

ARTICLE

STUDY OF ENVIRONMENTAL FACTORS OF OLYMPIC GAMES ON THE HOST CITIES FROM PROFESSORS AND EXPERTS VIEWPOINT CASE STUDY: LONDON 2012 OLYMPIC

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ABSTRACT

The Olympic Games are a world renowned sports Competition. The purpose of this research is Study of environmental factors of Olympic Games on the host cities from professors and expert's viewpoint, which was conducted as a case study on London 2012 Olympic. The method of this research was qualitative and quantitative. In the first phase, a questionnaire was developed using interviews with 25 individuals from professors and experts in physical education, sport management, economics and achieve theoretical saturation, as well as the history of literature. Then Content validity of the questionnaire was approved by professors, and its reliability was calculated using Cronbach's alpha for environmental factors 0/84. Secondly, according to a list of experts and professors in the field who have written and researched article, was sent questionnaire for them, which in ultimately were collected, necessary information than 120 people from the professoriate and Experts inside Country and outside Country. Thus the sampling was non-random targeted sampling methods and accessible. The descriptive statistics were used to calculate central tendency and dispersion, and inferential statistics were used to determine the KS test for normal data; Friedman test was done for ratings and ANOVA to compare the views of the software SPSS16 ($P < 0.05$). Friedman test related to respondents Overall view showed that, Transport Promotion is the highest rating, and biodiversity development is the lowest rating. According to the results of the ANOVA are considered among the masters and experts, and professors and experts from abroad in environmental factors, there is no significant difference at $P < 0.05$.

INTRODUCTION

Encyclopedia Britannica (2008b) suggest that the founder of the Olympic Games (Baron Pierre de Coubertin), with the goal of peace and equality, founded it with the slogan stronger, higher, faster. IOC is responsible for choosing the host city for the Olympics. The host city is responsible for the regulation and investment (funding) celebration of the Games consistent with the Olympic Charter; these programs include competitions, which are determined by the IOC [1].

Pierre de Fredey, the Baron de Coubertin, founded the modern Olympic Games after inviting delegates to come to Paris to discuss amateur sports at an international athletic congress. Coubertin then surprised them with a proposal to revive the Olympic Games of classical times and the 78 delegates from 9 countries voted unanimously to support his dream. Coubertin believed that the Olympics was much more than just a sporting event, and developed a philosophy to underpin the Olympic movement and guide its development. The Olympic charter⁴ devised by Coubertin states that Olympism is a philosophy "exalting and combining in a balanced whole the qualities of body, will and mind," Blending sport with culture and education, it seeks to create a way of life based on the "joy found in effort, the educational value of good example and respect for universal fundamental ethical principles"[2].

National Olympic Committees, almost 10 years before holding the Olympics period, send a notice to all National Olympic Committees. Eight years and a half before the game, cities have volunteered to host the Games, they have announced their bids. IOC has approximately seven years before the Games; will select the host city. Candidate cities must begin to organize the games, with a detailed plan, including equipment and sport facilities and accommodation capacity, public and private transportation and communication and..... [3]. The Olympic Games like World Fairs have become major showcases for the host cities and countries. The Games have evolved to have considerable impacts on the host cities. From an economic perspective, the Games have a catalyst effect for the economic development. These Games have changed the infrastructure and environment of the host city. For example, the Rome Games of 1960 improved the public transportation and built a new water supply system for the city. The Tokyo Games of 1964 built 22 new highways and improved the city's water and sewage system [4].

In 1999 the Sport and Environment Commission implemented its own Agenda 21 according to the 1992 Rio Agenda 21. The Olympic Movement's Agenda 21 focuses on three main points:

1. Improving socio-economic condition;

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2. Conservation and management of resources for sustainable development;
3. Strengthening the role of the main groups. (IOC, 2003)

The Games of London 1908 was the first Games to build a new venue. However, the new White City Stadium was not a success due to the accommodation of too many sports[5].

In 1994 the IOC working together with UNEP adopted the sustainable development concept for the Olympic Games. The Olympic Games in Lillehammer 1994 were the first green Games. The outcome of those Games made IOC more clearly on the importance of the environment. In 1995 the Sports and Environment Commission was created, and environment become the third pillar of the Olympic charter together with sport and culture [4].

Environmental activities of the olympic movement

1972: Japan's Sapporo Winter Games, Contests condition was confirmed, after finishing the game, the environment can be restored to original condition, and does not harm the surrounding environment.

1972: Munich Olympic Games, was designed buildings, with the precondition that the collection after the game has been used as a natural park for residents of Munich.

1992: During the Olympic Games in Barcelona, the IOC's athletes and officials, along with other members of this movement have attempted to sign a treaty entitled "Convention on Earth", by which they bound themselves to protect and protection of the earth.

1993: This year, the City of Sydney, with a commitment to the pursuit and development of environmental guidelines, was chosen to host the Olympic Games in 2000.

1994: City L. Hummer, with considerable emphasis on environmental responsibilities, began the Winter Olympics.

1996: The International Olympic Committee took action, the Commission Sports and Environment. The environment was introduced as the third pillar of the Olympic Charter.

1997: The Second World Conference on Sport and Environment held in Kuwait.

1999: Third World Conference on Sport and Environment held in Rio de Janeiro, Brazil, and adopted Agenda 21 Olympic Movement.

2000: Olympic Games in Sydney, behind the new international standards, in order to integrate environmental issues with decision making, construction and operation of various sports events.

The Winter Games in Nagano, Japan, for the construction of buildings and needed sports facilities, thousands of trees were cut. In contrast, tens of thousands of trees have been planted by athletes and students from ten years ago, around the set. At the Nagano Winter Games, the Olympic Flame Propane was used as fuel, which was used in comparison with previous cases of paraffin, was produced much less smoke and carbon monoxide. At the Nagano Winter Games, were used in iron recycling in making the ski jump platform.

At the Sydney Olympics, bags for trash bins, made from grain starch, paper packaging materials with food residue was converted to fertilizer, and are used in landscaping and gardens floor layout of the Olympic Games in the park. At the Sydney Olympics, under the "maintenance of the Earth's Olympics", was planted thousands of trees native to Australia, the Olympic stadiums, and more than two million trees across Australia.

During the 1996 Olympic Games, Atlanta air was 30 to 50 percent cleaner than normal weather conditions at that time of year, because many citizens were always traveling by car in the city, at the time of holding the Olympic Games used public transport.

Volunteer's uniforms, the Nagano Winter Games, were all made from recycled plastic bottles. More than 50% of plastic bottles and aluminum cans used in the Atlanta Olympics were prepared through the recovery process.

Environmental Foundation of Athens and Athens 2004 Organizing Committee for the Olympic Games in the World Environment Day (5 June) applied to coastal cleanup.

Athens Environmental Foundation, proposed a project called the crown of world olive trees, according to the program on April 19, 2003, in celebration of Earth Day, which Was held at the Hilton Hotel in Athens, Athens Environmental Foundation, and the cultivated olive tree as a symbol in a field near the hotel. From this time onward, it was decided that thousands of trees to be planted throughout Greece, and more than 1,400 schools, universities and other places, in more than 110 countries at the Olympics. Along the route the Olympic torch will attempt to planting trees, to establish a green highway. Athens Olympic champions will be awarded the crown of olive leaves as peace, environment and success [6].

The Games in Los Angeles 1932 were the first Olympic Games providing an Olympic Village. When planning the Olympic Village, one of the major factors was the climate conditions. The organizers took into consideration that most of the athletes competing were used to lower temperatures than in Los Angeles in

summer. They decided that to make the conditions more fair a location that was cooler than downtown Los Angeles should be chosen as the location for the Village. Seven locations were chosen as possible sites for the Village and the temperature was measured 24 hours a day for the months of July and August in 1931. Baldwin Hills was the coolest location (it averaged 10 degree cooler than any other location), and was chosen as the place where the Village should be built. The location, which is on sloping hills, chosen for the village had private owners and when buildings and roads were built the organizers had to make sure that no unnecessary grading had to be done. Further an underground water system, using welded steel pipes, had to be installed [7].

In a BBC article in 2006 [19] (ten years after the games), Kurt Barling discussed the legacy of the Atlanta games and drew tentative conclusions that for the city itself, the games had a sustained impact (but did not say specifically what the impacts were). For example, he concluded that, '...there is a sense that more widely Atlanta's attribute the transformation of their city to the Olympics'; and, '...a few days ago it [Atlanta] opened a new wing in its history museum dedicated to the Olympic Games. It clearly put Atlanta on the International map, but as the exhibition recognized it also gave Atlanta's an excuse to think big'; and '...last week the City of Atlanta hosted a massive outdoor party in Centennial Olympic Park to celebrate 10 years of Olympic legacy. Whilst internationally few people may recognize it, Kurt Barling considered that many Atlanta's were quietly (and not so quietly) confident that they would still be reporting fresh legacies from the 1996 Olympics in another decade's time [8].

After the International Olympic Committee awarded Beijing the 2008 Games on July 13, 2001, China established the Beijing Organizing Committee for the Games of the XXIX Olympiad (BOCOG) on December 13, 2001. The main responsibility of the BOCOG was preparing for the 2008 Games; this included infrastructure development, environment improvement, public relations, and logistics. The three main concepts promoted by the BOCOG were "Green Olympics, High-tech Olympics and People's Olympics," highlighting the importance of environmental protection and public interests [9].

In BEIJING 2008 Some 140 billion Yuan was invested in air quality improvements alone, with 60,000 coal-burning boilers being upgraded to reduce emissions; a number of public buses being converted to run on natural gas; and restrictions being put in place on private automobile use, a form of which is still in place today. There were also significant improvements in water treatment facilities [10].

In London 2012 for the first time, an independent commission was established to monitor and publicly evaluate sustainability efforts. The Commission for a Sustainable London 2012 rated the overall effort "a great success". More than 98 per cent of the demolition waste was recycled and 62% of Games operational waste was reused, recycled, or composted. Organizers also developed 45 hectares of habitat, with a 10-year ecological management plan to encourage biodiversity and 300,000 plants were planted in the Olympic Park's wetlands area. In addition, over 1,000 new trees were planted in East London. London 2012 was the inspiration for BS 8901, which led to ISO 20121, the first fully certifiable international Sustainability Management System standard [10].

Transport for London invested GBP 6.5 billion in transport infrastructure in preparation for the 2012 Games. Ten railway lines and 30 new bridges now connect London communities thanks to the Games and at least 60 Games-related projects promoted greener travel, including a GBP 10 million investment to upgrade pedestrian and cycling routes across London [10].

Olympic Games Impact Study (OGIS) to assess the likely national, regional and local impacts of hosting the Olympics in London. The OGIS was expected to quantify as comprehensively, accurately and robustly as possible the net benefit streams that would arise from hosting the Olympics in 2012 in London based on a comparison of two scenarios: 'with' and 'without' the Olympics. It was also intended to inform the development of strategies to ensure that the full potential benefits of hosting the Olympics can potentially be realized and any risks mitigated. The OGIS was designed to generate some important benefits by improving understanding of the potential benefits of hosting the Olympics in London in 2012; providing (as far as possible) consistent data. Information which can be used by the stakeholders to communicate the benefits of hosting the Olympics in London in 2012; Contributing to the development of a strategy. Action plan for delivering the potential benefits of hosting the Olympics in London 2012; and demonstrating to the IOC London's commitment to maximizing the potentially beneficial impacts of hosting the Olympics in London 2012. The OGIS has used the Framework of sustainable development to structure the analysis. Thus, it has examined three categories of impacts: economic, social and environmental [11].

MATERIALS AND METHODS

It is a mixed research methods. The mixed method research methodology is combines qualitative and quantitative research methods. This is a mixed research methods the discovery of the successive type that is the first method of qualitative and then quantitative methods. To summarize the entire research process includes the following steps: the first stage of research: qualitative research (Interviews with 25 professors and experts and Environmentalists, to achieve the theoretical saturation, reading the papers, and documents). Second phase: a Quantitative research type of Descriptive – analytical (using Friedman explains the weighting and ranking).

Using the comments of professors and experts from research and literature, a questionnaire was prepared, according to a list of physical education teachers and professionals across the country will interact with 150 professors and experts through email, and 110 people of the country and 10 abroad, a total of 120 people showed a tendency to fill in the questionnaire. Thus the sampling was nonrandom targeted sampling methods and accessible. The total sample consisted of 57 cases of sports management professors, and 53 of whom are experts in the fields of physical education and Biological sciences, across the country, and 10 professors and experts from abroad who participated in the first phase of research. Friedman test was used for the ranking of economic factors, as well as ANOVA with respect to the normal distribution.

RESULTS

In the quantitative research, through interviews with teachers and experts identified 7 variables in terms of the sum of the following this factor.

Environmental factors:

1. Development of biodiversity, 2. Improve of energy efficiency, 3. Recycling industry, 4. Cultural development, 5. Promotion of Cultural Heritage 6. Development of the transport industry, 7. Supporting the environmental industry.

The results of inferential statistics

Friedman test results in [Table 1] show that the priority of environmental factors, there are significant differences in professors and experts point of view less than 0.05. The ranking of these factors are shown in [Table 2].

Friedman test to evaluate the environmental factor, development of the hosting city in Olympic Games related to respondents Overall view showed that, Development of the transport industry is the highest rating, and Development of biodiversity is the lowest rating.

Table 1: Results of Friedman test related to respondents Overall view

Variable	Statistics	Number	Chi square	Degrees of Freedom	Significance level
From the perspective of total respondents		120	118.464	6	0.000

Table 2: Results of Friedman test rankings

Rank	Variables	Average rating
1	Development of the transport industry	5.16
2	Cultural development	4.73
3	Supporting the environmental industry	4.15
4	Promotion of Cultural Heritage	4.08
5	Recycling industry	3.45
6	Improve of energy efficiency	3.35
7	Development of biodiversity	3.09

To compare the views of teachers, experts and professors and experts from abroad to Study of environmental factors of Olympic Games on the host cities from professors and experts viewpoint and

Case study: London 2012 Olympic. Because the normal distribution and scale was quantity, we used analysis of variance test, the results of which are shown in [Table 3].

Table 3: Results of ANOVA test on the difference of opinion between environmental factors among the three groups of professors, experts and professors and experts from abroad

Barriers	Group	numbers	Average	Standard deviation	Differences between groups	Differences within groups	F Rate	Significance level
Economic factors	professors	57	3.37	0.679	1/475	52.879	1.631	0.200
	experts	53	3.57	0.694				
	professors and experts from abroad	10	3.25	0.421				

According to the results of the ANOVA are considered among the masters and experts, and professors and experts from abroad in environmental factors, there is no significant difference at $P < 0.05$.

DISCUSSION AND CONCLUSION

The Olympics have always been a golden opportunity for a host nation or city to showcase their culture, hospitality, and local attractions to the world. To most spectators these would seem to be the only reasons for hosting the Olympics.

There are many environmental impacts on a host city of a Olympic Games event, new venues and buildings are constructed, so land use has to be considered. The increase in people during the Games leads to an increase in demand for transport, water, energy and more waste get disposed. Those drivers could lead to for example climate change, ozone depletion, environmental health related disease and water resource depletion. Up to the Winter Olympics in Lillehammer 1994, not much attention was paid to the environment. In co-operation with the IOC and the UNEP, a sustainable development concept was adopted, and environment became the third Olympic pillar together with sport and culture. Some of the measures taken to limit the negative environmental impacts of the Olympic movement towards more sustainable development have been to: reuse existing facilities; use natural materials for construction, conserve energy, water conservation systems, waste management, and public transportation [12].

One of the most important environmental and economic effects on the host the Olympic Games is the development of the transportation industry. Transport system is the heart of the tourism industry[13].

Transportation, transportation system improvement and optimization is including wider lanes make up the Special fast train Olympics, construction of new trails and old roads. For example, to connect multiple locations London 2012 Olympic Games, Transportation systems such as cable car was built with a height of over 50 meters that ran through the river. A water taxi will transport 2,500 passengers an hour. Olympic Park was equipped with ten rail lines that transport capacity is 240,000 passengers an hour. Nearly 2 million tones of contaminated soil have been cleaned to be reused on the Olympic Park. An estimated 6.5 million people will attend the Games and will generate over 3,300 tones of food package waste. The Olympic Stadium is projected to include 42% recycled content. 74,000 plants, 4,000 trees, 60,000 bulbs, and 300,000 wetland plants have been planted in the Olympic Park. 20% of the energy we use on the Olympic Park will be from renewable sources. 2000 newts and hundreds of toads have been taken out of the Olympic Park during construction. 90% of materials from the demolition of buildings in the Olympic Park have been recovered so they can be reused or recycled [14].

It is necessary to increase awareness and education about the environment. Community involvement is very important, and people should be aware about the environmental impact, especially the health related problems. Also, be aware of the benefits of using public transport and bicycles instead of cars. In the area of waste management, the public should have a greater understanding and awareness of recycling [13].

CONFLICT OF INTEREST
There is no conflict of interest.

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None

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