



**UNIVERSITY OF PELOPONNESE
FACULTY OF HUMAN MOVEMENT AND
QUALITY OF LIFE SCIENCES
DEPARTMENT OF SPORTS ORGANIZATION
AND MANAGEMENT**

MASTER'S THESIS

**“OLYMPIC STUDIES, OLYMPIC EDUCATION,
ORGANIZATION AND MANAGEMENT OF OLYMPIC
EVENTS”**

Alberto Aragón-Pérez

**The integration of sustainability in mega sport events
: the origins of the environmental dimension of the
Olympic Movement, a legacy of Barcelona 1992**

Supervisor: Kristine Toohey AM
Professor, Sport Management
Department of Tourism, Sport and Hotel Management
Griffith Business School
Gold Coast campus, Griffith University

Sparta, October, 2015



UNIVERSITY OF PELOPONNESE
FACULTY OF HUMAN MOVEMENT AND
QUALITY OF LIFE SCIENCES
DEPARTMENT OF SPORTS ORGANIZATION
AND MANAGEMENT

Alberto Aragón-Pérez

“OLYMPIC STUDIES, OLYMPIC EDUCATION, ORGANIZATION
AND MANAGEMENT OF OLYMPIC EVENTS”

**The integration of sustainability in mega sport events : the
origins of the environmental dimension of the Olympic
Movement, a legacy of Barcelona 1992**

Supervisor: Kristine Toohey, AM
Professor, Sport Management
Department of Tourism, Sport and Hotel Management
Griffith Business School
Gold Coast campus, Griffith University

It was approved by the Advisory Committee on the

.....
Supervising Professor
Academic Level

.....
Professor-1
Academic Level

.....
Professor-2
Academic Level

Sparta, October, 2015

Table of Contents

List of Figures.....	4
List of Tables.....	4
List of Images.....	4
List of Acronyms.....	4
<u>1. Introduction</u>	6
1.1 Aims and Objectives.....	7
1.2 Thesis Overview.....	8
<u>2. Methodology</u>	9
2.1 Interviews.....	9
2.2 Written data.....	11
<u>3. Literature Review</u>	14
3.1 The Concept of Sustainable Development.....	14
3.2 ‘Mega’ Sporting Events.....	16
3.3 Sustainability and Sport.....	17
3.4 The Need of Sustainable Games for a Positive Legacy.....	18
3.5 Evolution of ‘legacy’ in the Olympics.....	19
3.6 Olympics Debate: Long-term legacy or short-term event?.....	22
<u>4. Analysis and Research Findings</u>	24
4.1 The Origins of Sustainability in the Olympic Games.....	24
4.2 The Evolution of Sustainability in the Olympic Games.....	27
4.3 Mechanisms and Procedures to ensure Sustainability.....	30
4.4 Examples.....	33
4.5 Findings.....	37
<u>5. Discussion and Recommendations</u>	42
5.1 Future recommendations.....	45
<u>6. Conclusion</u>	48
6.1 Future Research.....	49
<u>7. Appendices</u>	50
Appendix 1- Topic Submission of Master’s Thesis. University of Peloponnese.....	50
Appendix 2- Guideline of Interview Questions.....	51
Appendix 3- Factiva_ Example list of press collection.....	52
Appendix 4- Timeline of Sustainability in the different Olympic Games (according to the Organizing Committee of Rio 2016).....	54

List of Figures

Figure 1 - Map of actors involved in a mega-sport event

Figure 2 - Environmental and sustainability approach

Figure 3 - Legacy cube

Figure 4 - Agenda 21

Figure 5 - Evolution of Sustainability in the Olympic Games

Figure 6- Environmental agreement compliance

Figure 7- RobecoSam Country Sustainability Ranking: top 10 and bottom 10 countries

List of Tables

Table 1- Details of interviewees

Table 2- Olympic legacies

Table 3- Recommendations Agenda 2020

Table 4- Environmental agreement compliance ranking

Table 5- Indicators of the RobecoSam country sustainability framework

List of Images

Image 1: Screenshot of Factiva tool

Image 2: Earth Pledge at the Olympic Village of Barcelona'92, signed by athletes. The Earth Summit, the COOB'92, the IOC and United Nations encouraged this initiative

Image 3: A decade after Athens 2004

Image 4: Example of two London 2012 venues

Image 5: Collection of press headlines blaming the environmental performance of Sochi 2014

List of Acronyms

COOB'92 – Olympic Organizing Committee of Barcelona'92

CSL - Commission for Sustainable London

IOC - International Olympic Committee

LOCOG - London Organising Committee for the Olympic Games

NGO - Non-Government Organizations

NOC - National Olympic Committees

OCOG - Organizing Committee of Olympic Games

OG - Olympic Games

OGI - Olympic Games Impact Study

SOCOG - Sydney Organising Committee for the Olympic Games

CEO-UAB – Olympic Studies Centre of the Autonomous University of Barcelona

UNCED - United Nations Conference on Environment and Development

UNEP - United Nations Environmental Programme

1. Introduction

Mega sport events such as the Olympic Games and the FIFA World Cup are defined as large-scale competitions, which appeal to a large number of athletes and spectators and have an important presence of international media and sponsors (Roche, 2000). Mega sporting events require a complex organisation (Delgado, 2007) and are characterized by having big impacts and leaving a long-term legacy to the host city (Furrer, 2002). My focus will be the Olympic Games as they are considered one of the most significant large-scale sport events while thanks to its popularity, scope and wide range of stakeholders involved rests a great responsibility. The Olympic are also a great opportunity to lead example in the implementation of sustainable practices and promote positive global changes (IOC, 2012).

This research fits into the on-going debate that the Olympics are a short-term (it lasts sixteen days) event with long-term impact on host cities. The short-term view of maximizing the profit and achieving the stringent deadlines for the Olympics seems to be in conflict with the long-term vision of organizing sustainable Games. Some environmentalists consider that placing entertainment above the needs of the planet is at the root of the problem (Savery and Gilbert, 2011). This contradiction is what captured my attention and propelled me to choose my thesis topic. While discussing this apparent incompatibility, the concept of Olympic legacy and long-term gains becomes key for my thesis in order to counteract the temporary resources used for the preparations and delivery of the Games: energy use, consumption, waste, building new infrastructure and international travel (Savery and Gilbert, 2011).

During the 1992 Summer Olympics in Barcelona the organizing committee COOB'92, the IOC and United Nations agreed the assembly of an Earth Commitment Wall in the Olympic Village, the signing of an Earth Pledge by every NOC. Two years later, the 'environment' became the third pillar of Olympism, alongside with 'sport' and 'culture' (IOC, 2012). Since then, the IOC takes sustainability very seriously as demonstrated by the numerous initiatives; guidelines and monitoring that have evolved at the IOC since then. The Olympic Charter recognizes that the IOC's role is: "*to encourage and support a responsible concern for environmental issues, to promote sustainable development in sport and to require that the Olympic Games are held accordingly*" (IOC, 2013b, p.17). Although recognising these efforts and improvements, this thesis will critically discuss

and debate the idea that as much as the IOC tries to motivate sustainability within the framework of the development of the Games, it is often a goal which is not achieved by host cities or simply unattainable.

Specific examples of past Olympic Games and legacies such as Barcelona (1992), Lillehammer (1994), Sydney (2000) Athens (2004), Torino (2006), Beijing (2008) and London (2012) will be given to better understand different points made throughout the study.

1.1 Aims and Objectives

The overall aim of this research is to broaden the understanding of the concept of sustainability within the Olympic Games, while building a critical analysis of its implementation. The objectives of the research will be to:

- Identify the IOC's presence at the 1992 Earth Summit.
- Ascertain how the IOC perceived environmental issues in the event management of Barcelona'92.
- Enhance the concept of sustainability with mega sporting events focusing on the Olympics.
- Discuss the problem/contradiction that arises when considering that the Games are a short-term event and the maximizing of its profits seems to cause conflict with the long-term vision of organizing sustainable Games.
- Evaluate the historical evolution of sustainable development in the Olympic Games.
- Analyse the mechanisms and procedures that the IOC has to ensure its implementation.
- Understand the existence of different societal approaches towards sustainability.
- Present specific examples of past Olympic experiences.
- Give response to the question: Is it possible to achieve truly sustainable Olympic Games?

1.2 Thesis Overview

This thesis is structured as it follows:

Chapter 2 describes the methodologies chosen for my research study and data collection, mainly based on semi-structured interviews and written data such as official reports, press analysis and opinion articles.

Additionally, Chapter 3 overlooks at the relevant literature, with key references to the literature that has framed the starting point and direction of this thesis. It briefly provides the basis for an understanding of the concept of sustainable development, its application to the Olympics and viability; while also exploring the concept of the Olympic legacy. In this chapter, I will also introduce the debate and contradictions regarding the Olympics that will be further discussed in the following chapter.

Chapter 4 provides the data analysis and findings of note. This chapter presents an overview of the historical evolution of sustainable development in the Olympic Games, since the relevance of the year 1992: environmental measures at Barcelona'92 and the UN Earth Summit. It then presents a critical analysis about how rules and procedures of the IOC are not enough to ensure the adherence to or success of sustainable development. Special attention will be given to the importance of different broader societal approaches towards the environment and sustainability among different countries and nations.

Chapter 5 presents a discussion based on this general question: Is it possible to achieve real sustainable Olympic Games? Therefore, it provides a set of recommendations for hosting future and more sustainable Games.

Finally, Chapter 6 draws the main conclusions of the study, and also suggests an interesting issue to be covered by future research.

2. Methodology

During the course of my research, I have applied various strategies to analyse and find answers to my thesis aims. Before undertaking a literature review and examining background issues in the next chapter, in this section I am providing the description and appropriateness of my methodology in order to demonstrate the rigour of my research (Baxter and Eyles, 2004).

The approach employed for my thesis has been qualitative, ranging from the use of primary sources (interviews) and written sources such as official Olympic documents, NGO reports, university research studies and the collection of press releases. The use of multiple methods applied during research is known as ‘triangulation’. Triangulation allows different methods to complement each other, and deepens the understanding of the study topic (Lapan *et al.*, 2012 p. 99). It also helps in increasing the credibility and trustworthiness of the findings (Lapan *et al.*, 2012). Understanding the ‘integration of sustainability in the Olympic Games’ is a study topic that can present multiple perspectives, versions and interpretations. As Angen noted, the aim of the researcher is to understand the contextual realities that allow multiple explanations instead of obtaining one single relationship or statistical conclusions (Angen, 2000). Therefore, throughout the study, I have used an interpretivist approach that relies on the different contributions of my interviewees while always trying to assert, complement or contradict their points with other relevant sources.

2.1 Interviews

Primary data collection was done via interviews to key informants. Most interviews featured actors involved in issues of sustainability and legacy of the Olympic Games. As per the nature of my research, an in-depth semi-structured interview was the best possible method for obtaining information as it allows to obtain the personal attitude, perception, expectation and feeling of the interviewee (Cloke, *et al.*, 2004), which also added value to the written data. The key participants had thorough knowledge of the pathway of sustainability in the Olympics. Their interviews helped in gathering first-hand data about the subject, and not only provided an insight into what has already happened but also brought forward interesting recommendations for more sustainable Olympic Games in future.

First among the techniques employed in the interviews was purposive sampling, used for selecting the respondents. “*The purposive sampling technique, also known as judgment sampling, is the deliberate choice of an informant due to the qualities the informant possesses*” (Tongco, 2007, p. 147), a non-random technique that does not define a theory or a set number of respondents (Barbour, 2014). By using this type of sampling, I looked for the people who I believed that could provide the appropriate information due to their knowledge and expertise (Tongco, 2007). My final list of respondents includes representatives of the Spanish Olympic Committee and the organizing committee COOB’92, sustainability experts, an environmental NGO officer, a manager of sustainable events and a journalist.

Interviewees were chosen on the basis of internet searches, and ‘snowballing technique’ was also adopted, this being where initial contacts recommend or recruit others to get additional valuable inputs (Barbour, 2014). All the interviews I conducted followed high professional standards. The methodology of interviewing is recognized for providing ‘voice to others as an integral part of the research process (Cloke *et al.*, 2004, p.151). Preparation included deciding upon topics and outlining guiding questions. The questions were related to topics that I identified by doing intense written data research and also vary upon the profile of the person to interview. An interview protocol was designed after identification of important themes related to the research topic (see appendix 2 for the Guideline of interview questions). Semi-structured interviews gave me the freedom for probing, open-ended questioning. Before each interview, I explained the purpose of my study to the respondent, their consent was taken and I promised to give them a copy of my thesis.

As Bryman notes, when the scope of research is large and there are constraints on time and location, it is difficult to apply the concept of theoretical saturation (Bryman, 2012). While collecting data during interviews, there was no point of saturation in the present case. My research topic has a huge scope and so many different stakeholders are involved that I would have wished to interview many more actors if I did not have short- time pressing limitations. Therefore while collecting data during interviews, there was no point of saturation other than the decision made by me that the data under analysis had fulfilled my expectations of the research. Researchers are ‘positioned subjects’ (Baxter and Eyles, 1996, p. 505) and their subjectivity becomes part of the research process (Baxter and Eyles, 1996). However, throughout the process I tried to

maintain professional objectivity, recognizing that there may be a level of influence in the questions posed. (Sadd, 2012)

Interviews were conducted in two formats: face-to-face or through the Internet communication tool: Skype. Face-to-face interviews were conducted at locations chosen by the respondents, like their home or office. Proper care was taken to keep the interview setting comfortable and natural. As Jäckle, *et al.* (2006) note, face-to-face interviews and those conducted via telephone differ significantly due to medium of communication and the physical presence of the interviewer (Jäckle, *et al.*, 2006, p.4). While desirability bias is likely in a telephone or Skype interviewee, gaining trust is important in face-to-face interviews. Given limitations like distance, it was not possible to conduct all interviews face-to face.

2.2 Written data

As mentioned in the beginning of this chapter, interviews were not the only method used in the interpretative analysis of this thesis. Written sources, such official Olympic reports and available Olympic Games reports, were also analysed. Specifically, I have direct access to COOB'92 because of my current job at the Fundació Barcelona Olímpica. Apart of Barcelona'92, many official documents produced by OCOGs and by the governments of the host countries were reviewed. In addition, as the Olympics are already a focus of much research, many other sources such as university research projects, studies undertaken by NGOs, conferences, and media articles, were taken into account.

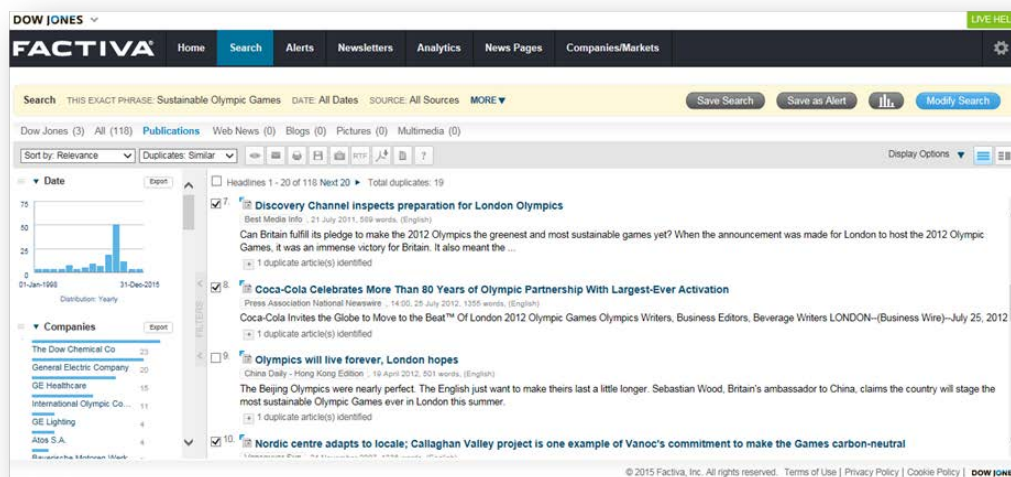
The use of these sources of written data potentially offered a rich set of information, which I analysed carefully in order to nourish the key findings. The official available reports of past Olympic Games might be biased by the authors' position in the organization (Bryman, 2012). I realised that in general all IOC reports from previous Olympics are positive descriptions of what went well, with little mentions to any negative impact. In any case, regardless of the biased approach, such documents were essential for data collection (Brinkmann, 2013).

Most mentioned written sources were accessible to me at the CEO-UAB. I contacted Berta Cerezuela, the head of projects of the CEO-UAB, explaining my thesis aims and objectives, and she kindly offered me unlimited access to the library. There, many

official IOC reports, research studies, opinion articles and other documentation were available, which proved extremely useful for my research.

In addition to the above-mentioned methods, another relevant source used for my research was the compilation of press releases. For this purpose, I had the opportunity to utilize a very useful and professional tool called Factiva, a business tool that gives access to nearly 14,000 sources including newspapers, trade publications, newswire, press release wires, media transcripts, etc. I had access to Factiva as, while doing my thesis, I was hired at a consultancy that gave me consent to access the tool and make a search of press releases that could add value to my research. Factiva allowed me to collect relevant press releases from past years simply by searching for words such as ‘Sustainability’, ‘Olympic Games’, ‘Olympic legacy’ etc. (See Appendix 3: Factiva_ Example list of press collection)

Image 1: Screenshot of Factiva tool



The methodology was based on the premise of understanding the maximum points of view and literature available taken into account the time limitations. The intention was of being inclusive first, and conclusive later, at least in my findings. Sustainability is an evolving contested concept, and the perception of its integration in events like Olympics has undergone many changes in the past few decades. For this reason, I have made an honest attempt and worked hard choosing the methods of collecting information from my primary and written sources. I have tried to be as objective as possible while analysing the available information, to reach a point, which is inclusive, conclusive, and constructive.

3. Literature Review

This section is based on secondary sources. It briefly provides the basis for an understanding of the concept of sustainable development, its application to the Olympics and the interrelation with the concept of Olympic legacy. Finally, this section introduces the debate and paradox regarding the sustainability of the Games; a debate that will be further discussed in chapter 5.

3.1 The Concept of Sustainable Development

Sustainable development has been defined and described in many ways by various scholars and researchers. The concept has been evolving for more than 30 years (Rogers and Carter, 2008) and means different things to different people (Karamichas, 2013). There is no agreement on the meaning of the term, so while ‘sustainable development’ offers immense appeal, it still lacks in specificity. Reviewed critically, the definitions of sustainable development may look vague (Jabareen, 2008). However, the most accepted definition worldwide came from the report *Our Common Future* issued by Norwegian Prime Minister Gro Harlem Brundtland, who chaired the World Commission on Environmental Development in 1987. It calls a sustainable development one that “*meets the needs of the present generations without compromising the ability of future generations to meet their own needs*” (UN, 1987). The report outlined global environmental concerns and development challenges, and concluded that the importance of defining global initiatives through actions on a local, national and international scale would be the only way to emphasize the correlation between improving everyday life while safe-guarding our ecosystem (Savery and Gilbert, 2011). The interconnection between environment and development was highlighted repeatedly, noting interrelation between poverty and the environment (Savery and Gilbert, 2011).

The United Nations Conference on Environment and Development, held in Rio de Janeiro in June 1992, confirmed the geopolitical importance and relevance of the term ‘sustainable development’ (Cantelon and Letters, 2010). The meeting took place only one month before Barcelona’92 was opened. Achievements in the realm of sustainability accomplished by Barcelona’92 revealed that environmental issues could be managed in the organisation of multi-sports events of this magnitude. The Spanish city’s environmental regeneration prior to the 1992 Summer Olympics constituted the main action in the endeavour to achieve a sustainable event. As Lamartine DaCosta

defends, the 1992 Earth Summit introduced the relevant aspect of communication (DaCosta, 1997). Media are a vehicle for promoting the image of sport so they have played a noteworthy role in influencing spectators' behaviour. Monclús thinks that the Rio Declaration on Environment provided a strong background for raising public awareness on environmental aspects already implemented in Barcelona between 1987 and 1992. It also contributed to the positive image and appeal of the Barcelona's city brand, known as the 'Barcelona model' (Monclús, 2010).

Although the link between environmental and sustainability issues and the Olympics is a subject with a notable abundance of written academic sources, the influence of the 1992 UN Conference on the Environment and Development on Barcelona's 1992 Summer Olympics does not have a body of literature. Barcelona planned the 1992 Olympics to promote its city brand and, some years later, in 1992, the Rio Declaration on Environment was also conducive to accomplishing such goal. The 1992 Olympics were a complex process involving many stages. Barcelona sought to yield benefits such as a strategically planned legacy to market its city brand through urban and environmental regeneration. Therefore, the COOB'92 worked together with the municipal authorities, a fundamental stakeholder, to achieve these goals. Written stakeholders, including local communities, environmental groups, athletes and sports federations encouraged decisions regarding environmental issues, such as noise, the lack of green spaces, air and coastline pollution and traffic congestion (Abad, 1996).

At the UN Conference of 1992 the concept of sustainability was not understood only in terms of the environment (Baker, 2006). 'Sustainability' was gradually chosen to bridge the gap between ideas focused on both economical development and the environment (Rogers and Carter, 2008). Nowadays, sustainability refers to a more holistic perspective that orchestrates social, economic and environmental dimensions, and balances opportunities and constraints (Oben, 2011). Many definitions of sustainability exist and it is necessary to define sustainability in order to promote clarity.

According to the Sustainable Development Commission in the United Kingdom, sustainable development is about far more than just the environment; it is about ensuring a strong, healthy and just society (Karamichas, 2013). It is a widely accepted, dynamic, three-dimensional concept, which requires striking a balance between social, economic and environmental development (Furrer, 2002). Currently, sustainable development is accepted as the new standard of development almost everywhere

(Coaffee, 2010). The whole idea is about establishing a future that is a better and healthier place than the present (Blewitt, 2008). The IOC President Thomas Bach expressed the same perspective in the IOC's 10th Conference on Sports and the Environment:

“Sustainable development means hope for a better future, a more environmentally sound and more humane society. A society which no longer focuses on short-term success, but rather spares a thought for subsequent generations as well as its own needs” (IOC, 2013c, p-5).

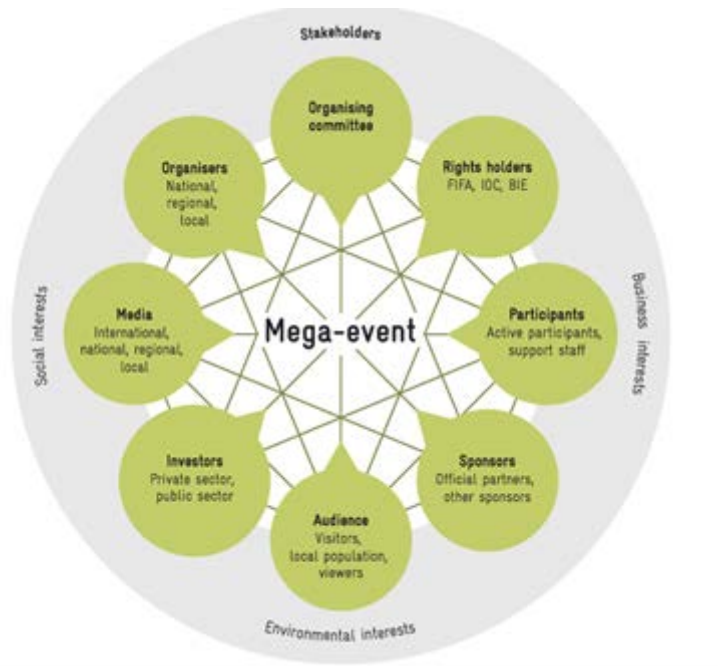
3.2 ‘Mega’ Sporting Events

Maurice Roche, a prominent sociologist describes mega events as ‘large scale cultural (including commercial and sporting) events, which have a dramatic character, mass popular appeal and international significance’ (Roche, 2000, p. 7). Such events are defined by factors including their scope, duration and frequency. Donald Getz identifies mega events: *“by way of their size of significance (...) those that yield extraordinarily high levels of tourism, media coverage, prestige or economic impact of the host community, venue and organization.”* (Getz, 2007).

Large-scale sporting events like the FIFA World Cup and the Olympic Games are good examples of mega sporting events. There has been growing awareness about understanding the organization and impact of mega sporting events in recent years (Chappelet and Bayle, 2005). Considering the Olympics, the event is observed to create a legacy (although this legacy can be both positive and negative) for the host city and to have impacts both nationally and internationally (Smith, 2008). The Olympics is no longer just a sporting event: it has become a cultural, political and economic phenomenon (Toohey and Veal, 2007) that appeals to large audiences, including athletes, stakeholders and the international media (Roche, 2000).

The diagram below illustrates the map of stakeholder's involved in in the organisation of a mega sport event such as the Olympics. During the candidature, organization and implementation phases of a mega sport event, it is necessary to coordinate a large number of actors who have very different interests and a complex interrelationship between them (AgenZ, 2013, p. 13).

Figure 1: Map of actors involved in a mega-event



Source: GIZ AgenZ, 2013, p. 13

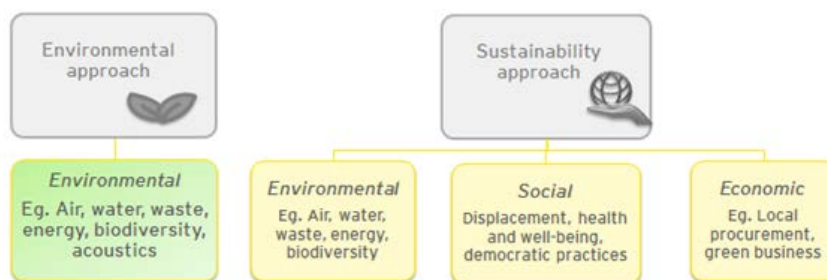
3.3 Sustainability and Sport

David Chernushenko, a widely recognized sustainability specialist, said: *“Sport is sustainable when it meets the needs of today’s sporting community while contributing to the improvement of future sport opportunities for all and the improvement of the integrity of the natural and the social environment on which it depends”* (Savery and Gilbert, 2011, p.6.). For centuries sport has been regarded as a fundamental element in the interaction between man and nature (Savery and Gilbert, 2011). Over time international elite sport has emerged along with its prerequisite sport development activities, major sport event and worldwide competition and media attention (IOC, 2012).

Olympic Games have developed hugely in scope and complexity and the relationship between sport and the environment has been compromised. Sustainability, has gained momentum in the modern sporting world (Smith and Westerbeek, 2004). The basic thought behind looking for sustainability from the Olympics is that the event has great reach, gets global attention and hence has the opportunity to make a contribution to the world in sustainable ways (Karamichas, 2013). Working towards sustainability poses a huge challenge for sport event organizers because sustainability is such a broad and transversal topic (see figure 1) that represents an ideal and a moving target, with an infinite end point (Girginov and Hills, 2009):

- On the social side there are issues ranging from education, community integration, democracy, and public participation to population health.
- On the economic side there are issues of employment, tourism, fair labour policies, good governance corruption and poverty eradication.
- Environmental issues range from water, air, soil, energy, biodiversity, venues, to transportations.

Figure 2: Environmental and sustainability approach

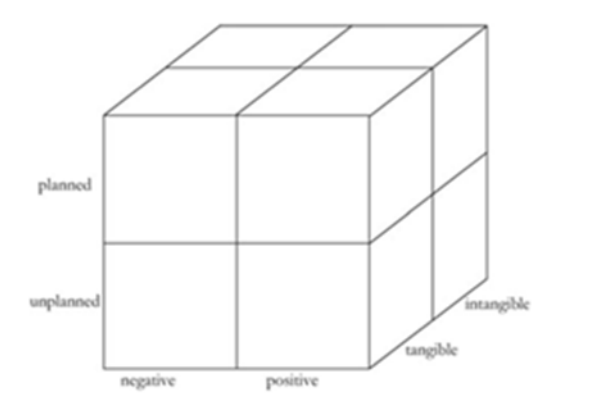


Source: (own elaboration from: Mackenzie, 2006)

3.4 The Need of Sustainable Games for a Positive Legacy

There can be several meanings for the concept of ‘legacy’. Among the different definitions, Savery (2011, p. 10) defines a sustainable legacy of a sport event as *“the lasting, positive change created through and catalysed by the bidding for, planning and hosting of a sport event”*. Hiller (2003) uses the word ‘outcomes’ instead of legacy, whereas Cashman (2003) prefers ‘impacts’. Despite the whole available terms to define ‘legacy’ what seems to be irrefutable is that the concept of legacy targets the long-term features. Preuss, proposed a definition of legacy that refers to *“all planned and unplanned, positive and negative, tangible and intangible structures created for and by a sport event that remains longer than the event itself”* (Preuss, 2004, p. 211).

Figure 3: Legacy cube



Source: Preuss, 2004, p. 211

3.5 Evolution of ‘legacy’ in the Olympics

Starting at the late 90s, the concept of Olympic legacy evolved into a major concern for the IOC. There were a series of interrelated events that brought this concern to the forefront and marked its evolution within the Olympics: the UN development of the concept of sustainable development in 1987 and the Rio Earth Summit in 1992 (Karamichas, 2013). Also remarkable events were the environmental failure produced by the Albertville’92 Winter Games, the positive legacy of Barcelona’92 and the establishment of the Sport and Environment Commission in 1995. The IOC saw itself in 1999 embroiled in a moral crisis which led to the establishment of a moral code of ethics and a profound introspection of how cities won their bids, implying the concern behind the process and their true commitments to urban growth and sustainability (Girginov and Hills, 2009).

The IOC developed a ‘legacy’ framework:

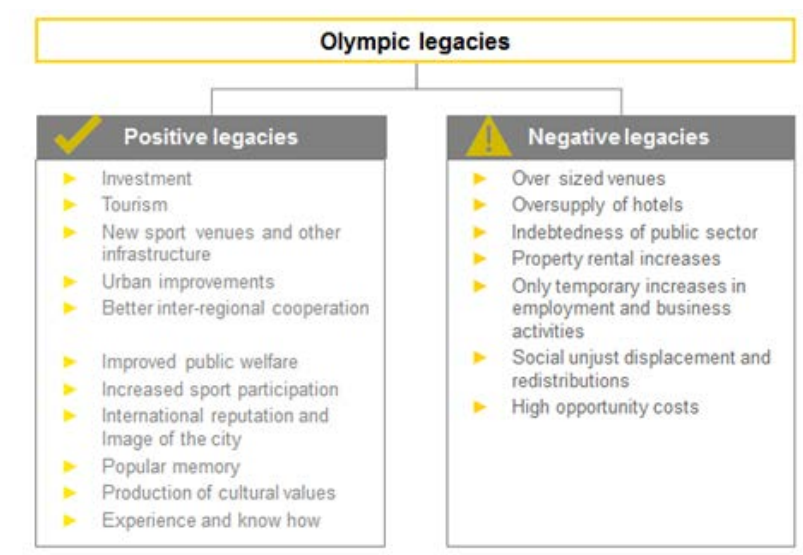
- Politically: The IOC amended in 2003 the Olympic Charter to introduce a particular mention “*To promote a positive legacy from the Olympic Games to the host cities and host countries*” (IOC, 2013, p.17). Also in 2001, the IOC included in the questionnaires for Candidate cities questions regarding what legacies are planned for the city.
- Legally: Through the Host City Contract signed by the IOC, the host city and the NOC (Girginov and Hills, 2009). Detailed requirements and obligations regarding sustainability and Olympic Legacy are included in the contract (Girginov and Hills, 2009).

- Technically: By monitoring over a period of 12 years a set of social, environmental and cultural indicators (Girginov and Hills, 2009).

Achieving sustainability and creating a lasting legacy has become increasingly important for any city intending to host the Olympic Games, as positive legacies are now part of the core aims of the Olympic Movement (Viehoff, 2013). A sustainable event legacy is not an add-on that starts when the event takes place, it is a vital and fundamental part of any serious event bid, and should be part of the event planning from day one (Essex and Chalkley, 2003).

The IOC has stressed, rightly, that large scale development and expenses incurred in the name of the Olympics should have a useful post-Olympic life (Poynter and MacRury, 2009). It is one of the major aims of any host country to achieve a sustainable Olympics, but the effects and the legacies may differ from one country or region to another for a variety of reasons (Cashman, 2003) and might result in positive outcomes and negative consequences too (see Table 2). Many commentators view ‘legacy’ as the true benchmark and the real endpoint for a sustainable Olympic event (Savery and Gilbert 2011, p. 118).

Table 2: Olympic legacies



Source: own elaboration from Lenskyj (2002) and Cashman (2005)

Some examples of legacies of the Olympics are as follows:

As examples of positive legacies, Olympic Games have had the power to highlight some host cities on the world map and attract investment and tourism, enhancing the

international profile of the host city. After the Olympics in 2000, Sydney witnessed increased tourism and trade with the games promoting Sydney as a global city (Karamichas, 2013). The 1988 Olympics helped to launch Seoul onto the international scene and its position within the Asian region noticeably improved (Furrer, 2002).

Also, the Olympics provide good opportunities to boost urban infrastructure like venues, buildings, roads, transportation systems, water and energy conservation, etc. (Wiltshko, 2010; Furrer, 2002). The Barcelona Olympics in 1992 were the first to demonstrate successful urban regeneration and modernization of the city to the world (Parent, 2012; Viehoff, 2013). The creativity with which they transformed deserted industrial land for the Olympic village and then re-transform it into residential housing and other facilities was ground-breaking (Bretveld, 2014). Barcelona re-opened itself to the sea, the shoreline and important parks were regenerated and a ring roads was created to ease traffic and other transportation initiatives (IOC 2013b).

Less tangible positive legacies are the capability of the Games to enhance the confidence and skills of the host population (Furrer, 2002). London used the 2012 Olympic Games to transform the way the citizens, the communities and the schools approached sports in general and competitive sports as well (Owe, 2012). Schools were required to offer and participate in competitive sports, investment in youth sports was greatly increased and community sports clubs created (CSL, 2013).

Olympic Burdens:

However, these legacies or impacts may not always be positive (Delgado, 2007). Even Barcelona'92 had controversies: the construction of the Norman Foster's Communication Tower in Collserola Park damaged part of this urban forest. Many countries have suffered the consequences of mismanagement, over-expectations and environmental problems, all of which have contributed to a negative historical legacy (Cashman, 2003, p.34). Some Olympics experiences have provided no major economic gains for the host city: the 1976 Olympics left the Montreal with \$2.7 billion of debt that were not paid off until 2005, almost thirty years later (Zimbalist and Maennig, 2012). In the 1996 Atlanta Games, around 9,500 units of affordable housing were sacrificed and \$350 million in public fund was diverted from low income housing to Olympic preparation (Razaq Raj, 2009).

Also over-sized venues are negative legacies as it has happened in Athens and Beijing where they are still facing major issues in order to find viable uses for Olympic venues. Also the over-supply of hotel rooms and other infrastructure developed during Olympic planning have proved to be a financial burden after the games are completed (Furrer, 2002). As an example of negative environmental legacy, Albertville 1992 was considered an environmental disaster by ecologists and local inhabitants “*as many forested areas were cut down to clear the ground for building of the new infrastructure, without much concern for the local biodiversity*” (Poynter and MacRury, 2009, p.232).

3.6 Olympics Debate: Long-term legacy or short-term event?

When divorced from the context of their broader potential, sporting mega-events seem the very antithesis of a sustainable activity (Karamichas, 2013). The demands of material consumption and energy use, the necessity of participants and audiences travelling from all around the globe, the inevitable waste generated both before and during the event—solely to justify less than a month of sporting activity (Owe, 2012). Surely a culture that was truly motivated to better its social and ecological environments would find it easier to do without such a significant economic drain.

There has been an on-going debate on whether the Olympics create long-term legacy or it is a short-term event for profit motive (Smith, 2008). The preparation and administration of mega-events typically entail tight deadlines, which may conflict with more long-term development policies of a host city, or identified needs within local communities. There is also the potential for uneven distribution of whatever benefits are gained, which could even lead to tension within the host society. In balance with such an interpretation, the prospect of hosting the Olympics presents several advantages to engaging with sustainability. The international scrutiny that accompanies such a prestigious event allows for no delays or indecision, thus commitments to sustainability (which might otherwise be postponed or never enacted at all) gain a sense of genuine urgency. If managed responsibly by the hosts, the many demands attached to what is a relatively temporary event can flourish as the beginning of a persisting improvement of a city’s future and long-lasting legacy.

Some believe that private interests and profit motives may hijack the Olympics bidding process, and the development work to follow. Builders and unions, architecture offices, bankers and lawyers all came together in pursuit of opportunity (Zimbalist and

Maennig, 2012). There are many past experiences that suggest that, post-games, newly created infrastructure becomes a costly 'white elephant' for the host city. Many Olympics have witnessed short-term profit motives among local organisers which left the host city disappointed (Zimbalist and Maennig, 2012), and some environmentalists feel that placing entertainment above the needs of the planet is the root cause of such problems (Savery and Gilbert, 2011)

Although this contested debate is still open, many revised literature tend to agree that the integration of sustainability in the Olympics is essential "*in minimizing negative impacts and maximizing the positive ones*" (Poynter and MacRury, 2009, p.134) so that the Games leave the best possible legacy for the city in the long-term.

4. Analysis and Research Findings

This section mainly explores issues that emerged from semi-structured interviews undertaken with a wide range of participants. The rationale is to scrutinise and present a more critical review of the situation as it was experienced and understood first-hand by the interviewees. Much of the interview content has been extended or questioned with relevant written data in order to develop a critical analysis that has resulted in very interesting findings.

I have gathered large amounts of qualitative data from official and non-official documents, press releases, and from interviews with subject experts. I encountered problems of how to deal with the large quantity of available data. Moreover, how to reduce all the information gathered without losing completeness, a common dilemma in qualitative researches. To address this, Bryman (2012) suggests undertaking a careful and accurate selection of the information that best answers your thesis objectives, while acknowledging how this presents the subjectivity of the researcher.

This chapter will provide a) the importance of the year 1992 because of Barcelona'92 and, mainly, because of the UN Earth Summit; b) an examination of the historical evolution of sustainable development in the Olympic Games; c) a critical analysis of the mechanisms and procedures that the IOC has to ensure its implementation; d) examples from the Sochi, Athens, and London Olympic Games; and e) some findings of note.

4.1 The Origins of Sustainability in the Olympic Games

The year 1992 proved highly significant as ecologism and environmentalism had become acceptable at major political and economic levels thanks to the concept of 'sustainability', a buzzword that called for the attention of states and non-governmental organisations at the 1992 UN Conference (Delibes de Castro 2008). Sustainability was already of interest to scholars of social and political sciences in the few years preceding the conference on account of its awareness-raising capacity (Seabrook 1988; Luhmann 1989). It was believed that "*the general tendency has been to look to other political traditions for the ideals and principles that would underpin an ecologically sustainable post-liberal society*" (Eckersley 1992, pp. 23-24).

Lamatine DaCosta was one of the first relevant scholars who wrote about the environmentally-unfriendly image of the Olympic Movement at that time when "*the*

Council of Europe voted for a resolution favouring ecologically-concerned sports and condemning the repetition of Albertville's environmental abuses. (...) Moreover, the year 1992 was a seminal one both for sport and global environmental concerns: the Earth Summit" (DaCosta 1997, p. 101). He defended that environmental damage during the 1992 Winter Olympics provoked a reaction since *"the short period of five years taken by the IOC to be adapted to the main environmental challenges may be contrasted with the long-standing discussion on the gigantism of Games. (...) The IOC's environmental adaptation has proved the capacity-building (...) when exposed to external pressures"*. (DaCosta 1997, p. 102). Every organising committee has integrated sustainable and 'green' measures after 1992, even the criticised Games of Atlanta'96 (Burbank et al. 2001).

Lillehammer'94 and Sydney'00 had applied complete and systematic environmental strategies, so they are mostly presented in academic papers as the perfect examples of Games that followed the 1992 Earth Summit recommendations. While *"the 1994 Winter Olympics (...) placed the environment on the sporting world's agenda. For the first time comprehensive environmental action was planned and implemented at a large-scale sports event"* (Roper 2006, p. 1). In the case of Sydney 2000, *"the environmental dimension first appeared in 1992 when the Bid Committee announced an open contest to design the Olympic 2000 Athletes' Village. (...) This environmental approach was very timely."* (Stubbs 2001, p. 3). The common stance held among academics is that these two Games constituted the effective 'green' reaction to a critical moment in the Olympic Movement in the 1980s because political issues like the boycotts showed *"an organization with a profile as prominent as that of the IOC inevitably has its critics. As a non-democratic, non-representative international body"* (Toohey and Veal 2007, pp. 50-51).

This negative image was heightened with *"Albertville 1992, where additionally negative environmental impacts of the Games were considerably criticized, that forced the IOC to accept this issue as another important aspect"* (Kováč 2003, p. 112). Famously, the opening ceremony of the 1992 Winter Olympics in Albertville, France, was preceded by protest marches by members of the local community concerned about the health risks posed by the construction of a luge and bob-sleigh run near La Plagne, *"which required the storage of 40 tonnes of ammonia to freeze the track"* (Newlands, 2011, p.155). The body adopted many ideas resulting from Rio 1992, like the Agenda

21, so the Conference became its main reference policy in pursuit of sustainable Games (Tarradellas Macià 2003, p. 76; Lenskyj 2006, p. 197).

Most scholars agree with this explanation of how the Olympic Movement adopted an environmental dimension that appeared throughout “*the adverse publicity surrounding the environmental impact of the Albertville Games*”, which “*stimulated global policy activity within the IOC. (...) The environment had emerged as an issue of global social policy, with the Earth Summit conference of Rio*” (Cantelon and Letters 2010, pp. 424-425). During the interview with Pau Pérez, first President of the Spanish Olympic Committee (COE) Commission for Environment and former Deputy President of the CEO itself, he presents the year 1992 as the key year for the adoption of a new social and environmental strategy by the IOC, together with the adoption of the Olympic Truce and in collaboration with United Nations programmes. Barcelona’92 collaborated with initiatives that included the assembly of an Earth Commitment Wall in the Olympic Village, the signing of an Earth Pledge by the IOC’s Executive Board and all the NOCs, the organisation of an exhibition called ‘Beloved Earth’ during the Games and the planting of a number of trees equivalent to the amount of paper consumed by the COOB’92 (Interview 3).

Tarradellas, expert environmentalist and member of the IOC Commission for Sports and the Environment says that “*looking back more than 20 years it all started with the protection of the environment, and gradually step by step it evolved to integrate the concept of sustainable development*” (Interview 2). One important event spurred the IOC to address the issues raised by Albertville: the UN Conference in 1992, shortly before the 1992 Barcelona Olympic Games (Interview 2). The Earth Summit challenged political and apolitical organisations at every level, from national governments and NGOs to citizen enthusiasts, to view environmental and industrial concerns as fundamentally interconnected and proposed that global collaboration could lay the path towards increased quality of life, more resilient ecosystems and a ‘safer, more prosperous future’ (UNEP website). Less than two months later, during the Barcelona Games, the IFs and NOCs signed the Earth Pledge, dedicating them to the idea of producing an environment-friendly Olympic Games (IOC, 1999).

Authors such as Karamichas, Oben and Newlands recognize that practical ecological experience adopted at the 1994 Winter and the 2000 Summer Games was result of the 1992 Earth Summit, so it remains as the milestone of the environmental dimension of

the Olympics: “the general acceptance of Local Agenda 21 at the 1992 Rio Conference (...), which is often seen as marking the official institutional acceptance of sustainable development” (Karamichas 2013, p. 85).

The importance of the environmental and sustainability aspects of Barcelona’92 is mostly underestimated by scholars; even Spanish works do not mention that Rio 1992 implemented a number of awareness measures a few weeks later during the Summer Olympics in Barcelona (Interview 1, 3 and 4). It is because the COOB’92 did not overly emphasise a communication strategy. Environmental measures that the City Council and the COOB’92 were adopting to restore the shoreline’s coastal ecosystem and to guarantee less polluted air during the Games were rarely reflected in the media. However, the communication of environmental awareness for Barcelona’92 and the importance of the 1992 UN Earth Summit are closely interconnected (Interview 1 and 2).

Image 2: Earth Pledge at the Barcelona’92 Olympic Village, signed by athletes. The Earth Summit, the COOB’92, the IOC and United Nations encouraged this initiative (as can be seen with their logos).



Source: Fundació Barcelona Olímpica (former COOB’92)

4.2 The Evolution of Sustainability in the Olympic Games

Sustainability has come a long path in the past two decades because the 1992 UN Conference is still today considered a political and social success. The concept of

sustainable development, although a debatable one, is currently an integral aspect of the Olympic Games (IOC, 2012). The first research question addressed to most of my interviewees was to express their point of view of the historical evolution and integration of the concept of sustainable development in the Olympic movement.

Sports development projects have often been targeted by ecologists due to their potential impact on natural systems, for example when trees are cut down to create ski runs, or fields devoted to agriculture are converted into golf courses (Girginov and Hills, 2009). As previously said, the strong criticism of the 1992 Winter Olympics from environmentalists and the international press coupled with the UN's Earth Summit in Rio de Janeiro several months later, making 1992 an important year from the point of view of global sporting and ecological issues (DaCosta, 1997).

However, the sports movement has not been insensitive to such criticisms. With time, it has become aware of the need to limit the effect it has on the natural environment (Interview 1). The IOC's growing awareness of ecology was demonstrated two years after Barcelona'92 (Cantelon and Letters, 2010). A vast majority of sources and all my interviewees agreed that the 1994 Winter Olympic Games in Lillehammer went a step further and represented the 'first ecological Games in history' (Interview 1, 2, 3,5, 6 and 9). Although there were some ecologists and environmental campaigners who considered the achievements of the Games far from perfect as "*negative impacts on the environment could not be avoided, only minimised*" (Coleman, 1994, p.54) and the reception of 100,000 visitors had a large impact on water and electricity suppliers, as well as waste management from consuming more than 300,000 meals (Chernushenko, 1994).

In addition to the official establishing of environmentalism as the third pillar of Olympism in 1994, the IOC joined the UNEP in promoting initiatives and helping host cities to maintain their ecological responsibilities (IOC, 2005a). In 1995, the IOC created its Sport and Environment Commission in order to ensure the fulfilment of the environmental objectives (Interview 1, 2, 5 and 9). The main role of the Commission is to advise the IOC Executive Board on the integration of environmental issues during the preparation and development of the Olympic Games (IOC, 2005a). Over the following years the UN continued to progress its work on matters of sustainable development. In 1999, following the UN invitation extended to all organizations to prepare their own Agenda 21 as a mean to promote sustainable development, the IOC decided to develop

its own Agenda 21, the called Olympic Movement's Agenda 21. Agenda 21 serves “as a useful reference tool for the sports community at all levels in the protection of the environment and enhancement of sustainable development” (IOC, 1999, p. 10). It was planned around three objectives (IOC, 1999):

Figure 4: Agenda 21

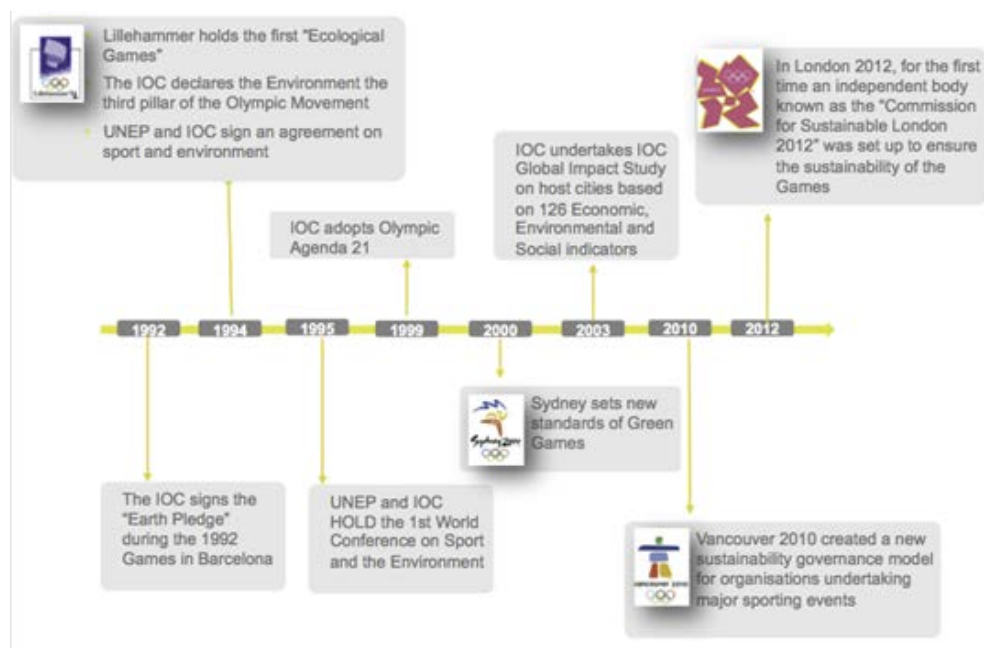


Source: (Author's own elaboration from IOC, 2005a)

The Sydney Olympics in 2000 were very significant, as the organisers explicitly focused on the environmental impact in their candidature file, beating the competing host candidates on that issue (Interview 3 and 5). A key factor for their success was the direct involvement of the environmental NGO Greenpeace during Games: “*Greenpeace helped to set binding, stretching, innovative, yet realistic targets at the earliest stages by working closely with the bid team*” (Interview 5). Also, Greenpeace worked with a range of experts and launched an Olympic Environmental Guideline. The Sydney Games sent a clear signal to all future organizing committees, that sustainability issues should be taken into consideration and integrated into their campaigns (Interview 3 and 5). Subsequently, many hosts followed Sydney's example, and build on what they did (Interview 3). However, some environmentalists remained sceptical and accused Greenpeace for ‘greenwashing’ the Games and condemned diverse environmental controversies regarding the “*landfills on site, the waste plant emitting toxic emissions in the midst, and the use of ozone depleters in Olympic venues*” (Beder, 2009, p.13).

The concept of sustainability in the Olympics was becoming stronger and stronger (see Appendix 4: Timeline of Sustainability in the different Olympic Games). The next big steps were the Vancouver Games in 2010 and London 2012, in both of which sustainability was included in the host's vision and integrated in their operations (Interview 4, 6 and 9).

Figure 5: Evolution of Sustainability in the Olympic Games



Source: (Author's own elaboration from: IOC 1999, 2005a, 2012 and 2014)

4.3 Mechanisms and Procedures to ensure Sustainability

There is disagreement and contestation over the extent to which mechanisms and procedures does the IOC have to ensure the implementation of sustainability and whether if they are effective or they lack of enforcement in practice.

As sustainability in sport develops, so does the need for guidance, standardization, and tools to ensure effective implementation. There have been numerous initiatives promoted and implemented by the IOC dealing with sustainability:

- The Olympic Charter
- The Manual on Sport and the Environment (developed in 1997)
- Agenda 21 of the Olympic Movement (1999)
- The Guide on Sport, the Environment and Sustainability (2005)
- Agenda 2020 (2014)

At the end of 2014, under the leadership of the IOC President, Thomas Bach, Agenda 2020 was approved, after a year of workshops with stakeholders of sport, as well as experts in other fields (IOC, 2014). Agenda 2020 includes two specific recommendations for advancing towards sustainability (see Table 3).

Table 3: Recommendations Agenda 2020

Relevant Olympic Agenda 2020 Recommendations:		
1. Shape the bidding process as an invitation	4. Include sustainability in all aspects of the Olympic Games	10. Move from a sport-based to an event-based programme
2. Evaluate bid cities by assessing key opportunities and risks	5. Include sustainability within the Olympic Movement's daily operations	12. Reduce the cost and reinforce the flexibility of Olympic Games management
3. Reduce the cost of bidding	9. Set a framework for the Olympic programme	

Source: IOC, 2014

During the interviews, many respondents tended to be very critical on this point. The President of the Spanish Olympic Commission for Sports and the Environment, Juli Pernas said: *“Although there are many principles, recommendations and conferences that promote the integration of sustainability in the Olympic Games, and look great on paper, they all have little power to ensure its implementation”* (Interview 1).

Another interviewee, an environmental expert member of the first Olympic Commission for Sport and the Environment stated: *“Agenda 2020 aimed to correct the deficiencies of Agenda 21, but it ends up committing the same mistakes. It is a very general guide that establishes only recommendations which encourage us to do certain things in a sustainable manner, but do not oblige in any sense”* (Interview 2).

In line with this, an environmentalist representing Greenpeace advocates that all these guidelines should be non-negotiable and should also be enforced by national laws in the host countries, and the IOC should provide firm penalties for non-compliance (Interview 5). Having identified this problem, I then asked: **What mechanism does the IOC have to ensure that the recommendations and bid promises are fully integrated and implemented by the cities that are organising and hosting the Games?**

Tarradellas believes that one of the main mechanisms the IOC has to ensure the implementation of sustainability is in the power of the IOC Members while considering the bids (Interview 2). The IOC has the final word upon deciding which city hosts the Games and obviously this has great influence, at least in terms of what candidates will propose (IOC, 2005b). Nowadays, it seems common practice for candidate cities to present very optimistic environmental promises, because hosting bids are greatly strengthened when they include major green and sustainable measures into their candidature files (Interview 1, 2, 6 and 9). However, from the moment that a city is chosen to host the Games, the IOC *“has little scope for action and it seems that there are few, if any, consequences or punishments for countries that don’t follow through on*

their promises” (Interview 4). An Olympic press journalists interviewed mentions that we have no example in which the Games, or any similar major sport event, such as the Commonwealth Games, World Cups, etc., have been withdrawn (Interview 9).

The 2008 Beijing Olympics went ahead in spite of boycotts regarding a catalogue of apparent violations of the Olympic Charter, which expects a harmonious atmosphere as a backdrop to its activities (Interview 2). Chinese policies, which have provoked accusations including religious repression, Tibetan genocide, the imprisoning and censoring of the press, and other human rights transgressions, were evidently not disharmonious enough (Percival, 2008). This exemplifies the fact that, once a city is selected, the influence of the IOC becomes highly limited (Interview 2). If they lack the power, or will, to act in the face of such explicit affronts to their core mission, they can have little power to ensure and enforce that sustainability measures are implemented.

Pau Pérez agrees that choosing the host city is an important decision, *“one that represents a vote of confidence in the selected city’s capacity to implement all the sustainability measures previously promised”* (Interview 3). He also explains how the IOC provides regular guidance, dialogue, reviews and undertakes close monitoring and follow ups regarding sustainability. Pérez proved a valuable source for information about the committee’s processes and mechanisms, helping to clarify this controversial point.

First of all, Pérez explained that *“After one city wins the bid to host the Games, it signs a detailed host city contract with the IOC that is legally binding”* (Interview 3). For example London’s host city contract had a clause that made the promises in their candidature file legally binding, meaning that the sustainability objectives promised in their candidature automatically became part of the host city contract (IOC, 2005c). All the bid commitments and promises in regard to sustainably are put together in a list that becomes the starting point of the monitoring system (Frawley and Adair, 2013). The lists of social, cultural, environmental and economic measures are monitored by the IOC by establishing a set of indicators that assess the degree of achievement and transformation made by the host city (PWC, 2005). This tool of indicators is known as *“The Olympic Games Impact”* (OGI). If for example a city says that they are going to use a certain green standard for construction, that goes into the system and the IOC team monitors it:

“We actually have meetings on site on the host city, meetings with their organizing committee, with the partners; with the construction people and we have regular correspondence with all the different managers, in particular with managers of sustainability in the Organizing Committee” (Interview 3). From a sceptical point of view, the OGI tool has received several criticisms, as the timing of the assessments does not allow to evidence the extend of implementation of realistic long-term Olympic legacies: *“It will take fifteen to twenty years to measure the true legacy of the Olympic Games and the OGI project finishes two years after the event is finished”*. (Graton and Preuss, 2008, p.10)

Furthermore, the IOC is aware that not every bid commitments can be achieved and that changes always may occur as a result of numerous economic and political factors (Interview 3 and Lialios, 2006). For this reason, bid commitments can be updated to cope with potential changes so that if the host city is encountering problems with a commitment that cannot be achieved, the IOC asks the city to formally explain why (interview 3). I observe here that the IOC can “ask for” (not “demand”) a formal explanation in the event of compromised sustainability commitments; but there is no indicator that anything can be done if the host’s response is deemed inadequate, or (presumably) if a formal response is not forthcoming at all. To conclude this section, the analysis shows that the IOC lacks of enforcement power. The system is set up to allow the host nation to simply move their goalposts in the event that their sustainability promises are proved to be unachievable.

4.4 Examples

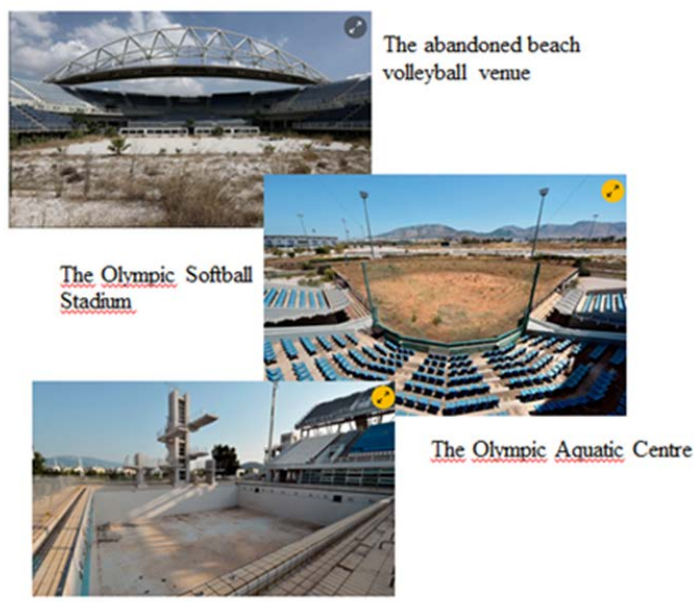
Reality has shown that—despite the above-mentioned existing tools, guides and recommendations—paradoxically there are examples both of sustainable Games, such as London 2012, and not so sustainable Games, like Sochi 2014 and Athens 2004. This section briefly looks into some specific aspects of these different Games to understand that there are more sustainable Games than others and further explain in the next section why some cities achieve greater success in the delivery of sustainable Games and others fall short of stated intention.

Athens 2004

More than one decade after hosting the Games, Athens is still facing the problem of how to maintain, manage and exploit their sport infrastructure (Gatopoulos, 2010). Most of the world-class venues built to host sports such as baseball, fencing, hockey, softball, kayaking and canoeing were disproportionately large for a country the size of Greece, and one in which there is very little tradition of practising these sports (Interview 7 and 9). Some of the structures were particularly expensive and have proved very difficult to maintain, while others simply remain unused and are becoming abandoned (Smith, 2008).

This is known as ‘white elephant’ syndrome, in reference to the costly and unmanageable gifts which South-East Asian kings would ironically bestow upon people who displeased them (Cashman, 2003). ‘White elephants’ are expensive and big buildings whose long-term potential is difficult to realise, and whose maintenance needs are often disproportionate to the financial means of the local communities responsible for their upkeep (Cashman, 2003). White elephants represent one of the worst aspects of the Olympic legacy in Athens, and they highlight the lack of strategic and long-term sustainable planning. To destroy them would be an acknowledgement of the system’s failure, even an affront to the IOC, but maintaining them to no purpose only underlines it.

Image 3: A decade after Athens 2004



Source: The Guardian, 2014

London 2012

When I asked for an example of recent successful Olympics in sustainability, most of my interviewees concurred, naming Sydney'00, Vancouver'10 and London'12, whose board consciously set out to deliver the most sustainable Olympics ever. The strategy of the London 2012 was to influence decisions made at every level of planning, including site location, design and construction of the Olympic Park, even investment choices, as well as the actual staging of the Games and the legacy that would follow (CSL, 2013). Manuel Fonseca, member of the COOB'92 Executive Board: *“London achieved its sustainability goals because it had kept to the original vision and integrated it fully into all stages of planning and delivery”* (Interview 4).

London 2012 had the complimentary objective of achieving large-scale regeneration of the highly depressed area of East London, creating inward investment and major new transport infrastructure from which the Games, and subsequently the region, would benefit (CSL, 2013). It is important to see how all this comes together, because too often planning and design is kept separate from operational and promotional elements. By contrast, in London these activities were seamless and the objective of long-term legacy was always kept in mind. Manuel Fonseca highlighted that the strategy of London 2012 regarding the construction of sustainable venues was based upon:

- Use of existing facilities
- Building permanent venues only where there was viable long-term use
- Where long-term potential was absent, create temporary venues that could be disassembled for reuse
- Hybrid structures: part-permanent, part-temporary
- Accessibility to facilities, both for attendance of the Games and for future use

By combining permanent or semi-permanent facilities with demonstrable on-going value to local communities, and avoiding the burden of costly, under-utilized buildings via temporary structures capable of being recycled or reused, the threat of the city suffering White Elephant Syndrome after the close of the 2012 Games was reduced.

Of course there were a lot of things that could be done better in London 2012 and the Games received substantial criticisms at the time (the failure of carbon offsets, transportation chaos...) (Singh, 2012). But looking at the overall results of the Games and the integration of sustainability into the culture of operations and long-term benefits is what makes London 2012 a good example.

Image 4: Example of two London 2012 venues



Aquatic Centre: Permanent venue of 2,500 seats, with Games-time temporary wings providing additional 15,000 seats



Basketball arena: a purely temporary venue, now dismantled

Source: Official website of the IOC, 2015b

Sochi 2014

Alexander Zhukov, Chairman of the Supervisory Board of the Sochi 2014 Organising Committee, said: *“Thanks to the Sochi Games, we are raising standards to international levels across the board. (...) The best practices from all over the world are coming to Sochi, and they will then spread across the entire country, creating a sustainable Games Legacy* (Sochi Organising Committee, 2012, p. 4). With estimated final costs of more than four times its original \$12 billion budget, the Sochi Winter Olympics was breaking records before the first athletes took their positions and waited for the starter’s gun (The Economist, 2013). The most expensive Winter Olympics ever, proclaimed its intentions to establish a new standard for ecological sustainability and responsibility, which would create a legacy that would benefit Russia into the future (Bidding Committee Sochi, 2006). However, the reality was to prove very different from the plan, as happened with initial budgets (Müller, 2014).

Despite pledges to utilize eco-friendly construction methods and to deliver no waste during the Games, construction impact, the dumping of refuse materials, and run-offs of toxic by-products were to have a catastrophic effect on the Mzymta river (Müller, 2014). A World Heritage Site since 1999, these side effects were to cause significant damage to its ecosystem, and pollute the drinking water for thousands of local residents (Interview 19 and Müller, 2014). This represents an obvious failure by the hosts to achieve the sustainability goals initially claimed and of the IOC to enforce the delivery of the bidding promises.

Image 5: Collection of press headlines blaming the environmental performance of Sochi 2014



Source: NY Times, WWF, Reuters, The Guardian

4.5 Findings

The IOC has gone to great pains to establish sustainability as a core requirement of any host city. Nevertheless, in spite of making ambitious pledges in pursuit of Olympic prestige, the facts are that while some cities achieve great success and deliver a sustainable event, others have fallen well short of both their stated objectives and general ecological acceptability. Comparing the hosts across time, there are clear disparities in what has been accomplished while following shared goals: **How is this possible?** This section has found possible arguments to answer this question.

On one hand, the absence of strict and enforceable mechanisms on the part of the IOC, coupled with no means or will to punish any failure to fulfil sustainability commitments, creates a dynamic in which dismissing problematic ecological activities or discounting the potential impact on the future is a perfectly viable option, although *“politically it will be embarrassing and suicidal for the city to ignore those things because of course they made promises and the media, citizens, NGOs and the IOC know it and it will not look good for the city”* (Interview 4).

On the other hand, the answer to this question also rests with the particular host itself (Interview 1, 3, 5 and 9). There are inherent cultural factors that can help us to estimate the degree of sustainability that can be achieved, be it for better or worse. Countries have different societal approaches towards the environment and sustainability. For example, the Lillehammer Olympics in 1994 and Sydney in 2000 took place in developed countries, Norway and Australia, both with an increasing culture of dedication to sustainability. Support from local NGOs, and a vision of sustainable development which is historically shared among a wide set of stakeholders (such as

businesses, suppliers, the government, regulators and citizens) can clearly be considered to have contributed to their success. As an example, the map below (figure 6 and table 4) compares the degrees of openness towards environmental friendliness on the part of different nations. There is a clear positive trend among northern European countries, less so in (for example) South America or Russia. It would be unsurprising to find that events hosted where ecological issues are already being addressed demonstrate greater success in terms of sustainability, simply due to the alignment between the Olympic Movement’s objectives and these countries’ pre-existing social commitment to such ideals.

Figure 6: Environmental agreement compliance



Source: Website Nation Master

Table 4: Environmental agreement compliance ranking

COUNTRY	POSITION IN THE WORLD RANKING	CITY AND YEAR OF THE GAMES
Spain	23	Barcelona 1992
Norway	7	Lillhammer 1994
USA	20	Atlanta 1996
Japan	14	Nagano 1998
Australia	16	Sydney 2000
USA	20	Salt Lake 2002
Greece	Not Available	Athens 2004
Italy	18	Torino 2006
China	21	Beijing 2008
Canada	13	Vancouver 2010
United Kingdom	11	London 2012
Russia	60	Sochi 2014
Brazil	39	Rio de Janeiro 2016

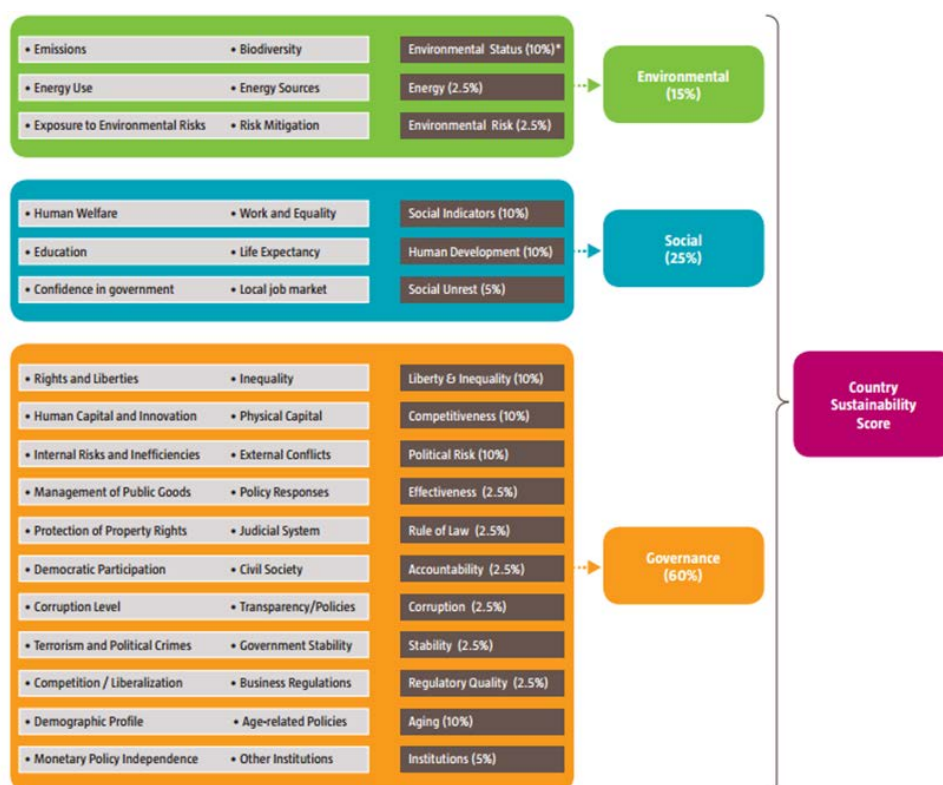
Source: Website Nation Master

Looking at the rankings, it could be predicted that the environmental performances of Norway and Canada would attain a higher level than those of Russia or Brazil. Lillehammer, a small town with a population of 30,000 citizens (moreover, in an

ecologically-minded nation like Norway), required far less effort to provide sustainable Games that Beijing, which has a population of over 15 million people, plus 3 million cars on the road and an annual coal consumption of 26 million tons and is surrounded by one of the biggest industrial areas in the world (Official Report of the Beijing 2008 Olympic Games, 2008).

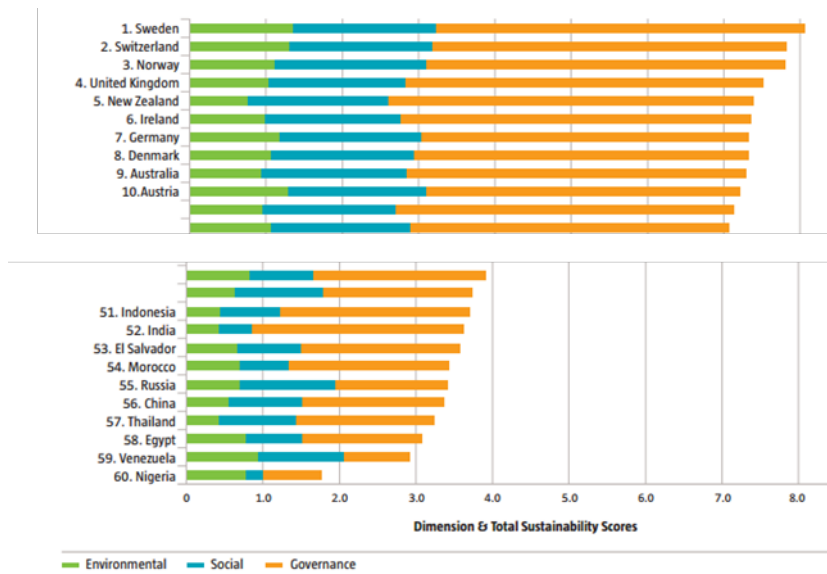
Also RobecoSam, a well-known investment company specialist focused exclusively on sustainability investing, has elaborated a country sustainability framework by analysing 60 countries on a broad range of Environmental, Social and Governance factors. The methodology and issues taken into account by RobecoSam are detailed in the table below (see Table 5). Basically the aim of this ranking is to give investors relevant information about how well a country is administrated from a perspective of social stability, aging, caring for the environment. In other words, they have tried to consider all those issues that involve the interests of the future generations.

Table 5: Indicators of the RobecoSam country sustainability framework



Source: RobecoSam, 2015

Figure 7: Country Sustainability Ranking: top 10 and bottom 10 countries



Source: RobecoSam, 2015

The ranking above (Figure 7) shows that high-income developed countries have the overall highest sustainability scores. However, other nations with emerging economies have the lowest scores. This graphic shows how sustainability paths vary by regions and countries because of different combinations of the natural environment, education, inequality, corruption, human welfare and many other economic, political and social variables of the country (see Table 5).

For cities such as Beijing, the concept of sustainable development is still far from being a reality. The Olympic Games in 2008 thus represented a huge challenge. Apart from the environmental implications, Beijing had additional political problems, including human rights and press freedom (Percival, 2008). The preparation of the Beijing Olympics “*was an incentive for the IOC to introduce the concept of sustainable development, a subtle and astute way of discussing China’s social and environmental issues which would not have been possible otherwise*” (Interview 2). Anticipating a genuinely sustainable Olympics would have been unrealistic.

To conclude this section, the findings show that there are no common mechanisms to force the Games to target equal sustainability and ensure fulfilment of any stated goals. The rules and guidelines are very general because they leave a lot of space for different interpretations. Also, the OGI tool is managed on the principle of “comply or explain”, not enforcement. Also, analysis shows that countries have different societal approaches towards the environment and sustainability, so they have different starting points and it would be unrealistic to demand the same level of action from Sydney as from Rio de

Janeiro, for example. The major responsibility to demonstrate concern for sustainability and promoting it at the Olympic Games rests with the organising bodies and mainly depends on their own will and ability to do so. Host cities determine the extent to which they commit to sustainability.

5. Discussion and Recommendations

This chapter approaches a fundamental question: **Is it possible to achieve truly sustainable Games?** There are several opinions about this issue. Some environmentalists claim that a global event such as the Olympics is an inherently unsustainable thing to do (Carus, 2010); others believe it is a unique opportunity to “*make sustainability relevant, engaging and fun*” (Witkin, 2012). Through the expert interviews and written data, a broad insight into the debate has been gleaned and recommendations for hosting future Games will be suggested.

Pessimist voices believe that “*there is no such thing as a sustainable Olympic Games*” (CSL, 2013, p.6). An Olympic event demands huge material and financial investment yet is ended in merely weeks, requiring activities such as constructions of stadiums and arenas, transport and accommodation infrastructure, food and water supply (Merkel, 2014). It has been argued (Cashman, 2003) that far from being justified by the pursuit of entertainment, the expenditure of power and generation of waste, the chaos inflicted on the host city and natural environs, and the pollution caused by transporting a global audience into attendance, all these factors underline a fundamental error in our shared priorities. Some environmentalists and social justice campaigners would label such activities as the very heart of the problem (Action-sustainability, 2010).

Referencing back to the 1994 Olympic Games, Olav Myrholt, the Head of the Norwegian Olympic Project, said: “*The only ecologically rational Olympic Games would be no Olympic Games at all. The second option would be the Recycled Olympic Games, the re-utilisation of old cities. Lillehammer is the third option*” (Olympic Review, 2007). Some environmentalists represented by Greenpeace once posed this question: “*would not be more sustainable to set a country with fixed facilities and infrastructure to celebrate the Games several years in a row? Instead of celebrating Olympic Games every two years in different countries each time?*” (Greenpeace, 2000). Robin Stott, a sustainability advisor stated that: “*The Olympics is inherently unsustainable. It is impossible to conceive of an enormous event like this which requires a substantial amount of building in its construction and development phase and then in its running phase, millions of people traveling from all over the world using prodigious amounts of fossil fuels and it being developed within a country that is already way outside its sustainability limits for us to be sustainable. It is completely impossible.*”

(Fenton Cooper, 2013). On the other hand, a more optimistic perspective is represented as follows. One of my interviewees, Agoullé, answered my discussion question as: *“There is no such thing as a set point where you reach sustainability (...) sustainability is a continual process. It’s like chasing a rainbow, you never find the end of it. Achieving sustainability is all about improvements and looking to achieve things on a long-term basis and looking at things in their totality”* (Interview 5).

Stubbs sees sustainability as a process for positive and renewable change, which improves the quality of life for people now and the future; it is about finding a complementary balance between the needs and wants of the present and those of the future, with the goal of achieving on-going environmental and societal health (Stubbs, 2011). There is a lot in today’s society that is unsustainable: the exploitation of natural resources and the depletion of the world’s biodiversity; producing more waste than can be re-absorbed into natural systems; pollution of land and air; vast inequalities between rich and poor, both within countries and between them; consumption-driven lifestyles which are increasingly disconnected from the natural world; and decreasing levels of personal activity and fitness. In this sense, the Olympic Movement is founded on a positive vision and ideals that project an optimistic view for society. *“The Olympic Movement has genuine global reach and influence, and thereby a leadership role to play in promoting sustainability”* (Stubbs, 2011, p.118).

Shaun McCarthy, head of the Commission for a Sustainable London 2012, agrees to certain extent that holding a huge, brief sporting event and inviting people from all over the world to attend is not a sustainable thing to do, but he also believes that sustainability can be achieved in the Olympic Games. McCarthy, and many other experts who take an optimistic inclination, believe that the sustainability of the Games can be reached when they produce a net benefit to the environment and society (McCarthy, 2011), such that the expenditure of resources “buys” an improvement in the host’s environmental or cultural state, and by extension that of the world generally, even if it is not immediate (Hayes and Horne, 2011).

Constructing from these different points of view I see that, taken in isolation, delivering Olympic Games might be considered inherently unsustainable only where the inarguably positive, motivating influence of the Games fails to be made into the driving force for enacting change or adding real, lasting value. Shaun McCarthy says that *“If we*

can use the Olympics to change the way things are made or procured and do more net good than net harm, I think we will have a sustainable Olympic Games” (McCarthy, 2011). In this approach, the key variable to achieve truly sustainable Games resides on the legacy left upon the host city. Legacy has more aspects to it than simply the tangible infrastructure or sense of community and well-being which the Games leave in its wake. In planning for and holding the Games, the potential for establishing new, beneficial modes of behaviour in relation to the environment can be instilled in the hosting society. More than any other major event, it can be claimed that the Olympics, *“if channelled effectively, can achieve sustainability by being a driver for positive change”* (McCarthy, 2011).

In general, individuals and organizations across the board are engaged with facilitating the Games, and this allows the possibility of having them similarly engage with the goal of sustainability. In prompting the consideration of ethical and sustainable approaches to the massive resource procurement and expenditure which every Games entails, participants are compelled to look at their own models of activity and find ways to satisfy these goals within themselves; but not only will this further the goal of Olympic sustainability, it may well provide those participants with a competitive edge in a business environment where ‘sustainability awareness’ and related issues are increasingly seen as an essential quality in both practice and promotion. This is an example of how the establishment of responsible procurement requirements for the Games can cause a positive change in business practices, one that will be continued even when the Olympics are over. Sustainability can make good business sense.

Also, it is important to keep in mind that people’s behaviours are fundamental in moving towards sustainability. The most environmentally ethical housing project is no guarantor of sustainable living, and the short-term ecological costs of construction will only be compounded if its residents engage in wasteful or destructive lifestyles into the future. As I concluded in the previous chapter, this issue goes well beyond the Games, as it is part of an inherent cultural factor of the host city itself. However, the Games can accelerate changes that have already been set in motion within a host city. Consequently, based upon the optimistic perspective, sustainable Olympic Games must (Furrer, 2002):

- Develop and deliver a sustainable social, economic and environmental legacy for the host city and region.
- Originate as a project specifically aimed at tackling local needs or challenges, offering an innovative response to the demands of hosting that will maintain or even improve on the status quo.
- Manage the demands of preparing and hosting the event responsibly, such that the requirements of the Games are met without compromising the short- and long-term harmony of the urban, cultural and environmental locale.
- Provide a benefit to all tiers of the host's society.
- Pre-empt and resolve any risks or conflicts that could be caused for local residents.
- Be ambitious but realistic about the capabilities of the city when setting the targets and commitments to be achieved.

Establishing these as starting principles, and following them through the various stages of the Games, should now be viewed as an essential practice. The bodies administrating future Olympic events must demonstrate true authority in ensuring that the label of 'sustainability' is not just achieved, but deserved. The level of success in attaining the goal of hosting truly sustainable Games is still to be assessed by future research.

5.1 Future recommendations

Although there are a lot of 'good practices' regarding sustainability at the Olympic Games, I would like to highlight some recommendations that have resulted from my thesis. These recommendations could also be applied to other major sport events:

1. Adopt an integrated, realistic and long-term approach. The organization of events should set objectives for sustainability which filter through every aspect of the project: from pre-event planning and the construction of facilities, to the holding of the Games themselves; and onward through the post-event administration and the transitioning into the legacy to come (Interview 7). The goals should be far-seeing and far-reaching but also attainable, such that the Games leave in their wake the best possible impression on the future.

2 Make mandatory the adoption of a sustainability management system for major sport events. A sustainability management system for major sporting events, such as the new international standard ISO 20121 developed during London 2012, will

provide a structured and uniform approach for addressing sustainability aspects in mega sport events. There is no point in establishing mandatory specific sustainability requirements (such as an obligation to reduce the carbon footprint by 20%, or to achieve zero landfill waste, for example) because, thinking practically, each city has very different realities and infrastructures and specific goals can be inappropriate in different locations. It is almost impossible to impose “one-size-fits-all” set of indicators and the same strict requirements across the board. By contrast, a sustainability management system is applicable to the different contexts of cities in Asia, Europe, Africa, and all across the world, because it does not establish specific requirements; instead, it provides the framework and core processes that shape the way of working, where sustainability is crucial at every decision point (governance, procurement, stakeholder engagement, etc.).

3. Involvement of NGOs. NGO partners can facilitate the establishment and execution of targets throughout the process of hosting Games, from the earliest planning roles to delivery and evaluation of the event itself. If properly integrated and respected within the process, their independence can allow them greater flexibility to innovate, while their presence can provide the hosting agent both with an outside motivation to meet binding targets and also added credibility, not to mention skill and specialization.

4. Public participation. More than any other category of participant, the citizens of a hosting nation hold a stake in the legacy the Olympic Games leaves them with. Without consultation and response regarding local needs and expectations from the earliest opportunity, the capacity of the games to achieve long-term sustainability is highly unlikely.

5. Establish an independent assurance body. Pairing each Olympics with an independent watchdog would almost certainly mean a greater commitment to implementing the sometimes ubiquitous pledges made every four years to offer the “greenest Games ever”. Dedicated monitoring would result in higher levels of transparency and accountability, helping the IOC and the public in general to be sure that a host city’s commitments to sustainability are in fact met. As an example, the Commission for a Sustainable London 2012, reported to the Olympic Board and the British public that the Games were hitting their sustainability targets. Such an independent body would be tasked with delivering consistent and accurate oversight,

and should be comprised of experts in both the typical sustainability needs of the Games and those of the particular hosting city.

6. Transfer of knowledge. Even an event as singular as a specific Olympic Games does not exist in a vacuum. Lessons are there to be learned from previous events, just as the activities, experiences and challenges faced by the current hosts can inform those yet to come. London's legacy should help shape the outcomes of Rio 2016 and Tokyo 2020. They in turn will influence future host cities. The IOC should facilitate and promote knowledge sharing so the reach of a successful Olympic sustainability program is continually extended

6. Conclusion

I defend in my thesis' title that the origins of the environmental dimension of the Olympic Movement are a legacy of Barcelona 1992 because it was the first Summer Olympic Games that planned a systematic strategy to implement environmental and sustainability measures within the host city. Furthermore, it was also very significant that it was the first Olympic event that applied ecological awareness campaigns, although during late stages of the organizing process. This awareness strategy had been directly influenced by the recommendations and agreements decided at the 1992 Earth Summit. For these reasons, the real importance Barcelona 1992 is that it gave the first step towards the same objective, to promote a more sustainable Olympic event. This way was followed later on by Lillehammer'94, Sydney'00, Torino'06, etc.

The increasing recognition by the IOC of its responsibility for sustainable development is clear from the presence of the issue within the Olympic Charter, along with the various sustainability-related documents and guidebooks it now makes available. Also it is demonstrated by the fact that concerns for sustainability issues and long-term legacies have become one of the very important issues when considering the selection of Olympic cities.

Nevertheless, while research has acknowledged the above-mentioned facts as a positive representation of the efforts made by the IOC, reality demonstrates that implementation of these efforts remains a challenge. Paradoxically there are still examples of both sustainable Games such as London and less sustainable Games like Sochi or Athens. This thesis has aimed to give an explanation to this conflict by showing the following research findings:

- On one hand, although the IOC takes sustainability very seriously and engages in much monitoring, reviewing, guidance, follow-up and dialogue with host cities, the IOC lacks any enforcement power to ensure the implementation and fulfilment of their recommendations, guides, and the OGI indicators set by their partners. Also, when competing for the right to host the Games, candidate cities try to please the IOC and present very ambitious sustainability plans, creating often a gap between intentions and delivery. Once the elections are over, research shows that the IOC's control over the host city is critically diminished and does not have that much leverage.

- On the other hand, the research findings support the perspective that the major responsibility to demonstrate concern for sustainability, and to implement it at the Olympic Games, rests within the Organizing bodies and the country itself. Different geographies and cultures obviously have different societal approaches, but also different starting points and needs, regarding sustainability. Therefore, the degrees of commitment and the extent to which sustainability is achieved will differ from host to host.


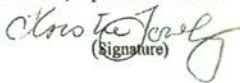


To conclude, the suggested answer to my thesis question: **Is it possible to achieve truly sustainable Olympic Games?** It is that there is no single specific point where any event, Olympic or otherwise, could be labelled as definitively sustainable. Taking the Olympic Games, lots of its individual elements (all these people traveling to the Games, building the venues, catering) might not be sustainable; but if you look at the total project from beginning to end, the benefits it creates and what it leaves behind, then if you have effectively achieved a net benefit and done a lot more good as a result of the event than bad, this is heading in the direction of sustainability. The legacy of the Olympic Games left in the host city is the key issue in determining the achievement of sustainability; the only capable of outweighing the intensive use of resources that the games imply.

6.1 Future Research

One of my recommendations for future Olympic Games (see section 5.1) is to make mandatory the adoption of a sustainability management system for major sport events such as the new international standard ISO 20121. It could be very interesting to expand future research in regard to the success /failure of the implementation of such a sustainability management systems for achieving sustainable Olympic Games.

7. Appendices

Appendix 1- Topic Submission of Master's Thesis. University of Peloponnese.

UNIVERSITY OF PELOPONNESE MASTER'S DEGREE PROGRAMME "Olympic Studies, Olympic Education, Organization and management of Olympic events" DEPARTMENT OF SPORTS ORGANIZATION AND MANAGEMENT	
Academic Year:	
Semester:	
<u>TOPIC SUBMISSION OF MASTER'S THESIS</u>	
FULL NAME:	Alberto Aragón-Pérez
COUNTRY:	Spain
STUDENT REGISTRATION NUMBER:	6062201302016
I declare	
that the topic of my master's thesis is the following:	
TOPIC: The origins of the environmental dimension of the Olympic Movement: a legacy of Barcelona 1992	
Date: November 6 th 2014	Signature of the student: 
<u>ADVISORY COMMITTEE</u>	
Supervising Professor Kristine Toohey . Professor. Department of Tourism, Sport and Hotel Management. Griffith University	
(Full Name)	(academic level)
Professor-Member 1 César R. Torres . Professor. Department of Kinesiology, Sport Studies and Physical Education. State University of New York	
(Signature) 	
Professor-Member 2 María Eugenia Martínez Gorroño . Professor. Department of Physical Education, Sport and Human Motricity. Autonomous University of Madrid	
(Signature) 	

Appendix 2- Guideline of Interview Questions

General Guideline of interview questions

1. Personal view of what sustainable Games mean, do you think it is possible to achieve truly Sustainable Games?
2. What has been the historical evolution of the integration of sustainability in the Olympics? What are the most important moments?
3. What mechanisms does the IOC have to ensure-enforce compliance of the principles and promises set by the IOC and the hosting cities?
4. How does the IOC address the cultural differences regarding possible un-sustainable practices? How should be addressed these cultural differences?
5. When can we consider that the sustainability in the Games is achieved?
6. What future recommendations regarding sustainability for future Games will you give?

Appendix 3- Factiva_ Example list of press collection

DOW JONES

▣ **2010 Winter Games more than green Games; set new bar for large sporting events**

Canada NewsWire, 19:28, 17 December 2010, 1635 words, (English)
VANCOUVER, Dec. 17 /CNW/ -- Final Sustainability report highlights environmental, social and economic legacies
VANCOUVER, Dec. 17 /CNW/ - The 2010 Winter Games were more than just green Games. They reached beyond the environmental pillar to ...

▣ **Coca-Cola uses Olympic Sponsorship as environmental call to action**

Canada NewsWire, 17:00, 24 March 2009, 1001 words, (English)
TORONTO, March 24 /CNW/ -- Coca-Cola nominates its first Environmental 2010 Olympic Torchbearer
TORONTO, March 24 /CNW/ - In an effort to spread the Olympic Spirit and create an environmental legacy to encourage Canadians to adopt ...

▣ **London will leave legacy for UK and Olympics**

Fuseworks Media, 16:06, 26 July 2012, 1406 words, (English)
Many of London 2012's sustainability measures were given the thumbs up by UN Under-Secretary General and UN Environment Programme Executive Director Achim Steiner as he toured final preparations for the summer Olympic and Paralympic Games.

▣ **Special Report: Sustainability - Will the Games leave a truly green legacy?**

Events, 13 February 2012, 1876 words, (English)
Locog is doing much to promote environmentally aware practices, but there is a real danger that commitment will wane when the flags are packed away.

▣ **Making the greenest Games a reality; The business of 2012 Contractors faced a tough challenge but they hit most of their environmental...**

The Daily Telegraph, 25 February 2012, 2235 words, (English)
The contractors and partners tasked by the Olympic Delivery Authority with delivering the 'greenest Games ever' in London this summer have had to innovate to meet strict environmental and sustainability criteria that ...

▣ **When London bid to host the 2012 Olympic and Paralympic Games, sustainability...**

Barking & Dagenham Post, 25 July 2012, 1208 words, (English)
When London bid to host the 2012 Olympic and Paralympic Games, sustainability was a key part of the winning pitch but have those behind the Games come through on their promises? Sustainability correspondent Tara Greaves reports.

▣ **A Rio piece of work; 2016 Olympics on horizon: With less than 1,000 days to go, not all has gone smoothly for organizers**

Vancouver Sun, 16 November 2013, 1537 words, (English)
Beach volleyball will be played on Copacabana Beach. The soccer final will be contested at the Maracana, the largest stadium in the world. Sailors will race in the shadow of the Sugar Loaf Mountain.

▣ **Rio 2016 and Dow Partner to Implement the Most Comprehensive Carbon Program in Olympic Games History**

ENP Newswire, 24 September 2014, 894 words, (English)
Release date - 23092014
RIO DE JANEIRO - Rio 2016 announced today The Dow Chemical Company (NYSE: DOW) as the Official Carbon Partner of the next Olympic Games, having the goal of creating climate benefits to mitigate the direct greenhouse ...

ⓂAthens Olympics leave mixed legacy, 10 years later

Associated Press Newswires, 15:59, 13 August 2014, 2361 words, (English)

ATHENS, Greece (AP) — In an obscure corner of a park sits a forlorn reminder that, 10 years ago, Athens hosted the 2004 Summer Olympics. The crumbling miniature theater is inscribed with the words "glory, wealth, wisdom, victory, triumph, ...

Ⓜ8th World Conference on Sport and the Environment coming to Vancouver this spring

Canada NewsWire, 23:30, 22 October 2008, 745 words, (English)

VANCOUVER, Oct. 22 /CNW/ -- VANCOUVER, Oct. 22 /CNW/ - A worldwide forum on opportunities and issues for sustainable sport is coming to Vancouver from March 29 to 31, 2009, when the International Olympic Committee (IOC), in partnership with ...

ⓂThe Greenest Games on Ice

Environment News Service, 10 February 2006, 863 words, (English)

TURIN, Italy, February 10, 2006 (ENS) - Everything is ready for the Opening Ceremony of the XX Olympic Winter Games. The opening show, staged with the collaboration of more than 3,500 volunteers and 250 staff, will begin tonight at 8 ...

ⓂLosing Faith in Brazil.

Building, 30 August 2013, 2671 words, (English)

Brazil has been one of the great hopes for UK construction firms seeking opportunities abroad. But while some familiar brands have gained traction there, many have failed to pick up any work. Iain Withers looks at the barriers to entering ...

Search Summary

All of these words	sustainability Olympic Games
At least one of these words	
None of these words	
This exact phrase	
Date	All Dates
Source	All Sources
Author	All Authors
Company	All Companies
Subject	All Subjects
Industry	All Industries
Region	All Regions

Appendix 4- Timeline of Sustainability in the different Olympic Games (according to the Organizing Committee of Rio 2016)

Source: Olympic Games Impact (OGI) : Baseline Report Progress Report - Sustainability Department (Rio 2016 Organizing Committee for the Olympic and Paralympic Games, 2011)

A tabela a seguir apresenta a cronologia do contexto da inserção da sustentabilidade, a partir dos Jogos Olímpicos de 1992:

JOGOS OLÍMPICOS

Ano	Local	Iniciativas
1992	Barcelona, Espanha	Barcelona implantou medidas de melhoria ambiental, como o controle de poluição dos rios por meio da ampliação e modernização da rede de esgoto. No âmbito sociocultural, quatro museus e o Jardim Botânico foram renovados na preparação para os Jogos. A cidade investiu em infraestrutura com a construção de novas ruas e estações de metrô e a revitalização da região do porto, tornando-se um dos principais destinos turísticos da Europa.
1994	Lillehammer, Noruega	Os Jogos de Lillehammer se tornaram notáveis por seu foco em conservação ambiental. Os planejadores dos Jogos colaboraram com as autoridades locais e nacionais para elaborar diretrizes que minimizassem os impactos dos Jogos sobre a paisagem natural. A reciclagem de resíduos e a eficiência energética foram alguns dos princípios incorporados pelos organizadores dos primeiros Jogos a adotar "Jogos Verdes" na nomenclatura.
1996	Atlanta, Estados Unidos	Cerca de 2.000 árvores foram plantadas no centro de Atlanta em função dos Jogos Olímpicos. Além disso, houve a reconstrução de vários parques urbanos da área metropolitana de Atlanta e o investimento em novas instalações, praças e jardins. Os organizadores dos Jogos de Atlanta apostaram em experimentos com tecnologias limpas, como painéis solares e iluminação de baixo consumo energético.
1998	Nagano, Japão	Os organizadores dos Jogos de Inverno de Nagano desenvolveram uma estratégia ambiental em todas as etapas de preparação dos Jogos e investiram em programas de reciclagem, preservação de habitat e de paisagens naturais. O Comitê Organizador preocupou-se em implantar medidas ambientais nas instalações esportivas, como, por exemplo, pista de esqui alpino e cross-country, pista de snowboard halfpipe, arena para patinação de velocidade, pista de salto de esqui e estádio de hóquei no gelo, de forma a minimizar os eventuais impactos ao meio ambiente.

The table below presents the timeline of sustainability is increasingly important role, starting with the 1992 Olympic Games:

OLYMPIC GAMES

Year	Location	Initiatives
1992	Barcelona, Spain	Barcelona implemented environmental improvement measures such as river pollution control by expanding and modernizing the sewage network. In the socio-cultural sphere, four museums and the Botanic Gardens were renovated in preparation for the Games. The city invested in infrastructure with the construction of new streets and metro stations, as well as revitalizing the port region, making it one of Europe's prime tourist destinations.
1994	Lillehammer, Norway	The Lillehammer Games were notable for their focus on environmental conservation. The organizers collaborated with local and national authorities to elaborate guidelines that minimized the Games' impact on the natural landscape. Recycling and energy efficiency were a few of the principles incorporated by the organizers in the first Games to adopt "Green Games" in their nomenclature.
1996	Atlanta, United States	Approximately 2,000 trees were planted in downtown Atlanta due to the Olympic Games. In addition, several urban parks in the Atlanta metropolitan area were rebuilt, with investments in installations, parks and gardens. The organizers of the Atlanta Games experimented with clean technologies like solar panels and energy saving lighting.
1998	Nagano, Japan	The organizers of the Nagano Winter Games developed an environmental strategy for all stages of preparation for the Games and invested in recycling, habitat preservation and natural landscape programs. The Organizing Committee showed its concern for the environment in sporting installations, for example, the Alpine and cross-country ski courses, speed skating arena, ski jump course and the ice hockey stadium, where it worked to minimize any environmental impacts.

JOGOS OLÍMPICOS

Ano	Local	Iniciativas
2000	Sydney, Austrália	Sydney estabeleceu novo padrão global olímpico ao introduzir o conceito de "Jogos Verdes". Foram incluídos aspectos como recuperação de solos e conservação de florestas; redução, reutilização e reciclagem de resíduos; além de projetar suas venues de maneira sustentável. Os Jogos de Sydney foram os primeiros a serem auditados pelo Greenpeace e criaram um modelo para os jogos subsequentes, com foco em redução de lixo, reuso de água e utilização de materiais recicláveis. Os Jogos de Sydney mostraram a importância da atuação em conjunto com as ONGs, sobretudo no compartilhamento de informações, planejamento e execução dos Jogos e definição de princípios ambientais para construção e compra de bens e equipamentos.
2002	Salt Lake, Estados Unidos	O Comitê Organizador de Salt Lake adotou quatro metas prioritárias que permearam seus programas: <ul style="list-style-type: none"> • Zero geração de resíduos • Zero emissões de gases de Efeito Estufa • Reflorestamento urbano • Tolerância zero para erros de conformidade ambiental e segurança Os principais projetos ambientais entregues pelos Jogos de Salt Lake foram: emissões atmosféricas neutralizadas; 85% de recuperação dos resíduos por meio de compostagem e reciclagem; e programa de educação ambiental da comunidade em âmbito nacional e internacional. Os Jogos Olímpicos de Inverno de Salt Lake foram certificados pela Climate Neutral Network, em função de seus projetos de eficiência energética, conservação da água e de ambientes aquáticos, restauração de habitat, reciclagem de resíduos dos Jogos e plantio de árvores. Ao término dos Jogos, mais de 100.000 árvores foram plantadas em Utah pelo programa "Plant It Green: The Global Tree Races", e mais de dois milhões de árvores em todo o mundo. A unidade de refrigeração foi projetada para usar amônia, e desta forma não agredir a camada de ozônio. Além disso, a energia produzida por esta unidade foi reciclada e utilizada para aquecer os banheiros e chuveiros das venues.

OLYMPIC GAMES

Year	Location	Initiatives
2000	Sydney, Australia	Sydney established a new global Olympic standard by introducing the "Green Games" concept. Aspects like soil recovery and forest conservation, waste reduction, reuse and recycling were included in the concept, and all venues were projected sustainably. The Sydney Games were the first to be audited by Greenpeace and created a model for subsequent games focused on waste reduction, water reutilization and use of recyclable materials. The Sydney Games demonstrated the importance of working together with NGOs, principally in sharing information, planning and execution of the Games and defining environmental principles for construction and goods and equipment purchases.
2002	Salt Lake City, United States	The Organizing Committee of the Salt Lake City Games prioritized four goals that permeated its initiatives: <ul style="list-style-type: none"> • Zero waste • Zero Greenhouse Gas Emissions • Urban reforestation • Zero tolerance for environmental and safety non-compliance The main environmental projects delivered by the Salt Lake City Games were: Neutralized emissions; 85% waste recovery through composting and recycling; and a national and international community education program. The Salt Lake City Winter Olympic Games were certified by the Climate Neutral Network for their energy efficiency, water and aquatic habitat conservation, habitat restoration, recycling and tree planting projects. By the end of the Games, more than 100,000 trees were planted in Utah under the "Plant It Green: The Global Tree Races" program, in addition to more than 2 million trees around the world. The refrigeration unit was designed to use ammonia, thus eliminating harm to the ozone layer. Additionally, the energy produced by this unit was recycled and used to heat bathrooms and showers at the venues.

JOGOS OLÍMPICOS

2004

Iniciativas



Athenas,
Grécia

Os Organizadores dos Jogos de Atenas realizaram investimentos na infraestrutura de transportes com a utilização de biocombustíveis e desenvolveram projetos de reutilização de água, reciclagem de resíduos e quantificação da pegada de carbono do evento.

Na área ambiental, foram remediados 130 ha de terrenos abandonados ou contaminados, recuperadas áreas alagadas para preservação da vida selvagem e plantados milhares de arbustos e árvores. Além do desenvolvimento de parques de recreação e áreas de educação ambiental.

Os Jogos de Atenas foram auditados pelo Greenpeace e pela WWF, seguindo o padrão adotado por Sydney. Junto às ONGs, o Comitê Organizador orientou suas ações para minimizar os impactos dos Jogos.

2006

Torino,
Itália



A estratégia abordada pela Área de Meio Ambiente do Comitê Organizador dos Jogos de Torino (TOROC) foi pensada no conceito de Ciclo de Vida, e englobou todo o período de planejamento dos Jogos até a dissolução.

O Comitê Organizador dos Jogos de Torino (TOROC) desenvolveu um Sistema de Gestão Ambiental. Foram os primeiros Jogos Olímpicos a obter as certificações ambientais ISO 14001 e a EMAS (Environmental Management and Audit Scheme).

Torino propôs mudanças urbanísticas do centro da cidade e a compra de créditos de carbono para neutralizar as emissões de gases do Efeito Estufa provenientes da operação das venues e dos Jogos. Além de pequenas inovações para redução de resíduos, conservação de água e sustentabilidade das construções. Entre os principais projetos desenvolvidos estão o "Hector" para combater as mudanças climáticas, o incentivo a fornecedores e patrocinadores que atuem de forma sustentável e a promoção de um Selo Verde para o setor de Turismo.

JOGOS OLÍMPICOS

2008

Iniciativas



Beijing,
China

O Comitê Organizador dos Jogos de Beijing trabalhou com a UNEP (United Nations Environment Programme) para reduzir poluentes atmosféricos e aumentar a conscientização da população chinesa sobre as questões ambientais.

Foram realizados projetos em diversos segmentos, tais como: tratamento de efluentes líquidos e de resíduos sólidos; reforçamento de 40% da área urbana; controle de poluentes atmosféricos, incluindo os provenientes de fontes industriais; utilização de combustível limpo em toda frota olímpica (em 90% dos ônibus e em 70% dos táxis); incentivo ao uso de energia proveniente de fontes renováveis; controle de ruídos, entre outros.

Como parte das ações de sustentabilidade dos Jogos, a UNEP (United Nations Environment Programme) lançou um livro com avaliação ambiental independente dos impactos causados nos Jogos Olímpicos de 2008.

2010

Vancouver,
CANADÁ



O Comitê Organizador dos Jogos Olímpicos e Paraolímpicos de Inverno de Vancouver (VANOC), ao inserir a sustentabilidade em sua Visão, Missão e Valores, assumiu o compromisso de investir na sustentabilidade das operações relacionadas aos Jogos.

As seis principais prioridades para o VANOC foram:

- Responsabilidade
- Ciclo de vida ambiental e redução de impacto
- Inclusão social e responsabilidade
- Participação de minorias
- Benefícios econômicos
- Esporte para uma vida saudável

O VANOC emitiu relatórios de sustentabilidade com base no *Global Reporting Initiative (GRI)*.

2012

Londres,
REINO UNIDO



O Comitê Organizador dos Jogos Olímpicos e Paraolímpicos de Londres 2012 (LOCOG), que inseriu os princípios da sustentabilidade desde o início do planejamento dos Jogos, planeja entregar a primeira Olimpíada Sustentável da história dos Jogos Olímpicos. Para isso, estão sendo priorizados cinco temas-chave:

- Mudanças climáticas
- Resíduos
- Biodiversidade
- Inclusão
- Vida saudável

OLYMPIC GAMES

2004

Initiatives

Athenas,
GREECE

The Organizers of the Athens Games invested in transportation infrastructure with the use of biofuel and developed water reutilization and recycling projects, as well as quantifying the carbon footprint of the event.

In the environmental sphere, 130 hectares of abandoned or contaminated lands was recovered, as well as flooded areas for wildlife preservation. Thousands of bushes and trees were planted, and parks and recreational and environmental education areas were developed.

The Athens Games were audited by Greenpeace and the WWF according to the Sydney standard. Together with NGOs, the Organizing Committee worked to minimize the impact of the Games.

2006

Torino,
ITALY

The strategy adopted by the Environmental Area of the Organizing Committee of the Torino Games (TOROC) was designed based on the Life Cycle concept and encompassed the entire period from planning through the dissolution of the Games.

The TOROC developed an Environmental Management System. The Torino Games were the first Olympic Games to earn ISO 14001 and Environmental Management and Audit Scheme (EMAS) certification.

Torino proposed urbanistic changes to its downtown area and the purchase of carbon credits to neutralize greenhouse gas emissions from the operation of venues, in addition to small innovations in waste reduction, water conservation and sustainable construction. Among the principle projects developed were "Hector" to combat climate change, incentives for sponsoring suppliers to operate sustainably and the promotion of a Green Seal for the Tourism industry.

OLYMPIC GAMES

2008

Initiatives

Beijing,
CHINA

The Organizing Committee for the Beijing Games worked with the United Nations Environment Programme (UNEP) to reduce emissions and increase Chinese peoples' awareness regarding environmental issues.

Projects in several areas were carried out, such as: treatment of effluents and solid waste; reforestation of 40% of the urban area; air pollution control, including industrial pollution; use of clean fuels in the entire Olympic fleet (90% of buses and 70% of taxis); incentives for using renewable energy; and noise control, among others.

As part of the Games' sustainability initiatives, UNEP published a book with an independent environmental assessment of the impacts caused by the 2008 Olympic Games.

2010

Vancouver,
CANADA

The Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC), made a commitment to invest in the sustainability of operations related to the Games when it included sustainability in its Vision, Mission and Values.

VANOC'S 6 principal priorities were:

- Responsibility
- Environmental life cycle and impact reduction
- Social inclusion and responsibility
- Minority participation
- Economic benefits
- Sports for a sustainably lifestyle

VANOC issued sustainability reports based on *Global Reporting Initiative (GRI)* standards.

2012

London,
UNITED KINGDOM

The London Organizing Committee of the Olympic and Paralympic Games (LOCOG), which has included sustainability since the start of planning, intends to deliver the first Sustainable Olympics in the history of the Olympic Games. For this, it has five priority issues:

- Climate change
- Waste
- Biodiversity
- Inclusion
- Healthy lifestyles

8. Bibliography

- Abad Silvestre, J.M., 1996. Balance de las realizaciones del COOB'92, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), *Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92*. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 13–20.
- Acebillo, J., 1999. El “modelo Barcelona” desde el punto de vista urbanístico. Espacio urbano y complejidad, in: Maragall Mira, P. (Ed.), *Europa próxima: Europa, regiones y ciudades*. Edicions Universitat de Barcelona : Edicions UPC, Barcelona, pp. 223–248.
- Baker, S., 2006. *Sustainable development*. Routledge, London.
- Barke, M., 2010. Mexico City 1968, in: Gold, J.R., Gold, M.M. (Eds.), *Olympic Cities: City Agendas, Planning, and the World's Games, 1896 - 2016*. Routledge.
- Barracó Nogués, H., Terradas Serra, J., Parés Rifa, M., Prat Noguer, A., 1999. *Barcelona 1985-1999 : Ecologia d'una ciutat*. Ajuntament de Barcelona, Barcelona.
- Blewitt, J., 2008. *Community, empowerment and sustainable development*. Green Books, Totnes.
- Brinkmann, S., 2013. *Qualitative interviewing*. Oxford University Press, Oxford.
- Brunet Cid, F., 1996. Análisis Económico de los Juegos Olímpicos de Barcelona'92 : Recursos, Financiación e Impactos, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), *Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92*. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 250–285.
- Bryman, A., 2012. *Social research methods*. Oxford University Press Oxford
- Burbank, M., Andranovich, G., Heying, C.H., 2001. *Olympic dreams: the impact of mega-events on local politics*. Lynne Rienner Publishers, Boulder, Colo.
- Burnside-Lawry, J., Ariemma, L., 2014. Global governance and communicative action: a study of democratic participation during planning for the Lyon–Turin rail link. *Journal of Public Affairs*.
- Cantelon, H., Letters, M., 2010. The making of the IOC environmental policy as the third dimension of the Olympic Movement, in: Girginov, V. (Ed.), *The Olympics : A Critical Reader*. Routledge, London, pp. 419–429.
- Capra, F., 1998. *La trama de la vida : una nueva perspectiva de los sistemas vivos*. Anagrama, Barcelona.
- Casellas, A., 2006. Las limitaciones del “modelo Barcelona”. *Una lectura desde Urban Regime Analysis*. *Documents d'Anàlisi Geogràfica* 48, 61–81.
- Cashman, R., 2003. What is “Olympic Legacy”?, in: Moragas Spà, M., Kennett, C., Puig, N. (Eds.), *The Legacy of the Olympic Games, 1984-2000: International*

Symposium, Lausanne, 14th, 15th and 16th November 2002. International Olympic Committee, Lausanne, Switzerland, pp. 31–42.

- Chappelet, J.-L., 2003. The Legacy of the Winter Olympic Games : an overview, in: Moragas Spà, M., Kennett, C., Puig, N. (Eds.), *The Legacy of the Olympic Games, 1984-2000: International Symposium, Lausanne, 14th, 15th and 16th November 2002*. International Olympic Committee, Lausanne, Switzerland, pp. 54–66.
- Chappelet, J.-L., Bayle, E., 2005. *Strategic and performance management of Olympic sport organisations*. Human Kinetics, Champaign, IL.
- Chappelet, J.-L., Kübler-Mabbott, B., 2008. *The International Olympic Committee and the Olympic system : the governance of world sport*, Global Institutions. Routledge, London.
- Clay, G., 1958. Remembered landscapes. *Landscapes* 7, 7–10.
- Coaffee, J., 2010. Urban Regeneration and Renewal, in: Gold, J.R., Gold, M.M. (Eds.), *Olympic Cities: City Agendas, Planning, and the World's Games, 1896 - 2016*. Routledge.
- Cole, L.C., 1964. The Impeding Emergence of Ecological Thought. *BioScience* 14, 30–32.
- Colomé García, G., 1991. Estudio Comparativo de los Modelos de Organización de las últimas seis Sedes Olímpicas. Presented at the Curs Universitari sobre Olimpisme, Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona.
- Corretjé Ventura, X., Addison, 1992. Carteles de Deportes, in: *Els Cartells olímpics = Los Carteles olímpicos*. COOB'92 - Telefónica, pp. 134–195.
- Cortés, M.T., 2008. *El clima: El calentamiento global y el futuro del planeta*. Debolsillo.
- DaCosta, L., 2010. A never-ending story : the philosophical controversy over Olympism, in: Girginov, V. (Ed.), *The Olympics : A Critical Reader*. Routledge, London, pp. 67–79.
- DaCosta, L., 1997. The Olympic Movement today and the Environment protection. *International Olympic Academy Session 37*, 100–106.
- DaCosta, L., Carvalhedo Reis, A., 2011. Is the booming sustainability of Olympic and Paralympic Games here to stay?, in: Savery, J., Gilbert, K. (Eds.), *Sustainability and Sport*. Common Ground, Champaign, Ill., pp. 167–176.
- Dansero, E., Segre, A., Mela, A., 2003. Spatial and Environmental Transformations Towards Torino 2006: Planning the Legacy of the Future, in: Moragas Spà, M., Kennett, C., Puig, N. (Eds.), *The Legacy of the Olympic Games, 1984-2000: International Symposium, Lausanne, 14th, 15th and 16th November 2002*. International Olympic Committee, Lausanne, Switzerland, pp. 83–93.
- Delgado, M., 2007. *La Ciudad mentirosa: fraude y miseria del "modelo Barcelona."* Los Libros de la Catarata, Madrid.

- Delibes de Castro, M., 2008. La naturaleza en peligro. Destino, Destino.
- Discurso de Clausura de los Juegos de la XXV Olimpiada de Barcelona 1992, 1992. . Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92.
- Dobson, A., 2007. Green political thought. Routledge, London; New York.
- Dolf, M., 2011. Setting Up Sport with Tools for Sustainability, in: Savery, J., Gilbert, K. (Eds.), Sustainability and Sport. Common Ground, Champaign, Ill., pp. 33–42.
- Doñate Sanglas, I., 1993. La Normativa ambiental comunitària: condició i proposta de futur. Beta, Barcelona.
- Duffy, A., 2011. Vancouver 2010 : raising the bar for sustainable Olympic and Paralympic Winter Games, in: Savery, J., Gilbert, K. (Eds.), Sustainability and Sport. Common Ground, Champaign, Ill., pp. 91–102.
- Eckersley, R., 1992. Environmentalism and political theory : toward an ecocentric approach. State University of New York Press, Albany.
- Egler, F.E., 1964. Pesticides in our Ecosystem. American Scientist 52, 110–136.
- Errington, P.L., 1962. Of man and the lower animal. The Yale Review 51, 370–383.
- Essex, S., Chalkley, B., 2003. The infrastructural legacy of the Summer and Winter Olympic Games : a comparative analysis, in: Moragas Spà, M., Kennett, C., Puig, N. (Eds.), The Legacy of the Olympic Games, 1984-2000: International Symposium, Lausanne, 14th, 15th and 16th November 2002. International Olympic Committee, Lausanne, Switzerland, pp. 94–101.
- Felli, G., 2002. El Model Organitzatiu dels Jocs després de Barcelona'92, in: Moragas Spà, M., Botella i Pahissa, M. (Eds.), Barcelona: l'herència dels Jocs : 1992-2002. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 65–76.
- Fenton Cooper, A., 2013. Africa's health challenges : sovereignty, mobility of people and healthcare governance. Ashgate, Surrey.
- Fernández Hermana, L.A., Reales, L., 1994. Medi ambient i comunicació: de l'evolució cultural a la conscient. Beta, Barcelona.
- Fernández Peña, E., Ramajo Hernández, N., 2014. La comunicación en el deporte global: los medios y los Juegos Olímpicos de verano (1894-2012). Historia y Comunicación Social 19, 703–714.
- Ferrer Salat, C., 1990. Los Juegos Olímpicos de Barcelona : su Repercusión para los Españoles, in: Duránte Corral, C. (Ed.), Actas de la XXII sesión de la Academia Olímpica : Granada 1989. Acedemia Olímpica Española, Madrid, pp. 39–48.
- Folch, R., Ferrés, L., Monge, M., Estimada terra, 1992. Estimada terra: la biosfera : canviar per viure. Olimpiada Cultural Barcelona'92 : Repsol : Lunweg, Barcelona.

- Furrer, P., 2002. Sustainable Olympic Games : A dream or a reality?. *Bollettino della Società Geografica Italiana* 7, 4, 795–839.
- García, B., 2010. Sydney 2000, in: Gold, J.R., Gold, M.M. (Eds.), *Olympic Cities: City Agendas, Planning, and the World's Games, 1896 - 2016*. Routledge.
- Gatopoulos, D., 2010. Greek Financial Crisis : Did Athens Olympics Spark Problems in Greece? *The Huffington Post*, 3 June 2010 (accessed 11 September 2015).
- Getz, D., 2007. Festival Stakeholder Roles: Concepts and Case Studies. *Event Management*, 10, 2: 103-122.
- Girginov, V. (Ed.), 2010. *The Olympics : a critical reader*. Routledge, London.
- Gold, J.R., Gold, M.M. (Eds.), 2010. *Olympic Cities: City Agendas, Planning, and the World's Games, 1896 - 2016*, 2 edition. ed. Routledge.
- Gold, J.R., Gold, M.M., Latouche, D. (Eds.), 2010. Montreal 1976, in: *Olympic Cities: City Agendas, Planning, and the World's Games, 1896 - 2016*. Routledge.
- Gold, M.M., 2010. Athens 2004, in: Gold, J.R., Gold, M.M. (Eds.), *Olympic Cities: City Agendas, Planning, and the World's Games, 1896 - 2016*. Routledge.
- Gosper, R.K., 1990. Relations with the media, in: *De Moscou À Lausanne = From Moscow to Lausanne*. Lausanne, pp. 93–102.
- Hayes, G., and Horne, J., 2011. Sustainable Development, Shock and Awe? : London 2012 and Civil Society. *Sociology*, 45, 5, 749-764.
- Hede, A.-M., 2007. Managing special events in the new era of the triple bottom line. *Event Management* 11, 13–22.
- Hiller, H., 2003. Toward a science of Olympic outcomes : the urban legacy, in: Moragas Spà, M., Kennett, C., Puig, N. (Eds.), *The Legacy of the Olympic Games, 1984-2000: International Symposium, Lausanne, 14th, 15th and 16th November 2002*. International Olympic Committee, Lausanne, Switzerland, pp. 102–109.
- Hutchins, B., Rowe, D., 2012. *Sport beyond television: the internet, digital media and the rise of networked media sport*. Routledge, New York.
- IOC, 2007. *IOC guide on sport, environment and sustainable development*. International Olympic Committee, Lausanne.
- Jabareen, Y., 2008. A New Conceptual Framework for Sustainable Development. *Environment, Development and Sustainability*, 10, 2): 197–192.
- John, G., 2003. The impact of the Olympic Games on the urban planning policy of the city, in: Moragas Spà, M., Kennett, C., Puig, N. (Eds.), *The Legacy of the Olympic Games, 1984-2000: International Symposium, Lausanne, 14th, 15th and 16th November 2002*. International Olympic Committee, Lausanne, Switzerland, pp. 69–73.
- Karamichas, J., 2013. *The Olympic Games and the environment*. Palgrave Macmillan, Houndmills, Basingstoke, Hampshire; New York.

- Kovác, I., 2003. The Olympic territory : a way to an ideal Olympic scene, in: Moragas Spà, M., Kennett, C., Puig, N. (Eds.), *The Legacy of the Olympic Games, 1984-2000: International Symposium*, Lausanne, 14th, 15th and 16th November 2002. International Olympic Committee, Lausanne, Switzerland, pp. 110–117.
- Ladrón de Guevara, M., Còller, X., Romaní Cornet, D., 1996. La Imagen de Barcelona'92 en la Prensa Internacional, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), *Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92*. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 124–142.
- Laferrière, E., Stoett, P.J., 1999. *International relations theory and ecological thought: towards a synthesis*. Routledge, London; New York.
- Lapan; S., Quartaroli, M. T., Riemer, F. J., 2012. *Qualitative research : an introduction to methods and designs*. San Francisco, Jossey-Bass.
- Lenskyj, H.J., 2010. Olympic impacts on bid and host cities, in: Girginov, V. (Ed.), *The Olympics : A Critical Reader*. Routledge, London, pp. 373–386.
- Lenskyj, H.J., 2006. The Olympic (Affordable) Housing Legacy and Social Responsibility, in: Crowther, N.B., Barney, R.K., Heine, M.K., Torres, C.R. (Eds.), *Cultural Imperialism in Action, Critiques in the Global Olympic Trust : Eighth International Symposium for Olympic Research*. Brockport Bookshelf, ???, pp. 191–199.
- Leopkey, B., Parent, M.M., 2012. Olympic Legacy: From General Benefits to Sustainable Long-Term Legacy. *The International Journal of the History of Sport* 29, 924–943.
- Lomborg, B., 2001. *The Skeptical Environmentalist: Measuring the Real State of the World*. Cambridge University Press.
- Luhmann, N., 1989. *Ecological Communication*. University of Chicago Press, Chicago.
- MacAloon, J., 1996. Barcelona'92: un punto de vista desde la Antropología Cultural, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), *Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92*. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 223–231.
- Malaret i García, E., 1993. *Público y privado en la organización de los Juegos Olímpicos de Barcelona 1992*. Civitas, Madrid.
- Maragall Mira, P., 1999. *Europa próxima: Europa, regiones y ciudades*. Edicions Universitat de Barcelona : Edicions UPC, Barcelona.
- Maragall Mira, P., 1996. Presentación de Pasqual Maragall, presidente del COOB'92 y Alcalde de Barcelona, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), *Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92*. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 9–10.

- Maragall Mira, P., Samaranch Torelló, J.A., 2002. Joan Antoni Samaranch, Pasqual Maragall i Josep Miquel Abad Conversen Deu Anys després sobre el Llegat dels Jocs de 1992, in: Moragas Spà, M., Botella i Pahissa, M. (Eds.), Barcelona: l'herència dels Jocs : 1992-2002. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 5–18.
- McCarthy, S., 2011. Sustainable Olympics - Assuring a legacy : the Commission for a sustainable London 2012, in: Savery, J., Gilbert, K. (Eds.), Sustainability and Sport. Common Ground, Champaign, Ill., pp. 133–144.
- McQuail, D., 2000. Introducción a la teoría de la comunicación de masas, Nueva ed. rev. y ampl. ed. Paidós, Barcelona.
- Mestre, A.M., 2010. The Relationship between Olympism and the European Union. *Journal of Olympic History* 18, 24–35.
- Miguélez Lobo, F., Carrasquer Oto, P., 1996. La Repercusión Laboral de los Juegos Olímpicos, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 188–205.
- Miller, D., 1990. Evolution of the Olympic Movement, in: De Moscou À Lausanne = From Moscow to Lausanne. Lausanne, pp. 9–24.
- Millet Serra, L., 2002. Els Jocs de la Ciutat II, in: Moragas Spà, M., Botella i Pahissa, M. (Eds.), Barcelona: l'herència dels Jocs : 1992-2002. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 295–308.
- Millet Serra, L., 1996. Los Juegos de la Ciudad, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 232–249.
- Millet Serra, L., 1992. Impacte urbà dels Jocs Olímpics. Presented at the Curs Universitari sobre Olimpisme, Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona.
- Monclús Fraga, F.J., 2010. Barcelona 1992, in: Gold, J.R., Gold, M.M. (Eds.), *Olympic Cities: City Agendas, Planning, and the World's Games, 1896 - 2016*. Routledge.
- Monod, J., 1988. El azar y la necesidad: ensayo sobre la filosofía natural de la biología moderna. Tusquets Editores, Barcelona.
- Moragas Spà, M. de, 2011. Interpretar la comunicación : Estudios sobre medios en América y Europa. Gedisa, Barcelona.
- Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), 1996. Las Claves del Éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona.
- Moragas Spà, M., 2002. Comunicació a Barcelona'92 : la Herència dels Símbols, in: Moragas Spà, M., Botella i Pahissa, M. (Eds.), Barcelona: l'herència dels Jocs :

1992-2002. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 119–144.

- Moragas Spà, M., 1996. Diseño, Logotipo y Mascota en la Promoción e Identidad de Barcelona'92, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 143–159.
- Moragas Spà, M., Botella i Pahissa, M., 2002. Barcelona: l'herència dels Jocs : 1992-2002. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona.
- Moragas Spà, M., Rivenburgh, N.K., García, N., 1996. Televisión y Construcción de una Identidad : la Imagen de Barcelona'92 en las Televisiones Internacionales, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona'92. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 88–123.
- Morton, T., 2010. The ecological thought. Harvard University Press, Cambridge, Mass.
- Nel·lo Colom, O., 1992. Les Repercussions Urbanístiques dels Jocs Olímpics de Barcelona. Presented at the Curs Universitari sobre Olimpisme, Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona.
- Newlands, M., 2011. Deconstructing “Team Green Britain” and the London 2012 Olympic and Paralympic Games, in: Savery, J., Gilbert, K. (Eds.), Sustainability and Sport. Common Ground, Champaign, Ill., pp. 153–166.
- Niubó, M., Batlle Bastardas, A., 2002. L'Esport i la Pràctica de l'Activitat Física a la Ciutat de Barcelona després de 1992, in: Moragas Spà, M., Botella i Pahissa, M. (Eds.), Barcelona: l'herència dels Jocs : 1992-2002. Centre d'Estudis Olímpics i de l'Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 197–218.
- Oben, T., 2011. Sport and the Environment : an UNEP perspective, in: Savery, J., Gilbert, K. (Eds.), Sustainability and Sport. Common Ground, Champaign, Ill., pp. 25–33.
- Olympic Agenda 2020 : Context and background, 2014. . International Olympic Committee, Lausanne.
- Pernas López, J., 2011. Olimpismo y Medio Ambiente, in: Actas de la XLIII sesión de la Academia Olímpica : Jaén 2010.
- Philpott, M., Seymor, R., 2011. The European Healthy Stadia Network, in: Savery, J., Gilbert, K. (Eds.), Sustainability and Sport. Common Ground, Champaign, Ill., pp. 67–80.
- Porritt, J., Winner, D., 1988. The coming of the Greens. Fontana, London.
- Pound, R.W., 1990. Funding the Olympic Movement, in: De Moscou À Lausanne = From Moscow to Lausanne. Lausanne, pp. 25–38.

- Poynter, G., Iain MacRury, I., 2009. Olympic cities : 2012 and the remaking of London. Ashgate, Farnham.
- Preuss, H., 2004. The economics of staging the Olympics : a comparison of the games, 1972-2008. E. Elgar, Cheltenham, UK; Northampton, MA.
- Price, M.E., 2010. On seizing the Olympic platform, in: Girginov, V. (Ed.), The Olympics : A Critical Reader. Routledge, London, pp. 239–254.
- Ratner, A., 1990. Long live to the alliance Course, in: De Moscou À Lausanne = From Moscow to Lausanne. Lausanne, pp. 65–72.
- Real, M.R., 2010. Who owns the Olympics? Political economy and critical moments in the Modern Games, in: Girginov, V. (Ed.), The Olympics : A Critical Reader. Routledge, London, pp. 221–238.
- Roche, M., 2000. Mega-events and modernity : Olympics and expos in the growth of global culture. Routledge, London.
- Rogers, D. S., Carter, C. 2008. A framework of sustainable supply chain management: moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38, 5, 360–387.
- Roper, T., 2006. Producing environmentally sustainable Olympic Games and “greening” major public events. *Global Urban Development* 2, 1–5.
- Rueda Palenzuela, S., 1995. Ecologia urbana : Barcelona i la seva regió metropolitana com a referents. Beta, Barcelona.
- Salmon, C., 2008. Storytelling: la máquina de fabricar historias y formatear las mentes. Península, Barcelona.
- Savery, J., Gilbert, K., 2011. Sustainability and sport. Common Ground, Champaign, Ill.
- Seabrook, J., 1988. The race for riches : the human cost of wealth. Marshall Pickering, Basingstoke, Hants, UK.
- Serra Batisbe, J. (Ed.), 2011. Atles de Barcelona. Ajuntament de Barcelona, Barcelona.
- Smith, A., 2008. Introduction to sport marketing. Elsevier Butterworth-Heinemann, Amsterdam.
- Smith, A., Westerbeek, H., 2004. The sport business future. Palgrave Macmillan, Houndmills.
- Spaargaren, G., 2000. Ecological Modernisation Theory and the Changing Discourse of Environment and Modernity, in: Spaargaren, G., Mol, A.P.J., Buttel, F.H. (Eds.), *Environment and Global Modernity*. Sage, London, pp. 41–72.
- Stubbs, D., 2011. The Olympic Movement as a leader of Sustainability, in: Savery, J., Gilbert, K. (Eds.), *Sustainability and Sport*. Common Ground, Champaign, Ill., pp. 117–122.

- Stubbs, D., 2001. Sydney Olympic Games 2000 : the environmental Games : a review of the environmental achievements of the “best Olympic Games ever.” Committed to Green Foundation, Dorking.
- Tarradellas Macià, J., 2014. Entrevista con Tarradellas.
- Tarradellas Macià, J., 2003. The Olympic Games and sustainability, in: Moragas Spà, M., Kennett, C., Puig, N. (Eds.), *The Legacy of the Olympic Games, 1984-2000: International Symposium, Lausanne, 14th, 15th and 16th November 2002.* International Olympic Committee, Lausanne, Switzerland, pp. 74–80.
- Tomlinson, R., 2010. Whose Accolades? An Alternative Perspective on Motivations for Hosting the Olympics. *Urban Forum* 21, 139–152.
- Toohey, K., Veal, A.J., 2007. *The Olympic Games: a social science perspective.* Cabi Pub., Wallingford, Oxon.
- Truñó Lagares, E., 2002. Barcelona’92 i la seva Influència Internacional, in: Moragas Spà, M., Botella i Pahissa, M. (Eds.), *Barcelona: l’herència dels Jocs : 1992-2002.* Centre d’Estudis Olímpics i de l’Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 77–104.
- Truñó Lagares, E., 1996. Barcelona, Ciudad del Deporte, in: Moragas Spà, M. de, Botella i Pahissa, M. (Eds.), *Las Claves del éxito: Impactos sociales, deportivos, económicos i comunicativos de Barcelona’92.* Centre d’Estudis Olímpics i de l’Esport. Universitat Autònoma de Barcelona, Barcelona, pp. 52–67.
- Viehoff, V., 2013. Olympic Games Munich 1972 and London 2012 : creating urban legacies – similar concepts in different times?. IOC website (accessed on 28 September 2015).
- Vinué Perulles, J.M., 2014. Entrevista con Vinué - Salut Pública COOB’92.
- Wallechinsky, D., Loukey, J., 2008. *The complete book of the Olympics 2008.* Aurum Press Ltd : [distributor] Littlehampton Book Services Ltd, London.
- Ward, S.V., 2010. Promoting the Olympic City, in: Gold, J.R., Gold, M.M. (Eds.), *Olympic Cities: City Agendas, Planning, and the World’s Games, 1896 - 2016.* Routledge.
- Zimbalist, A., Maennig, W., 2012. *International handbook on the economics of mega sporting events.* Edward Elgar, Cheltenham.