantly, the diversification of Qatar's productive activities beyond the sale of energy resources, which are huge in Qatar but finite and exhaustible eventually. Considering the opportunity to diversify such an economy through the WC organization would provide another vital legacy, but it should be done in a sustainable framework that respects the social, economic, human, and environmental goals.

6. Conclusions

This study centered on the consecution of the Qatar 2022 FIFA WC as SME and the sustainability aspects of the future event, considering sustainability as one indispensable concept for the organization. The main contribution of this study is to holistically synthesize the sustainability issues and challenges, legacies, motivations, opportunities, and initiatives on the lead-up to the Qatar 2022 WC. This sustainable approach assembled with the legacy vision on the WC organization is expected to catalyze on different sectors of development of Qatar, boosting this new emergent country in the Middle East. Other contributions are the systematic analysis and comparison with other SMEs, to offer early warnings for additional measures to increase the sustainability level of the WC, and to ensure prolonged positive impacts on most if not all stakeholders.

Furthermore, this early comparison could help better designing and organizing future mega-events from a comprehensive point of view. The initiatives related to developing such a frame of mega-events are still a developing front to be fully integrated with OGs and, more sharply, in the FIFA WCs. The literature body shows progress in the development of structures to support the sustainability framework towards greener games and tournaments. However, the experiences of different SMEs show that it is difficult to put such a framework into practice, ensuring the accomplishment of sustainable events that can leave positive legacies for the host countries and cities, with economic returns for all the stakeholders and with human/social development.

Within such a frame, we are three years away from the FIFA WC—Qatar 2022. A unique event for Qatar, it is due to be the first WC in all the Arab World and the Middle East; additionally, and according to the engagements by Qatari organizers, it is due to be the first carbon-neutral and most compact WC in history. The new approach using a reduced compact spatial model to organize the WC into the Doha conurbation, with all the venues within one hour of transportation, allows some reductions in carbon emissions from the WC. The leverage of innovative technologies and new construction approaches can be helpful to likewise contribute to energy efficiency, reduction, waste management, and other problems. However, the challenges are also huge, mainly related to using the WC as a catalyzer for sustainable development in different relevant economic, environmental, social, and human areas, in a small and arid country of an unforgiving environment. The successful consecution of the event would demonstrate in the short-term, the diligent and meticulous organization of the Muslim country in a world-class SME; in the long-term, it may turn into a future model of sustainable WC organization and positive contribution to the host country development.

Qatar and FIFA organizers are still due to deliver a sustainable strategy related to the WC, which could explain in more detail the carbon neutrality concept applied to this SME and the strategies used to operate the achievement of the carbon-neutral target. If well managed, such a strategy could be a new step and contribution to reducing carbon footprints of mega-events. It would be pertinent to see the progress and contributions of the Qatar 2022 WC, towards the reduction of the environmental footprint, when compared to previous WC. Socially, it would be relevant to see the progress and measure effectiveness on workers' human rights and the integration of the community as an early participant in the organization, leading to more democratic involvement of the civil society, which is due to be impacted by the legacies of the event. Such participation has already ensured a more satisfactory outcome and positive collective memory [12] on other events.

According to the drives to organize the event, Qatar would eventually increase its global image and reputation, making it attractive as a new destination for different activities such as business and sports and developing the country socially, humanly, economically, and with respect to the environment, which are the four main pillars envisioned in the QNV 2030. The Qatar SCDL has already released a legacy book [114] based on such vision, a guideline to the main targets to be achieved after the event. Time will tell if the organizers will be able to translate the Qatar WC organization into an effective tool to drive such a vision.

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Abbreviations

Sports Mega-Events (SME); Olympic Games (OG); FIFA Men's World Cup (WC); International Olympic Committee (IOC); Non-Governmental Organizations (NGO); Supreme Committee for Delivery and Legacy (SCDL); Qatar National Vision (QNV).

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