

ENVIRONMENTAL SUSTAINABILITY OF MEGA-SPORT EVENTS: A COMPARISON OF INITIATIVES IN DEVELOPED AND DEVELOPING COUNTRIES

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ABSTRACT

Sustainability has been coined ‘one of the most successful concepts in tourism and event studies that has experienced exponential growth since the mid-1980s’ (Hall, 2010). Despite its emergence as a popular concept, sustainability is a complex issue that has been poorly understood by stakeholders, policy makers and organisers of mega-sport events. Lohman and Dredge (2012) have noted that even though humans are a fundamental part of the natural environment, leading policy makers such as the International Olympic Committee, have created policies that solely consider impacts to the physical environment (i.e. transportation and pollution) while omitting other equally significant environmental impacts such as community displacement (Porter et al., 2009), use of facilities after the event (Hiller, 2006) and uneven distribution of benefits within the host community (Gaffney, 2010). This paper will review the issues surrounding environmental sustainability of mega-sports events such as the Summer and Winter Olympic Games and the World Cup. A historical account of movements to improve sustainability, such as the Olympic Charter (IOC, 2007), the International Standards Organisation (ISO, 2010) and the Sustainable Sourcing Code (LOCOG, 2012) will be presented amongst others. The paper will particularly focus on comparing sustainability policies and strategies between developed and developing countries where mega-sport events have been held or are to be held in the near future.

Key words: *mega sport events, environmental sustainability, developed vs developing countries*

Introduction – defining sustainability

According to the United States Environmental Protection Agency (EPA), sustainability is based on a simple principle: everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations. Sustainability is important to making sure that we have and will continue to have, the water, materials, and resources to protect human health and our environment. (<http://www.epa.gov/sustainability>). A report of the World Commission on Environment and Development (WCED), also known as the Brundtland Report defines sustainability as ‘*the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs*’ (WCED, 1987). This report highlights five basic principles: holistic planning and strategy-making (linking economic, environmental and social concerns), preservation of essential ecological processes, protection of biodiversity and human heritage, intergenerational equity and better balance of fairness and opportunity between nations. Intergenerational equity is central to the WCED definition of sustainability. This principle stipulates that no avoidable environmental burdens should be inherited by future generations.

However, humans are not an entity separate to the natural environment but an integral part of it. To this effect, Hall (2012) argues that separating humans from their natural environment is largely anthropocentric and that sustainable development should have a more ecocentric perspective. Such an ecocentric perspective is reflected in the joint report published in partnership with the World Conservation Union (IUCN), the United Nations Environment Programme (UNEP) and the World Wide Fund for Nature (WWF) that specifically states: ‘*sustainability is about improving the quality of human life, while living within the carrying capacity of supporting ecosystems*’ (IUCN et al., 1991). Hall (2012) continues that this latter approach recognises that the capacity of the environment to improve living conditions is limited and depends on the capacity of the surrounding natural environment to absorb sustainable activities. This approach may contradict views of those that suggest that there are no few limits to economic growth and natural capital, which is often the case with mega events resulting in environmental disasters in the past (see Albertville 1992 Winter Olympic Games).

Sustainability has been coined ‘one of the most successful concepts’ in tourism and event studies. It is a concept that has experienced exponential growth since the mid-1980s’ (Hall, 2011). In the tourism literature, this growth

is evident in the number of papers published on sustainability; just two papers were published in 1989 and over 60 papers were published in 2009. In event studies, sustainability has increasingly become part of the discourse of mega sport events (MSE's; Hall, 2012). Despite its emergence as a popular concept, sustainability is a complex issue that has been poorly understood by stakeholders, policy makers and organisers of mega-sport events. The aim of this paper is two-fold. First, the paper aims to present a more holistic view of sustainability including aspects that are often overlooked in the planning of sustainability policies. Second, to compare sustainability strategies between developed and developing countries drawing specific examples from the Olympic Games, the Commonwealth Games and the Football World Cup.

The evolution of environmental sustainability at MSE's

Sustainability has evolved as a dimension of the Olympic Movement. The Olympic Movement was the brainchild of Pierre de Coubertin, the founder of the modern Olympic Games. The Olympic Movement and the International Olympic Committee (IOC) were officially established on 23 June 1894 at the Paris International Congress that was organised by Coubertin at the Sorbonne (IOC, 2013-Olympic Movement). The IOC is an international, non-governmental, non-profit organization of unlimited duration in the form of an association with the status of a legal person, recognized by the Swiss Federal Council (ruling of 17th September 1981). Under the supreme authority and leadership of the IOC, the Olympic Movement encompasses organizations, athletes and other persons who agree to be guided by the Olympic Charter. The basis of the Olympic Movement is described as follows:

"The Olympic Movement is the concerted, organised, universal and permanent action, carried out under the supreme authority of the IOC, all individuals and entities who are inspired by the values of Olympism. [...] Belonging to the Olympic Movement requires compliance with the Olympic Charter and recognition by the IOC".

Olympic Charter, (2013), Fundamental Principles

The goal of the Olympic Movement is clearly defined in the Olympic Charter:

"The goal of the Olympic Movement is to contribute to building a peaceful and better world by educating young people through sport practised in accordance with Olympism and its values. "

Olympic Charter (2013), Rule 1

Since its inception in 1894, the Olympic Movement included two dimensions of Olympism; sport and culture. It was not until 1995, that the IOC recognised the importance of the environment and sustainable development and in 1996, it added a paragraph on environmental protection to the Olympic Charter (IOC, 2009: 1) hence creating 'the environment' as a third dimension of the Olympic Movement.

The IOC has acknowledged its particular responsibility in terms of promoting sustainable development, and regards the environment as the third dimension of Olympism, alongside sport and culture. This led to its decision in 1995 to create an IOC Sport and Environment Commission. Furthermore, NOCs are encouraged to establish a Sport and Environment Commission on a local level.

<http://www.olympic.org/sport-environment-commission>

The Winter Olympic Games at Nagano, Japan in 1998 marked the first Games at which the IOC had a clearly articulated environmental protection policy that was to be followed by the organising committee (Cantelon and Letters, 2000). According to Cantelon and Letters (2000), the IOC was pressured into including an environmental policy following widespread international claims of environmental damage and mismanagement that resulted from the staging of the 1992 Winter Olympic Games in Albertville, in the Savoie region of France. The 1992 Winter Olympic Games were panned as an "environmental disaster" because of the destruction they caused to the natural environment. Girginov and Parry (2005) stated that the Albertville Olympic Games were highly regionalized with competition venues located in thirteen alpine communities spread over 1657 km². This model of organising the Games necessitated an ambitious construction programme comprising sports facilities, hotels and roads. Horst (2012) reported that the new infrastructure was built on once-heavily forested areas and resulted in irreversible losses of massive forest areas that were filled with vulnerable wildlife.

Due to this incident, the environment became the focus of attention and emerged as an issue of global social policy at the Earth Summit conference in Rio de Janeiro (United Nations, 1992). The IOC could ill afford a replication of Albertville in subsequent games for it was a short conceptual link to associate local games mismanagement to the IOC as the transnational agent responsible for widespread environmental destruction (Cantelon and Letters, 2000). The IOC committed the Olympic Movement to the concept of sustainable development (The Global Plan Agenda 21). Among other policies, the IOC developed a list of environmental requirements concerning the cities bidding to host the Olympic Games. These demand more responsibility and

accountability from the Organising Committees of the Olympic Games (OGOC), and bind them to co-operate with respective agencies, to plan and implement environmentally safe projects (Girginov and Parry, 2005). Also, it was not a coincidence that the IOC decided to change the sequence of Winter and Summer Olympic Games so that Lillehammer, Norway would stage another Winter Olympic Games in 1994, just two years after Albertville. It seems that this was a strategic decision made by the IOC that was aimed at restoring confidence in the association and its role in ensuring environmentally friendly Olympic Games. From the outset, Lillehammer made environmental issues a priority and committed the bid to deliver sustainable Games (Girginov and Parry, 2005). The promise was reinforced by the personal involvement of the Norwegian Prime Minister Gro Harlem Brundtland, who at the time was also chair of the United Nations World Commission on the Environment and Development. The 1994 Lillehammer Winter Olympic Games were labeled 'environmentally conscious green games' and will go down in history as 'an environmental-political showcase' (Girginov and Parry, 2005). These two Winter Olympic Games were the historical benchmarks that were critical in the IOC's shift toward environmental issues and the development of an environmental policy.

Environmental sustainability initiatives at MSE's- a historical account

Environmental initiatives have now become a standard requirement for Olympic Games organisers. In the search for a solution to the conflict between sport and nature, the IOC and other authorities apply various strategies (Girginov and Parry, 2005). The first environmental initiative in the history of modern Olympic Games was set by the organisers of the 1972 Munich Olympic Games. They invited all participating National Olympic Committees to plant a shrub from their country in the Olympic Park, and coined the slogan '*certatio sana in natura sana*' (healthy competition in an intact environment; Girginov and Parry, 2005).

A good example of agreement between the Organising Committee of the Olympic Games, government, local community and private enterprises was demonstrated in the 1994 Lillehammer Winter Games. The Lillehammer Games were truly a collective effort involving the government, environmental agencies, the military, the Games Organising Committee and countless volunteers (Cantelon and Letters, 2000). The Lillehammer Games were an outstanding success, organisationally, and for the outstanding support the Norwegian population extended to the athletes, but mostly because of the strict reverence shown to, and the preservation of, the natural environment (Cantelon and Letters, 2000). In 1995, the IOC organised the first World Conference on Sport and the Environment in Lausanne, Switzerland, which has since been held every two years. The conference was supported by the United Nations Environment programme (UNEP) and addressed four major issues: a) governmental responsibility, b) duties of the Olympic Movement, c) education and the environment, d) sports industries' responsibility. A practical outcome of the conference was the launch of the 'Eco-wave' movement by the Federation of the European Sporting Goods Industry (FESI). It introduces 14,000 ISO ecological standards for businesses. Another important development was the setting up of the IOC Sport and Environment Commission in 1996 (<http://www.olympic.org/sport-environment-commission>).

The 1996 Atlanta Summer Olympic Games focused on major construction of sports facilities (Olympic stadium, Aquatic Centre, basketball gym, equestrian venue, hockey stadium) but there were only modest changes to the city's environment and infrastructure (Girginov and Parry, 2005). These Games showed environmental considerations in terms of *environmental protection* (e.g. the Centennial Olympic Park replaced derelict buildings in downtown Atlanta with a 21-acre urban park, including 650 new trees and plants), *resource management* (photovoltaic energy system comprising 2856 solar panels covered the roof of the Atlanta Aquatic Centre and energy efficient lighting was installed in all competition venues), *transportation* (1.3 million spectators used buses or subway and electric trams were used in the Olympic Park to protect air quality) and *waste management* (recycling initiatives produced a remarkable 82% diversion during the best eight days; Girginov and Parry, 2005). However, it was the Winter Olympics at Nagano, Japan in 1998 marked the first Games at which the IOC had a clearly articulated environmental protection policy that was to be followed by the organising committee (Cantelon and Letters, 2000). Building on the legacy began by Lillehammer, Nagano Games organisers incorporated a comprehensive environmental strategy at every stage of preparations. The decision was made to utilize existing venues and courses wherever possible in order to reduce the need for new construction. A series of extensive conservation measures including comprehensive recycling programmes was implemented to ensure that environmental impact was minimized (www.olympic.org). With an environmental policy in place the IOC anticipated that subsequent Olympic Games Organising Committees would take on board and implement relevant strategies to ensure environmental sustainability.

Indeed, in preparation of the 2000 Sydney Olympic Games, the Sydney Olympic Park Authority published a 68-page State of Environment report where they outlined a framework for environmental sustainability including environmental guidelines, policy and strategy and attention to biodiversity, resource conservation and social and economic sustainability (www.sopa.nsw.gov.au). According to IOC's (2013) factsheet on Olympic Games

Legacy, Sydney's Green Games strategy saw the successful remediation and restoration of approximately 160 hectares of badly degraded land and the creation of one of the largest urban parklands in Australia (425 hectares). This included conservation and enhancement of remnant wetlands and forest, and native flora and fauna (i.e. endangered green and golden bell frog). The venues were also designed with a strong focus on: energy and water conservation, sustainable materials selection, pollution control, and waste management and minimisation. The waste management strategy resulted in the establishment of Australia's first large-scale urban water recycling system, which saves approximately 850 million litres of drinking water each year and the extensive use of renewable energy across Sydney Olympic Park. The Park has also since developed environmental education, interpretation and research programmes (IOC, 2013-Legacy).

Girginov and Parry (2005) noted that the Organising Committee of the 2004 Athens Olympic Games developed an environmental policy featuring four important elements: 1) the siting of the Olympic venues was in full alignment with the land use and sustainability plan for the metropolitan area of Athens, 2) in all Olympic venues, the post-Olympic use excluded the construction of hotels, offices, private houses, casinos and nightclubs/restaurants (Law 2730/99), 3) in all Olympic venues the number of construction permits was kept very low and 4) all temporary constructions for the Olympic Games would be removed at the latest six months following the completion of the Games (included in Law 2819/2000 on the establishment of a private company for the Olympic Village, protection of Olympic symbols and other provisions). Despite this well defined environmental policy, the 2004 Athens Olympic Games organisers were heavily criticized for making the natural environment an afterthought. Horst (2012) reported that poor planning left the city stuck paying maintenance bills for poorly designed stadiums that were vastly underused following the Games. In addition, construction of Olympic facilities did not account for open spaces which were carelessly destroyed instead of having been kept as green spaces (Reyes, 2005).

The 2008 Beijing Olympic Games catalysed a major project of urban transformation and new infrastructure development. Most of the capital invested in the 2008 Olympics was in fact spent on infrastructure, which has helped shape and foster a greater environmental awareness among the public and was an opportunity to showcase China's commitment to growing in an environmentally sustainable manner (Aichi Expo, 2005). The 2008 Beijing Olympics highlighted a number of environmental issues, including the city's poor air quality (Busa et al., 2010). During the bid phase in 2000, Beijing set ambitious goals to improve the city's environment. The goals ranged from addressing air and water quality and waste management to introducing environmental considerations in the development of new infrastructure. As specified in the UNEP environmental report on the 2008 Games, in order to accelerate the achievement of environmental goals, Beijing decided to move forward the deadlines of a number of existing environmental targets in the Beijing 'Environmental Master Plan'. The outcomes became visible even before the Games started through: new wastewater treatment plants (waste reduction and recycling schemes at the venues), expanded solid waste processing facilities, increased forestation and green belt areas and an improved public transportation fleet (sustainable transport during the Games). These initiatives were achieved due to cooperation with sponsors on environmental sustainability and dialogue with environmental National Governing Organisations (NGO's) (Busa et al., 2010).

More recently, the London 2012 Olympic Games Organising Committee (LOGOC) made environmental sustainability a top priority (Horst, 2012). They kept permanent construction to a minimum and opted to use existing venues and temporary ones wherever possible. In situations where new venues were needed, as with the Olympic Park, building took place on [reclaimed areas of contaminated industrial land](#) with plans that minimized construction supplies and [used lightweight steel](#) and recycled materials. More than 98%t of the demolition waste was recycled and 62% of Games operational waste was reused, recycled, or composted (IOC, 2013-Legacy). What's more, London built the Olympic structures to *last*, designing them to accommodate [sports, entertainment, cultural and community events](#). London 2012 was also the first Olympic Games to open itself to scrutiny by an independent assurance body, the Commission for Sustainable London 2012 and London's Organising Committee for the Olympic Games (LOCOG) paved new ground with a Sustainable Sourcing Code that was reinforced by a complaints mechanism (Institute for Human Rights and Business [IHRB], 2013). For the first time, an independent commission was established to monitor and publicly evaluate sustainability efforts. The Commission for a Sustainable London 2012 rated the overall effort "a great success" (IOC, 2013-Legacy). Organisers also developed 45 hectares of habitat, with a 10-year ecological management plan to encourage biodiversity and 300,000 plants were planted in the Olympic Park's wetlands area. In addition, over 1,000 new trees were planted in East London. London 2012 was the inspiration for BS 8901, which led to ISO 20121, the first fully certifiable international Sustainability Management System standard (IOC, 2013-Legacy).

ISO (International Organization for Standardisation)

ISO is a worldwide federation of national standards bodies (ISO member bodies) (www.iso.org). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote. One of the standards developed by ISO is the standard of Social Responsibility 26100 in 2010.

Organisations around the world, and their stakeholders, are becoming increasingly aware of the need for and benefits of socially responsible behaviour. The objective of social responsibility is to contribute to sustainable development (www.iso.org). An organisation's performance in relation to the society in which it operates and to its impact on the environment has become a critical part of measuring its overall performance and its ability to continue operating effectively. This is, in part, a reflection of the growing recognition of the need to ensure healthy ecosystems, social equity and good organisational governance. In the long run, all organisations' activities depend on the health of the world's ecosystems. Organisations are subject to greater scrutiny by their various stakeholders. The perception and reality of an organisation's performance on social responsibility can influence, among other things:

- — its competitive advantage;
- — its reputation;
- — its ability to attract and retain workers or members, customers, clients or users;
- — the maintenance of employees' morale, commitment and productivity;
- — the view of investors, owners, donors, sponsors and the financial community; and
- — its relationship with companies, governments, the media, suppliers, peers, customers and the community in which it operates.

This International Standard provides guidance on the underlying principles of social responsibility, recognising social responsibility and engaging stakeholders, the core subjects and issues pertaining to social responsibility and on ways to integrate socially responsible behaviour into the organization. This International Standard emphasises the importance of results and improvements in performance on social responsibility. As part of the social responsibility agenda and with special reference to events sustainability, ISO has developed ISO 20121. ISO 20121 is a management system standard that has been designed to help organisations in the events industry improve the sustainability of their event related activities, products and services (www.iso20121.org). ISO 20121 is based on the earlier British Standard called 'BS 8901 Specification for a Sustainability Management System for Events' which was first developed in 2007. Due to the high level interest in BS 8901, it was decided to create an international version of the standard to coincide with the London 2012 Olympics. In simple terms, ISO 20121 describes the building blocks of a management system that will help any event related organisation to: a) continue to be financially successful, b) become more socially responsible and c) reduce its environmental footprint. ISO 20121 applies to all types and sizes of organisation involved in the events industry – from caterers, lighting and sound engineers, security companies, stage builders and venues to independent event organisers and corporate and public sector event teams (www.iso20121.org).

LOCOG Sustainable Sourcing Code - Vision for a sustainable Games

The London 2012 Sustainability Plan outlines London 2012's commitment to ensuring that the 2012 Games are managed in a way that remains economically viable but is also environmentally sound, socially responsible and ethical. LOCOG intends to engage in business with suppliers and licensees who are best placed to deliver outstanding value for money. Sustainability is one of a number of core elements which together represent what value for money means to LOCOG. As a result it will place a high priority on environmental, social and ethical issues when procuring products and services for the Games. This means we want to do business with responsible suppliers and licensees; companies who treat their staff and sub-contractors well, who understand the nature of the products and materials they are supplying, and who recognise their responsibility to protect the environment and foster good relations with their local communities (LOCOG Sustainable Sourcing Code, 2011).

The Sustainable Sourcing Code (2011) exists to encourage suppliers and licensees to adopt, or further develop, practices that are environmentally sound, socially responsible and ethical, based upon the following four principles:

1. *Responsible sourcing* – ensuring that products and services are sourced and produced under a set of internationally acceptable environmental, social and ethical guidelines and standards.

2. *Use of secondary materials* – maximising the use of materials with reused and recycled content, minimising packaging and designing products that can either be reused or recycled.
3. *Minimising embodied impacts* – maximising resource and energy efficiency in the manufacturing and supply process in order to minimise environmental impacts.
4. *Healthy materials* – ensuring that appropriate substances and materials are used in order to protect human health and the environment (LOCOG Sustainable Sourcing Code, 2011).

For all of these reasons and more, some are hailing the 2012 Summer Olympics as the “[greenest” Games to date](#). There is still a lot of room for improvement, though. A study projecting the carbon footprint of the 2012 London Olympic Games estimated they would produce [3.4 million tons of carbon dioxide](#). Unfortunately, London officials ended up [abandoning their attempt to offset carbon emissions](#). Nevertheless, there are clear differences between Albertville and London, or even Athens and London, there’s no question that there has been astonishing progress in “greening” the Olympics (Horst, 2012).

FIFA

Apart from the IOC who is responsible for the environmental sustainability of the Summer and Winter Olympic Games, another major organization, the Fédération Internationale de Football Association (FIFA aka International Football Association) has recently launched an environmental policy as part of the World Cup. The FIFA World Cup™ is the biggest individual sporting competition in the world and its impact on society and the environment is indisputable (FIFA.com). Staging such a world-class event requires careful consideration of all aspects to ensure a balanced approach and sustainable outcome. The first FIFA World Cup™ with a greening agenda was Germany 2006 where the ‘Green Goal’ programme was carried out in order to reduce to the greatest possible extent the adverse effects on the environment associated with organizing the World Cup (Ackermann, 2011). ‘Green Goal’ was an integrated part of the planning and organizing of the tournament and a contribution towards the ‘sustainable legacy’ of the World Cup (OC 2006-FIFA World Cup™ 9). It focused on water, waste and energy conservation, transport and climate. Water conservation in the area of consumption (within the Olympia Stadium and other Olympic facilities) was achieved through the use of rainwater cisterns, whereas successful waste avoidance was achieved through returnable plastic beakers for the first time at a World Cup. Seventy five per cent of visitors travelled to Olympic venues by rail, bus and bicycle or on foot and only 25% travelled by car. These methods of transportation were successful in offsetting the adverse effects of transport on the climate.

For the 2011 FIFA U-20 World Cup in Colombia, FIFA was engaged in a programme that was raising public awareness on environmental issues and implementing a reforestation project in the Colombian Andes region. Earlier in the year, FIFA teamed up with the Colombian Football Association (COLFUTBOL), the Office of the President of Colombia’s Senior Environmental Policy Counsellor, the Ministry of Environment in Colombia and the World Wildlife Fund (WWF), to create an environmental programme to mitigate the negative environmental impacts of staging the FIFA U-20 World Cup 2011. Colombian President Juan Manuel Santos said: “As proud organisers of the U-20 World Cup, we are very pleased that FIFA supports these environmental projects as part of its social responsibility. Therefore, we have taken this project on as our own.” The reforestation project was carried out in the Colombian Andes region and involved the planting of more than 35,000 trees over two years. This project allowed the compensation of 9,000 tons of carbon dioxide and provided a livelihood to local communities (FIFA, 2011). FIFA and the 2014 FIFA World Cup Organising Committee (LOC) took their environmental responsibility very seriously and were committed to delivering a sustainable event in Brazil in 2014. Since the launch of the strategy in 2011, FIFA and the LOC, together with partners, sponsors and experts, successfully implemented a number of sustainability activities including sustainability training for stadium operators, the campaign against racism and discrimination, support of community development projects, waste management in stadiums, a ban on tobacco at both tournaments, an international forum on social development through football and a carbon offsetting programme (FIFA, 2014).

Environmental sustainability – the hidden aspects

All the cases of environmental sustainability described here have the natural environment in the core of environmental policies and strategies designed to deliver sustainable Olympic Games and FIFA World Cups. However, Lohman and Dredge (2012) have noted that even though humans are a fundamental part of the natural environment, leading policy makers of mega sport events tend to focus their strategies and policies on minimising the impacts to the physical environment (i.e. impact on natural resources such as air and water, event-related pollution from construction of facilities and transportation and management of waste). This is often the case with most of the aforementioned environmental policies. Nevertheless, there are other areas within the general concept of mega sport event sustainability that are often overlooked in the interest of

preserving the natural environment in the run up to the event and also during the event. For example, other equally significant environmental impacts that are concerned with the host community such as community displacement (Porter, 2009), uneven distribution of benefits (Gaffney, 2010; Wolfe, 2013), Olympic spending compromising spending for the community (Lenskyj, 2000), quality of life for residents (Scheissel, 2013), use of facilities after the event (Hiller, 2006), and human rights (IHRB, 2013).

According to Porter (2009), displacement is a defining feature of mega sporting events (MSE) that roam every few years to a new venue and a new city. Displacement is part of the legacy of such events that goes almost unreported publicly. It is considered either an unimportant or an unfortunate, but necessary by-product of the urban redevelopment needed to make a successful event. Policy makers and planning practitioners state that displacement is inevitable and while perhaps unfortunate, just a 'natural' part of the cycle of urban development. However, little consideration is given to the personal cost and experience of being at the 'receiving end' of the policy and planning processes designed to to achieve displacement (i.e. tenant evictions, forced purchase of land; Porter, 2009). Gaffney (2010) reported that Beijing 2008 and Athens 2004 very clearly demonstrated that low income neighbourhoods were 'cleared' in order to make way for mega-event infrastructures and renovation and tens of thousands were displaced, either through the physical destruction of their homes or through market mechanisms such as rent inflation. According to some estimates, as many as 1.5 million people were displaced for the 2008 Beijing Olympics, while some 35,000 families were evicted from public lands ahead of the 2010 New Delhi Commonwealth Games (COHRE, 2007). In the run up to the 2014 FIFA World Cup in Brazil, a UN human rights expert reported many allegations of housing rights abuses, such as forced evictions and low compensations (OHCHR, 2013).

Cases of uneven distribution of benefits among the host community have been reported in the literature. Wolfe (2013) discusses the developments in the run up to the Sochi 2014 Winter Olympic Games in Russia and the divergence caused between two villages (Kazachiy Brod and Akhshtyr) which was amplified due to uneven distribution of resources. The existence of a historical, paved road represents the critical difference between the villages and is the reason why the village of Kazachiy Brod has been the recipient of investment and attention for having direct access to the road, whereas Akhshtyr being on the opposite side of the river lives this village with no water, no reliable transit links, and the promise of becoming an Olympic dump once construction is complete. No doubt Akhshtyr finds itself in the role of victim. While much of the infrastructure development was needed and welcomed, many locals nonetheless felt significantly marginalised, excluded from the discussion, and not benefiting from their region's development (Wolfe, 2013). Gaffney (2010) discusses the distribution of public money in Rio de Janeiro's run up to the 2014 FIFA World Cup and the 2016 Olympic Games. He points out that the Organizing Committees that are responsible for funding and managing mega-event budgets are autonomous entities comprised of national elites not subject to any sort of democratic accountability. Organising Committees have access to tens of billions of dollars of public money, keep their own books, and award contracts for everything from stadium building to concessions, claiming land through eminent domain to contracting private and public security forces. After the mega-event has passed, the committee dissolves, leaving behind political, economic, and socio-spatial legacies that promote neo-liberal forms of governance. There is no legal recourse for those displaced or otherwise aggrieved by the mega-event - the massive debt is assumed by the city and with time the corruption scandals fade (Gaffney, 2010).

An often heard criticism is also the fact that in many cases, a large share of public money is invested in hosting the Olympic Games, thus threatening 'core spending in health, education, welfare and transport' (Lenskyj, 2000). Indeed, the costs involved in staging the Games are now so high that host cities can often only justify the expenditure when it is seen as leading to a major programme of regeneration and improvement (Essex and Chakley, 1998). The quality of life of local residents in the host community is also seriously affected by a MSE. Schissel (2012) reported that today's sporting mega-events are a globally recognized urban spectacle for their capacity to stimulate economic growth, revitalize urban cityscapes and promote their respective metropolis to a transnational audience. Yet in spite of the ubiquitous enthusiasm touted by Olympic stakeholders, there is a growing literature documenting the negative impacts that sporting mega-events have on the quality of life of host-city residents. Residents are seriously concerned about environmental pollution and congestion associated with sport event-related developments (Tatoglu and Erdal, 2002) and they often feel disenfranchised by the planning process which may result in forming negative perceptions toward the event (Fredline and Faulkner, 2002). In order for residents to tolerate the inconveniences associated with hosting a sport event (such as queuing for services, sharing local facilities, overcrowding, traffic congestion, and route disruption), the perceived rewards should equal their willingness to carry the infrastructure costs, extending friendliness, courtesy and hospitality to tourists (Waiitt, 2003). Coackley and Lange Souza (2013) have noted that fair and equitable legacies and developmental outcomes are achieved only when the voices and interests of the general population are taken into account and given priority during the process of planning, funding and implementation.

From the perspective of human rights, MSEs bring both opportunities and risks (IHRB, 2013). They precipitate massive public and private investment needed to create new jobs and boost employability, along with the potential for improving essential infrastructure, regenerating urban areas, developing housing and promoting increased participation in sport and healthy living. At the same time, MSEs – including the 2008 Beijing Olympics, the 2010 South Africa FIFA World Cup, the 2010 New Delhi Commonwealth Games, the 2012 London Olympics and the 2014 FIFA World Cup in Brazil and 2014 Sochi Winter Olympics in Russia – have come under repeated scrutiny from human rights experts and campaigners over a gamut of concerns. Apart from the community displacement in Beijing, at the height of Olympic construction, at least 10 people were killed and some 17,000 workers complained of workplace exploitation (Human Rights Watch, 2008). In addition, the Playfair Campaign recorded instances of child labour, excessive working hours and abuses of health and safety laws in the supply chains of several Olympic licensees (PlayFair, 2008). Gaffney (2010) also commented that "Olympic mega-structures arose from the toil of migrant workers whose own homes were fetid barracks and desolate encampments." Rio de Janeiro fully engaged the process of making itself into an Olympic City where the workers streamed down from the favelas (a Brazilian shack or shanty town; a slum) to build sportive constellations that are intended for use by the international tourist class and the upper strata of Brazilian society (Gaffney, 2010).

Gaffney (2010) continues that the social programs associated with the various games are intended to instill codes of ethics and behavioral norms that are in accordance with the "Olympic Spirit" but really serve the dominant paradigms of international sport and a neo-liberal political economy. Positioned as elements of education, the stated goals of these programs suggest that "it is through sport that young people and children learn to overcome obstacles, respect rules, work within a team and demonstrate solidarity. Values that come from the field of play help to encounter difficulties and provide strength to fight for a better life" (2014 Rio de Janeiro Organising Committee). Yet these programs aimed at developing disciplined minds and bodies are wrapped in a global political economy of sports that serves, in part, to exacerbate instead of ameliorate social and spatial inequalities. Human rights have also come to the fore during the events themselves (IHRB, 2013). The 2010 FIFA World Cup in South Africa saw media reports of police harassment on the homeless and squatters, and forced removal of street vendors from commercial exclusion zones that reportedly resulted in lost livelihoods. Media revelations during the 2012 London Olympics surfaced cases of migrant worker exploitation among temporary agency staff working at two hotels used by Olympic delegations and referees. A BBC Newsnight report claimed that Jani-King, the agency used by the Hilton Waldorf, altered workers' hourly rates without warning and threatened them with unfair dismissal. London 2012 was criticized by PlayFair 2012 in that corporate discourses of 'ethics' and 'sustainability' set by the Games organizers were an 'empty' promise. In its campaign to ensure a 'sweat free' Olympics, Play Fair connects the production of major sporting events to wider issues of global inequality, poverty and structural problems in transnational labour markets (Timms, 2012). According to Timms (2012), London 2012 Olympic mascots were made in sweatshops in Hong Kong. Equally, during the 2010 Vancouver Winter Olympic Games and the 2012 London Olympic Games, civil liberties groups and journalists complained of limits on free speech and assembly imposed by host authorities and events' organisers ostensibly to safeguard brand rights (IHRB, 2013).

The 2012 London Olympics laid down several significant benchmarks in addressing human rights related challenges (IHRB, 2013). London was the first Summer Olympics to embed sustainability from the outset and to place an emphasis on leaving a positive legacy for the city, sport in the UK, and for the wider Olympic Movement. It was also the first Olympic Games to open itself to scrutiny by an independent assurance body, the Commission for Sustainable London 2012. London's Olympic Delivery Authority set a new bar too, by completing venue construction without any construction worker dying in an accident (Commission for Sustainable London 2012, 2011). London arguably went further than any previous MSE organiser in terms of commitment to sustainability and socially responsible policies and practices, and made advances upon which the Olympic Movement and other MSE organisers can build. Yet, more than one year after the 2012 London Olympic Games, mass protests in Brazil and debates around homophobia in Russia prompted attention to the next Olympic host cities. It is unclear if and by what means the lessons learnt from London will be carried forward to upcoming events such as the 2014 FIFA World Cup in Brazil, the 2014 Glasgow Commonwealth Games, the England 2015 Rugby World Cup, the 2016 Rio Olympic Games or the FIFA World Cups in Russia and Qatar in 2018 and 2022, respectively (IHRB, 2013).

Environmental sustainability of MSE in developing countries

The next two generations will see the percentage of the world's population residing in urban areas rise from 50-70% with cities in developing countries experiencing highest population growth rates which will be affected negatively by climate change (Wahlers, 2011). Mega events are significant catalysts to promote climate change awareness and sustainable urban development.

In considering the legacy of mega events, their potential for contributing to sustainable development and their negative and social and ecological effects become additional burdens as these events are more frequently being hosted by developing cities and countries. Cities in the developing world are facing enormous social, economic and environmental challenges, which are not comparable with those of Sydney, Vancouver or London. In particular the cities of the emerging developing countries show deep social and economic disparities, significant infrastructural deficits and environmental problems. Usually the public budgets are insufficient to meet the development demands and priorities for public investments have to be defined carefully.

Ackermann (2011, p.27)

A key strategic question for developing countries concerns the potential employment and income generating effects of mega-events and particularly the social distribution of these effects. Most of the existing research indicates that MSE's can lead to considerable employment growth (Preuss, 2004). However, the jobs required to host the mega event are mostly of temporary nature and dependent on the different event phases. Lasting jobs are created in the phase after the event through the induced economic benefits, mainly in the building sector and the tourism and leisure industry. These jobs are a direct result of the changed city image and improved tourism infrastructure (Preuss, 2004). As indicated previously for these changes to materialise there must be substantial investment by the local government in utilising funds to change the cityscape in preparation for the MSE. Event-greening has been defined as the process of incorporating environmental dimensions into the planning, organising and implementing an event. It involves incorporation of sustainable development principles and practices at all levels of the event organising. The 2010 Commonwealth Games in India, the 2010 FIFA World Cup in South Africa and the 2016 Olympic Games in Rio de Janeiro, Brazil each have adopted event-greening measures. Their respective sustainability agendas differed however in the degree of institutional integration and thoroughness (Ackermann, 2011).

The 2010 Commonwealth Games in India incorporated a vision of 'Green Games' and the main focus was to reduce the carbon footprint and set a benchmark for the Games in the future (Kedia, 2011). Tree planting programmes as offset measures were implemented to guarantee the carbon neutrality of the Games. The Organising Committee of the Commonwealth Games estimated the total event's carbon footprint of 52,468.9 tCO₂e. With the estimated sequestration of 81,472.2 tCO₂e over a 5-year period the footprint of the Games would be completely neutralised. Additional measures focused on the reduction of air pollution and waste management of the non-biodegradable waste. These initiatives played an important role in raising environmental awareness and received the support of international organisations such as the Global Environment Facility., the United Nations Environment Programme (UNEP) and the UN Development Programme. As mentioned in the India report, *'It is also important to recognise that environmental sustainability should not stop at carbon offsetting and low carbon strategies should not be substituted for low emissions. Social issues are also important to address as improved 'adaptive capacity' could be an important element that needs to be incorporated while planning MSE's.* (Kedia, 2011).

The 2010 FIFA World Cup in South Africa presented a very mixed balance regarding the greening of the event. Many host cities did not have the resources to engage with environmental sustainability or sustainable development aspects, or the implementation of greening or the legacy programmes (Borchers, 2011). Exceptions were the cities of Durban and Cape Town. In spite of the fact that the national carbon footprint of the World Cup was estimated in 2,753,250 tCO₂, no strong mitigation measures or offset programmes were undertaken. Other environmental issues, such as waste and recycling efficiency were addressed by the National Government only through nominal programmes, even though admittedly, some host cities were very proactive in these areas. Consequently, FIFA and the National Government were heavily criticised for their weak response to environmental challenges (Borchers, 2011).

Despite the rather disappointing performance in event-greening, Cape Town's Green Goal ProgrammeTM saved the overall results to a significant extent. It was one of the first initiatives in the country aimed at reducing the environmental footprint and promoting the sustainability of the 2010 World CupTM. The programme was well planned with several workshops, broad stakeholder participation and an Action Plan. It covered approximately 50 different projects in the following areas: *energy efficiency and climate change, water conservation, integrated*

waste management, transport, mobility and access, landscaping and biodiversity, green building and sustainable lifestyles, responsible tourism, green goal communications, monitoring, measuring and reporting. The 2016 Olympic Games in Rio de Janeiro, Brazil will be held under the motto 'Green Games for a Blue Planet' (Trusen, 2011). The Games will be based, according to the bid document, on the three sustainability pillars of 'planet, people and prosperity'. For the Games, a suitable 'Sustainability Framework' was developed that also defines institutional framework of the sustainability agenda (Ministerio do Esporte, 2009). The core of the sustainability framework is the *Sustainability Management Plan* (SMP) which also ensures participation of other stakeholders (NGOs, private businesses, and scientific institutions). Rio's application document mentions the following with regard to the objectives of the plan:

The SMP core objective is to support the delivery of the Games and to create, with Government engagement and integration, the means for a definitive transformation in the city. This co-ordinated plan will set a new standard for urban transformation and sustainability in South America, and will create a foundation for the integration of sustainable events and environmental regeneration'.

The SMP is intended to ensure that the Games are in line with the development priorities in the city of Rio de Janeiro that include: **water conservation** (construction of river treatment units, expansion of sewage network), **renewable energy** (implementing Brazilian state-of-the-art hydrogen energy cells and generators in all venues), **carbon neutral** (reforestation of 24 million trees in strategic rainforest areas before 2016 with 3 million trees planted in the National Park Pedra Branca aka 'Carbon Park'), **waste management and social responsibility** (100% of solid waste produced at all phases of the event will be recycled through a sustainable chain with direct social benefits to surrounding communities). Additionally, the Organising Committee and the Brazilian Federal Government have decided to implement some very innovative environmental-technological pilot projects, for example in the field of green construction and the use of renewable energy resources in public transport. A testing and monitoring system will also be established to minimise possible negative environmental effects (Trusen, 2011).

The future of environmental sustainability at MSE's

Tokyo, Japan has won the bid to host the 2020 Olympic Games. The Organising Committee of Tokyo 2020 has joined forces with Climate Action and UNEP in 2014 to produce a strategy of environmental sustainability (ClimateAction and UNEP, 2014). **Tsunekazu Takeda, member of the IOC and President of Tokyo 2020 has already reported that:**

'All competition venues or facilities for the 2020 Games will be required to meet strict energy-efficiency building certification standards'. Including the new National Stadium itself, all competition venues or facilities being constructed or renovated for the 2020 Games will be required to meet strict energy-efficiency building certification standards under the CASBEE system (the Japanese system equivalent to the certification standards) and in accordance with the Tokyo Metropolitan Government Tokyo Green Building Program. Recycled construction material will be used wherever possible. In addition, the Olympic Village will become a new model for sustainable inner-city housing. Energy consumption will be minimised through the use of renewable energy sources including solar power, a seawater heat pump, use of surplus heat generated by waste treatment plants, and biogas power generation using food waste. The Olympic Village will become an urban residential 'smart city pioneer model,' using a wide range of Japanese sustainability technologies. It is anticipated that Tokyo 2020 will deliver a sustainability legacy with long-term benefits for the city and Japan'.

The three pillars of the 2020 Tokyo Games Sustainability Strategy are:

- Pillar 1: Minimal environmental burden
- Pillar 2: Urban environment plans harmonising with nature
- Pillar 3: A sustainable city through sport

Tokyo 2020 is currently looking into the implementation of the ISO 20121 Event Sustainability Management system during the Games. The city of Tokyo's 2020 strategy includes a long-term development plan aimed at a vast increase of green areas. The overarching objective of the strategy is to make Tokyo the "world's most environmentally friendly low-carbon city" and the revitalisation of Tokyo as a "beautiful city surrounded by water and greenery." Specific examples include the creation of some 537 hectares of new green space in Tokyo by 2020 and plans to further extend the green road network through the planting of more roadside trees. Tokyo aims to become a city in harmony with nature, with more open spaces and greenery integrated into its long-term development plans. Another example may be seen with the Sea Forest zone in Tokyo Bay, which will further connect the city and the sea to increase cooling breezes in urban areas (ClimateAction and UNEP, 2014).

Conclusion

For developed countries, environmental sustainability has become a standard requirement and mandate for running successful MSE's. Strategies and policies such as the 'Green Game Plan' introduced by FIFA World Cup™, the International Standards Organisation environmental agenda (ISO20121), and the Sustainable Sourcing Code introduced by LOCOG for the 2012 London Olympic Games (2011) are all excellent examples of steps taken to reduce the MSE's impact on the natural environment. However, developed countries have still a long way to go to ensure that other aspects of environmental sustainability are also an integrated part of the MSE's. These aspects pertaining to community displacement, distribution of benefits, disruption to local residents' lives and human rights need to be brought onto the environmental sustainability agendas. For developing countries, the issue of environmental sustainability is still in its infancy with minimizing the impact to the natural environment being in the core of sustainability programmes for the local communities. Even though some of the other aspects of sustainability are mentioned in the sustainability agendas of MSE's the lack of resources is often the reason for which social programmes pertaining to the legacy of the events are not implemented. Developing countries need more support from international organizations such as Climate Action and United Nations Environmental Programmes to raise awareness of the 'hidden aspects' of environmental sustainability. The engagement of all stakeholders alongside the establishment of an open and inclusive organization as Busa et al., (2010) have suggested is key in achieving the promotion of the overlooked areas of sustainability i.e. the "soft" aspects which bear on the social fabric, the cultural vibrancy, the ability to innovate, an environmentally aware public, an enhanced international image.

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