

CHAPTER 7

SPORT, PHYSICAL ACTIVITY, AND THE ENVIRONMENT¹

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LEARNING OBJECTIVES

After reading this chapter, you should be able to:

1. Define environmental sociology and explain the tenets differentiating it from sociology.
2. Identify the relationship between the waves of environmental sustainability in sport.
3. Summarize the various threats sport poses to the environment.
4. Explain the evolution of environmental initiatives in sport.
5. Provide examples of initiatives sport organizations are taking to reduce their environmental impact.

INTRODUCTION

There, Mother Nature designed the links – grasses on sandy stretches were fertilized by the droppings of breeding seabirds and cut short by grazing rabbits. Bunkers were allegedly formed by sheep and other animals burrowing into the turf. The result: wide open playing areas with random clumps of razed grass, the perfect terrain for thumping a small, hard ball across the countryside. (Keast, 2001, p 37)

Golf is perhaps one of the most exclusive and expansive individual sports across the globe. It is common to see municipal, semiprivate, and private golf courses everywhere from large metropolitan to rural areas. Despite the popularity of golf, there are environmental effects of designing, constructing, and maintaining the various courses, as well as participation itself.

Environmentalists have voiced concerns over the detrimental impact of golf courses since the 1960s. The concerns arise, at least in part, due to the fact that the average 18-hole golf course requires 75 to 150 acres to build. In America alone, US golf courses amass the size of Delaware and Rhode Island combined (Adams, 1995). Because of the expansiveness of these courses, natural populations of wildlife are oftentimes displaced or perish. After the natural environment is demolished and oftentimes customized to meet the designs of the course developer, nonnative plants are introduced into the landscape, with extreme amounts of water used to sustain them.

Additionally, toxic and environmentally damaging pesticides and fertilizers are used to maintain the pristine expectations that golfers have come to expect (Wheeler & Nauright, 2006). However, golf courses did not first start as artificial wonders of landscape architecture. As the opening quotation exemplifies, golf courses started by embracing the natural environment. Links courses are commonly seen in Scotland, the birthplace of golf. These courses embrace the natural environmental features of rolling hills, thick brush, and oftentimes-sandy costal conditions. Courses were seamlessly connected with nature and nature to sport. Nature was not sterilized and recreated to fulfill a specific image of courses designed like most courses today.

New courses are frequently designed with the golfer in mind instead of the environment and natural landscape. The focus on golfers and their high expectations has caused golf course managers to take these extreme measures to sustain their profits. All the while, the environment suffers. Wildlife populations are

¹ McCullough, B. P. (2019). Sport, physical activity, and the environment. In G. B. Cunningham & M. A. Dixon (Eds.), *Sociology of sport and physical activity* (3rd ed., pp. 87-102). College Station, TX: Center for Sport Management Research and Education.

threatened. Local water tables are infiltrated with toxic chemicals from pesticides and fertilizers (Wheeler & Nauright, 2006). Natural landscapes are destroyed in order to make room for another golf course without concern for compromising the health of the environment. These threats to the environment happen simply to meet the expectations of their customers and members.

However, there are ways to maintain these high levels of quality on the course. Audubon International has partnered with golf courses around the United States and Canada to promote more environmentally-friendly course management. These programs include education on the necessity of using fertilizers and pesticides and responsible watering techniques. Additionally, Audubon promotes responsibility to the surrounding and displaced wildlife. This firm also offers a certification program for the various course management and wildlife management practices that golf courses should embody to become more environmentally friendly (Audubon, 2010).

As with the management of golf courses, the business practices of other sport organizations have the potential to negatively impact the surrounding environment. As such, examination of the organization's impact on the environment can be quite revealing. These analyses commonly focus on the product life cycle but can also include organizational internal operations, as well. Considering the environmental impact of organizational processes can reduce the organization's carbon footprint.²

It is unreasonable and naïve to believe that changes can be made to completely eliminate an organization's environmental impact. However, this does not mean that these considerations should be neglected or ignored. Rather, the stance to ignore and neglect an organization's impact on the environment has fueled a backlash from environmental groups to community stakeholders. These inspired stakeholders encourage organizations to minimize their impact on the environment and move toward more environmentally-sustainable business practices and procedures. Some of the more common sustainable business practices in sport include maximizing waste diversion (i.e., waste that ends up in a landfill) by implementing waste management programs (e.g., recycling, composting), reducing utility usage (e.g., water, energy, gas), and promoting mass transit options to spectators, using renewable energy sources, among other initiatives (see Game). Reducing an organization's environmental impact is an ongoing process. It cannot be limited to a one-time evaluation and modification. The process of becoming environmentally friendly needs to continually adapt to new technologies and be introduced into all aspects of the organization. The organization's environmental impact and ways to mitigate this impact need to be factored into everyday decisions and long-term planning.

The purpose of this chapter is to demonstrate the impact that sport has on the natural environment. Specifically, I provide an operational definition of sustainability and environmental sociology. I then offer an overview of the environmental impacts of various aspects of the business of sport and the various levels of sport. Additionally, I provide background into the social movements that lead to the greening of the sporting world. Lastly, I discuss the progression of green initiatives in sport, as well as future opportunities for sport organizations to engage in the green movement.

KEY CONSTRUCTS

Sustainability

In order to understand sustainability, it is important to first define the term. The following are similar, yet distinct, definitions of sustainability as cited from Gatto (1995, p. 1181):

- Applied biologist definition: “sustained yield of resources that derive from the exploitation of populations and ecosystems”

² A carbon footprint refers to the amount of carbon dioxide emitted as part of the operations of all facilities, event, spectator transportation, team travel, and so on.

- Ecologist definition: “sustained abundance and genotypic diversity of individual species in ecosystems subject to human exploitation or, more generally, intervention”
- Economist definition: “sustained economic development, without compromising the existing resources for future generations”

There are several key points from these definitions. First, sustainability focuses on the exploitation and the overconsumption of natural resources. Second, the abuse of these resources comes as a result of human activity. For example, the use of natural resources, such as timber, can have negative effects on the environment if clear cutting techniques are used. Third, the overconsumption of natural resources can have detrimental effects on future generations. We see that in today’s current climate change debates about the impact of human activity on the natural environment whether from carbon emissions or consumerism (Tollefson, 2017). Damaging ecosystems due to human activity does not necessarily have a quick fix to recover and reestablish environmental responsibility (Sartore-Baldwin & McCullough, 2018). That said, actions are needed to evaluate the degree of environmental damage human activity might cause (Orr & Inoue, in press).

The concept of sustainability extends from the need for the natural environment to provide for future generations. But as personkind and business organizations recklessly consume natural resources, the overall wellbeing of the environment is threatened. People have oftentimes ignored this threat. Discussion over how to neutralize and even reverse our effect on the environment has commonly been avoided or underestimated. It may be simple to see the effects people’s activity has on the environment. Simply looking at the skylines of major metropolitan areas to see the smog hovering over these cities can demonstrate these effects. Landfills filling up with post-consumption waste cover our country and the globe. Raw and untreated sewage is oftentimes dumped offshore into the ocean, threatening the health of water sources. Pollution and other results of our insensitivity to the environment show the impact that we have on the environment through our behavior and current ways of life. These behaviors impact the world and its future generations.

Related to the issue of sustainability are debates surrounding the issues of global warming and climate change. One side of the argument tries to establish that climate change has been caused by fossil fuels and human activity. Conversely, others suggest that the Earth is naturally warming itself with little to no effect from people. Positions in these debates oftentimes appear to align with political ties or personal interests. This may be best exemplified by the Trump White House removing the United States from its prior commitment to the notable Paris Climate Agreement. Despite one’s political affiliation, it would be difficult to demonstrate that the amount of waste produced, the energy/fossil fuels consumed, and the increased extreme weather events (e.g., Hurricane Harvey in Houston, wildfires in California) and not think human activity has an impact on the environment and its ability to sustain itself.

For years these debates have resulted in calls for environmental reform. New lines of scientific, political, and academic inquiry have been formed. Environmental groups have conveyed the importance of environmental consideration. Conversely, other groups, backed by large environmentally threatening organizations, have formed to defend the actions of corporations that potentially could be deemed environmentally damaging.

The issue of conservation and environmentalism has caused clashes from these perspectives over the wellbeing of an important yet inanimate perspective, the environment. Environmental groups and organizations provide a voice for the environment. This voice conveys the damages that have been apparent and visible to the signs that have often gone unnoticed by the general population. From this perspective, interaction between personkind and the environment has formed into a new branch of sociology called environmental sociology.

Environmental Sociology

From a sociological perspective, environmental sociology recognizes “the fact that physical environments can influence (and in turn be influenced by) human societies and behavior” (Dunlap & Catton, 1979 p. 244). From this perspective, environmental sociologists refrain from the typical sociological “insistence that social facts can only be explained by other social facts” (p. 244). Sociologists have typically distinguished differences among the social and cultural environment from the natural and physical environment (Bernard, 1925). However, traditional sociologists ignore the influences that the natural environment can have on the social and cultural environment. Thus, the effects and consideration of environmental variables distinguish environmental sociology from its parent field (i.e., sociology) and its preexisting theories.

Just as there are different categories to classify people into religious backgrounds or ethnicities, there are similar ways to classify the environmental movements within the United States. Understanding these different groups provides insight into the environmental movement within a sport context and into environmental sociology. Brulle (2009) provides a summary of different environmental groups that manifested through the environmental movements in American history. That is, these groups have different perspectives on the definition of sustainability and what it means to be environmentally responsible. More specifically, these classifications correspond to their response to environmental issues.

From the groups that Brulle (2009) describes, wildlife management, conservation, and reform environmentalism are of considerable interest with relation to sport and the environment. *Wildlife management* was the first environmental movement to form over concern for the natural environment. This movement actually started in the mid 1800s by wealthy sportsmen who wanted to protect the wild game they hunted. From this perspective, excess wildlife is seen as “a crop that can be sustainably harvested” (Brulle, 2009, p. 213).

Later, one of the most politically influential movements began. The *conservation movement* looked at the ecosystem as a machine or parts of a body that are necessary to function properly. Conservationists take a utilitarian perspective striving to “realize the greatest good for the greatest number of people over the longest period of time” (Brulle, 2009, p. 213).

Lastly, one of the longest sustaining environmental movements, reform *environmentalism*, spurred off conservationism in the mid-1960s. Reform environmentalists were motivated by the constant pollution of humankind and depicted the environment as an interconnected system with delicate relationships. This movement depicts nature as the basis for all existence.

ENVIRONMENTAL IMPACTS

Sport organizations of all sizes have an impact on the environment. In the following section, I outline various aspects to consider when evaluating the environmental impact.

Facility Construction and Management

As the opening example to the chapter demonstrated, the construction of sport facilities and venues can have a considerable impact on the natural environment. Also, construction is inevitable when older facilities are replaced. Substantial consideration should be given to the construction of new facilities because of the financial investment in construction and the lifespan of sport venues. Investing in environmentally friendly construction practices are commonplace now since many architects are well-trained in sustainable design. These design aspects can include energy-saving lights, low flow water features, and updated HVAC (heating and air condition) systems, considerations for automobile traffic, and public transportation availability, among many other considerations. This initial investment into sustainable design and environmentally friendly features can have substantial long-term benefits, cutting organizational operational expenses and enhancing the fan experience.

Much like Audubon’s certification process for golf course and wildlife management, there is a certification for buildings and sport venues as well. The Leadership in Energy and Environmental Design, or LEED

program, is a renowned program developed through the US Green Buildings Council. Through this certification, various environmental aspects are considered. Most importantly building strategies, materials, energy saving, water usage, carbon emissions and consumption of additional resources are evaluated. There are multiple levels of certification ranging from being simply certified to higher levels of compliance including silver to platinum, which is the highest level of accreditation.

Achieving LEED certification is becoming popular among sport facilities. The Washington Nationals were one of the first Major League Baseball teams to achieve this distinction (MLB Advanced Media, 2009). More recently, the Atlanta Falcons new stadium, Mercedes Benz Stadium, achieved the highest LEED certification – Platinum – and is considered the most environmentally sustainable stadium in the world at its opening. Additionally, many higher education institutions are mandating that new sport and non-sport facilities achieve at a minimum silver certification under the LEED guidelines.

Examining the environmental impact of the construction of a sport facility has been given the most attention by sport organizations. This attention is understandable considering the financial investment of such construction projects. For instance, the Cowboys Stadium in Arlington, Texas, cost nearly \$1.2 billion to construct. However, environmental considerations were made throughout the construction of this facility, thus increasing the success of environmental programs. The new Cowboys Stadium includes:

State-of-the-art bio composting reactor from 'Totally Green, a retractable roof that allows a lot of events to be held in natural lighting, retractable end zone doors that allow for natural ventilation, permeable pavement that helps with water drainage and pollution, a comprehensive recycling program, and more. Overall, it has reduced solid waste, energy use, and water consumption considerably due to its green initiatives (Shahan, 2011).

The initiatives that were implemented have been recognized as being one of the most environmentally friendly sport facilities in the country as well as the first facility to be certified by the US Environmental Protection Agency's (EPA) National Environmental Performance Track Program (Shahan, 2011). The EPA's certification program has since been dissolved but, the initial planning to include environmentally friendly aspects in the construction of the facility helped the facility not only reduce its impact on the environment during, but more importantly, after construction where environmental impacts may be less recognized.

Transportation

One of the major considerations with any event is dealing with an increase in spectators. Sport venues are used throughout the year and can attract more than 200,000 people per event. Obviously, the more people that attend an event, the more money can be made off an event. However, considerations are needed to manage the increase in spectators and the impact that those people have on the surrounding area. More people attending events mean more cars and eventually more pollution. Transportation to and from an event has a tremendous impact on the overall carbon footprint of a particular event. As discussed later, transportation can contribute about 50% to an event's carbon emissions (Dolf & Teehan, 2015).

Public education campaigns are commonly used and recommended. These programs can educate the public on transportation alternatives. However, these alternatives are only used if they are efficient and are seen as an easier substitute to using private transportation. It is inevitable that a number of spectators will choose private transportation; thus, facility managers are encouraged to have transportation procedures for entering and exiting vehicles.

Additionally, infrastructures are commonly redesigned and adapted to accommodate new sporting venues. Public railways and extensions of freeways and highways are used to ease traffic congestion at new facilities. Improvements to a city's infrastructure are more commonly seen in metropolitan areas. However, for smaller cities that host mega events, parking programs to ease traffic are used to facilitate traffic congestion.

For example, programs offered at Texas A&M University during football games are called “Get to the Grid.” This program allows fans to park away from the stadium but close to the highway. Public transportation brings fans from the offsite location to the stadium before and after the game and offers a quick and easy way to get home, all the while decreasing traffic and the impact on the environment.

Foot Traffic

Professional sport facilities and venues, like football and baseball stadiums, are designed to accommodate spectators and increased traffic. However, some facilities are designed for participatory sports, like golf and skiing. That is to say, these facilities are designed to accommodate the people who will be using the facilities for recreational use. When being designed, these facilities may not be considered for hosting a larger event, such as a golf tournament or ski competition. Hosting such events attracts more spectators than the venue may have been designed to accommodate. Increased foot traffic from spectators can ruin the natural landscape and integrity of the surrounding environment.

During ski competitions and golf tournaments, spectators are sometimes granted unlimited access to their respective venues. This free access can threaten the surrounding environment as a result of meandering spectators. Major PGA Tour golf tournaments, like the Waste Management Phoenix Open, can attract upwards of estimated 200,000 spectators per round. The influx of people on the course at major golf tournaments can cause tremendous harm to the already altered landscape. Because of this increased traffic of spectators, these golf courses are normally closed for three months after a major event.

Waste – Landfill, Recycle, and Compost

Along with increased foot traffic, a large sporting event generally draws an enormous number of tailgating spectators, and where spectators congregate waste whether destined for landfill, recycling or composting are sure to follow. Tailgating before and after a game can increase the waste produced. Oftentimes, sport organizations and events are charged for every dumpster of solid waste (i.e., landfill waste). This charge covers the transportation fee and the actual dumping fee the waste management company pays to empty the bin or truck in the local landfill. However, waste management companies charge significantly less, to dispose of recyclable materials because the waste management company can subsequently sell the recyclable materials on the secondary market.

Yet, recycling has become more complicated with countries like China that traditionally purchased these materials on the secondary market have ceased doing so through a policy known as “National Sword.” As a result, state and county governments and waste management companies are scrambling to find or create domestic secondary markets for recyclable (specifically plastic) waste (Katz, 2019). From this example, it is clear to see that sport organizations are not immune from global and national issues concerning sustainability. The ‘no plastic’ movement, sparked by the ‘plastic ocean’ in the Pacific Ocean and the push to ban single-use plastics (e.g., straws, plastic shopping bags, etc.) also impacts the procurement among sport organizations and events. These larger policy changes can serve as an opportunity for sport organizations to revisit and implement new efficient procedures and improve their environmental sustainability commitments. Thus, a focus on reducing solid waste and recovering recyclable materials can help sport organizations’ bottom line.

As an example, Penn State made \$58,000 (Environmental Protection Agency, 2010) by selling recyclable materials (e.g., cardboard, glass, aluminum) on the secondary market. Additionally, the San Francisco Giants saved \$200,000 over the course of an entire season by implementing a stadium wide recycling and composting program at AT&T Ballpark (Williams & Sherman, 2005). The San Francisco Giants extended their savings by diverting foot waste from local landfills and in turn reduced the amount of waste going into solid waste dumpsters. The Giants diverted 75% of their waste from landfills by 2009. In 2011, with a \$50,000 grant from the Office of the University President, Ohio State implemented a zero-waste campaign at their football stadium. Zero waste is defined “as a 90 percent diversion rate of waste material such as food, paper products and plastics away from landfills” (Ricchiuto, 2011). To help in this goal, Ohio State

redefined their procurement, or purchasing, behaviors, and Ohio Stadium facility officials ensured that everything sold inside the stadium was either compostable, recyclable, or biodegradable (i.e., destined for landfill but would decompose quickly). Due to the focused attention given to diversion rates, Ohio Stadium now commonly has diversion rates above 90 percent each football game (see <https://ohiostatebuckeyes.com/zero-waste-at-ohio-stadium>).

Moreover, the previously mentioned Waste Management Phoenix Open diverts 100% of its waste from the landfill. All waste is sent to recycling sorting centers or is sent to a composting facility. Considering the event attracts over 750,000 during the tournament, this is an impressive accomplishment. Their efforts should be studied and applied to other sporting events, large and small. For example, spectators are not allowed to bring in their own concessions to the event. As the Ohio State example, all concessions or consumer goods at the Phoenix Open were either recyclable or compostable. This is a major accomplishment of the tournament to purchase (i.e., procurement) items and to attain such a lofty goal with that many attendees.

Researchers have also started to examine the recycling behaviors of sport spectators (Casper, McCullough, Pfahl, in press; Casper, Pfahl, & McCullough, 2014, 2017; McCullough, 2013; McCullough & Cunningham, 2011; Trail & McCullough, in press). McCullough and Cunningham's (2010) work in this space indicated the influence of social pressures to engage sport spectators to recycle; as such, athletic departments can take advantage of their spectator's fan identification levels and encourage attending spectators to recycle their waste (McCullough, 2013; McCullough & Cunningham, 2011; McCullough & Kellison, 2016). They can do so by taking several small steps, including: better signage informing spectators what can and cannot be recycled, public address announcements encouraging spectators to recycle, and creative advertisements and public service announcements to appear on the jumbotron before a specific time in the game where spectators will congregate on the concourse (McCullough, 2011; Trail & McCullough, 2018). Implementing such programs can improve the environmental standing of the athletic department and can increase the fan identification of moderately identified fans of the university (Casper et al., in press; McCullough & Cunningham, 2010).

SPORT AND THE ENVIRONMENT

Researchers have previously examined the effects sports have on the environment from the various forms of pollution. I will cover these aspects and also outline the response that sport organizations, leagues, and individuals have taken to decrease their environmental impact. As previously mentioned, organizational behavior and human actions will have an inevitable impact on the environment. It is important to realize these impacts to effectively change or modify behaviors. Before modification can happen, awareness is critical. As part of a social movement, environmentalism and environmental awareness hit mainstream media during the 1960s (Dunlap & Marshall, 2007). All industries, including the sport sector, were criticized for their environmental impacts. The following sections outline various aspects within the sport sector from mega events to individual participation sports like golf and alpine skiing.

Mega-Events

Mega-events are large social or sporting events that are designed to attract large amounts of people and media attention, like the Summer or Winter Olympics and FIFA's World Cup. There is a tremendous amount of research surrounding these events and the economic impact that the participants, fans, and tourists can inject into the local economy (Hotchkiss et al., 2003; Porter & Fletcher, 2008; Preuss, 2004, 2006). It was not until recently that environmental impacts were estimated before or after such events. These impacts are only increased with the size of the events. Events like the Waste Management Phoenix Open attracted 216,000 spectators in one day and a total of nearly 720,000 spectators across the entire golf tournament (Myers, 2019). With this many spectators, the travel required to get to Phoenix and the venue, the resources consumed throughout the event, and the waste generated by spectators, sporting mega-sporting events have a tremendous environmental impact concentrated on one area.

Olympics Takes Charge

The Olympic Games have exploded in terms of the number of athletes who participate and fans who attend each Olympiad. As a result of the increased popularity and a heightened awareness to environmental issues, the International Olympic Committee (IOC) has come under fire to improve their environmental reputation. Preliminary studies commonly focus on the economic benefits for the host city and country, but before the 1990s the cost to the environment for hosting such events was not common practice among bidding or host cities. The same is not the case today. In the following sections, I provide an overview of the changes that resulted in a more eco-conscious Olympics.

Pressures to Go Green

Protests developed in North America against Olympic bids in both Canada and the United States, with concerns regarding the environmental implications of hosting the Games. The Olympics began to grow exponentially from one Olympiad to the next, thus increasing the environmental implications for the host community. The first Olympic bid lost because of an environmental protest was in 1966 during the bidding process for the 1972 Winter Games. Banff, in the Canadian province of Alberta, was figured to be the running favorite as Calgary finished second for the 1968 Winter Games. However, the Canadian Wildlife Association actively protested Canada's bid to host the 1972 Winter Games, mainly because of the relation of Olympic venues in proximity to Lake Louise in Banff National Park (Chappelet, 2008).

Instead, Sapporo, Japan, received the winning Olympic bid for the 1972 Winter Games. The Japanese bid did not win solely because it did not face the resistance that the Canadian bid did. On the contrary, the Japanese bid included many environmental considerations that were typically unseen in Olympic bids. The Japanese town of Sapporo supported and promoted its newly developed infrastructure. This was much stronger than Banff could offer. This infrastructure included "metro, a railway station, new roads, and improved urban heating systems, water supplies, and sewage treatment facilities" (Chappelet, 2008, p. 1889). Another feature that the Japanese bid promoted was the proximity of venues. All venues were within a 35-kilometer (22 miles) radius, a relatively close proximity for Olympic host site standards especially considering the terrain needed for the Winter Games. The close proximity of all the facilities reduced the need for transportation, thereby lessening traffic congestion and increasing usage of public transportation. Interestingly, the one site that was located outside of the 35-kilometer radius, the downhill run for skiing, had to be relocated to The Mount Eniwa in Shikotsu National Park because of necessary gradient of the mountain. After the completion of the 1976 Winter Games, the slopes were removed and trees were replanted on the ski runs developed for the Olympiad.

Within the United States, the Citizens for Colorado's Future was one of the first social groups that successfully politicized the environmental impact of the Olympic Games (Chappelet, 2008). After Denver had been granted to host the 1976 Winter Games, this collective group of Colorado residents protested over concerns regarding the impact that the Winter Games would have on over development of Denver and impact on Colorado's natural environment. There was much debate over the benefits of hosting the Games versus the tangible and intangible costs. As a result, the State of Colorado put a ballot measure to vote on whether the state would accept the Olympic bid. In 1973, 93% of voters overwhelmingly turned out to vote on the measure to keep the Games or reject the offer for the Games. The voters rejected the Olympic bid by a three to two margin. Denver then withdrew their acceptance to be the host city of the 1976 Games. On such short notice, the IOC awarded the Games to Innsbruck, Austria, because they previously hosted the Winter Games.

Further protests surrounded the 1980 Winter Games in Lake Placid with regards to the conditions of the bobsled and luge run. These runs require enormous amounts of ammonia to refrigerate the ice. The use of ammonia is tremendously damaging to the surrounding environment, especially when the runoff from the course goes directly into the ground and into the natural water table. This became an issue as the Lake Placid Games approached. Lake Placid was eventually able to upgrade their facilities to address these concerns. Additional reservations surrounded the use of ski runs used for short and long distance jumping.

These runs were located in a New York state park run by New York State Department of Environmental Conservation, thus leading to conflicts of interest. But, these protests were eventually dropped. One major problem surrounding the 1980 Games was that the infrastructure originally created for the Winter Games that were hosted there in 1932 and the subsequent tourism to the region did not keep pace with the necessities of the Winter Games. The increased traffic to the region could not withstand the increased traffic for the 1980 Games (Chappelet, 2008). That is, the development of Lake Placid did not match the growing popularity of the Winter Olympic Games. This further demonstrates that an increased number of spectators creates a larger environmental impact.

Development of Environmental Policies

Protests surrounding the environmental impact of the Olympics became commonplace since the Winter Olympic Games were hosted in Sapporo, Japan. These protests developed into losing bids by potential host cities based on their poor environmental management. Subsequent bids for the 1976 and 1988 Winter Games were rejected because of the lack of environmental considerations. But even the winning bid cities that hosted the Olympic Games in Sarajevo (1984) and Calgary (1988) did not follow through on environmental promises (Chappelet, 2008). As a result, the IOC decided to focus on developing an environmental aspect to the Olympic charter. As part of this development, the IOC wanted to focus on the legacy of the Olympic Games. This would be demonstrated in Lillehammer during the 1994 Winter Olympic Games. The IOC included the environment as the third pillar of the Olympic movement. This includes incorporating environmental aspects to sport federations, national Olympic committees, and all Olympic sponsored events. The IOC was able to further develop their environmental programs through a partnership with the United Nations. For more information, see Exhibit 7.1.

1994 Lillehammer Winter Games. One of the first Olympiads to incorporate environmental considerations was at the 1994 Winter Games in Lillehammer, an approach subsequent Games incorporated. However, based on the setting of the venues in Lillehammer, it was used as the example to exemplify the new face of the IOC with regards to the environment. The IOC's intentions were exemplified by Norway's Prime Minister saying that the Olympic Games were an opportunity to forward "an ethic of solidarity with our current and future generations, a responsibility to the global balance of nature and an understanding of our role within it" (Mathisen, 1993). These words embodied the purpose and spirit of the third pillar to protect the environment.

The Lillehammer Games were deemed an environmental success. The backdrop of the falling snow in Norway, combined with the early instituted environmental programs, subdued criticism from the media and environmental groups. The Norwegian government invested heavily into the incorporation of environmental aspects to the Games. Additionally, the government opened their doors to environmental groups and worked together to host the "greenest" Olympiad to that point.

Exhibit 7.1: International Olympic Committee & Agenda 21

In keeping with their declaration of the environment being the third pillar of the Olympic Movement, in 1999 the IOC implemented Agenda 21 – Sport for sustainable development. This document has been used by future bidding countries as a guideline to host a sustainable mega-event. Agenda 21 outlines the responsibilities of "different members in implementing action, which respect the concept of sustainable development". The document also encourages the International Federation, National Olympic Committees, athletes, clubs, and sponsors to follow Agenda 21 as a reference for sustainable development (Balderstone, 2001; International Olympic Committee – Sport and the Environment Commission, 1992).

2000 Sydney Summer Games

Though environmentalism was strong in the 1994 Winter Games, the 2000 Summer Games in Sydney were the first Olympic Games to incorporate the IOC's environmental pillar throughout the bidding process and through the completion of the Olympic Games. The Sydney Games featured many environmental considerations, such as cleanup of toxic sites, environmentally friendly construction of facilities, facilitating increased use of public transportation, and the introduction of recycling in Olympic facilities. Despite a partnership with Greenpeace international to formulate environmental considerations, programs and policies, the Sydney Games faced criticism. Critics from other environmental groups claimed that the Games were not truly environmentally friendly and accused the Games of green washing or making false environmental claims (Beder, 1999). Despite the challenges to the environmental programs and initiatives taken at the 2000 Olympic Games, there were considerable strides in hosting a more environmentally friendly event.

2028 Los Angeles Summer Games

The Los Angeles Games mark a new trend with the IOC on how they approach environmental sustainability and event legacies. For example, the IOC now wants bidding cities to align their sustainability and legacy plans with the host cities sustainability goals. This approach is intended to ensure that the Olympic Games serve as a medium to further not hinder sustainable development in the city. In Los Angeles, the organizing committee is planning to forward Los Angeles' Sustainable pLAN focusing on water conservation and mass transit options.

Six Nations Rugby World Cup

While the Olympics garner considerable attention, other mega events also have the potential to negatively impact the environment. Rugby's Six Nations tournament represents one example, as event organizers must consider not only the economic benefits but also the environmental costs of hosting such an event. Researchers at Cardiff University (2007) examined the environmental impact of a 2006 Rugby match during Rugby's Six Nations Tournament. The researchers found that hosting the event required extreme amounts of energy and natural resources. In fact, hosting more than 85,000 fans for one rugby match consumed scores of natural resources and produced massive amounts of carbon emissions. To offset the resources that were consumed and CO₂, it would take nearly 3,600 rugby pitches, meaning that the energy and resources consumed at one rugby pitch produced such a large carbon footprint it takes over 3,000 times the land to offset the environmental impact.

Cardiff University encouraged large sporting events like Six Nations to consider alternatives to decrease their environmental impact. Basic elements surrounding the event such as concessions and transportation had the largest impact on the event, totaling 60% and 31% of the carbon footprint, respectively. The study suggested simple solutions such as encouraging the use of mass public transit. If 50% of the spectators took a public or private bus or took the train to the event, the carbon footprint can decrease by as much as 15%. However, many solutions to decrease the environmental impact of sporting events have not been explored or possibly discovered.

Some sport organizations, such as the Welsh Rugby Union, have called upon their fans and followers to help decrease sport events' environmental impacts. Nonetheless, it is clear to see that even one sporting event can have a significant impact on the surrounding environment. Imagine the compounding effects of repeating sporting events of a collegiate football team with seven home games or a Major League Baseball team hosting 81 home games. The environmental impacts of these events are even more significant than a weekend rugby match.

Participatory Sports

Much has been written on the environmental impact of mega events and spectator sports, but little attention has been given to physical activity, or participatory sports. These sports include individual sports and recreation, like fishing, surfing, skiing, and cycling. Participatory sports are important to investigate because they are not regulated as closely as organized sports. As a result of the lack of management, these activities

can be considered a notable environmental threat. In fact, the environmental movement within the United States can be traced back to hunters in the mid 1800s.

The wildlife movement stands as one of the oldest environmental movements within the United States, initially forming in the mid 1800s. This classification consists of wealthy hunters who became concerned with the depletion of the particular game that was hunted. As a result, these hunters formed the country's first environmental groups, like the Boone and Crocket Club and the National Audubon Society, to institute bag limits while fishing and hunting wild game animals (Brulle, 2009). Eventually, restrictions further developed to include hunting and fishing seasons for specific species of wild game and fish.

Later, with populations of the United States growing combined with an ever-growing suburbanized America in the 1930s, habitats for these animals dwindled. As a result, wildlife management was created, establishing habitats and wildlife refuges for animals. This paved the way for population controls and the mindset that "wildlife populations can be seen as a crop from which excess populations can be sustainably harvested" (Brulle, 2009 pp. 213). From a sports perspective, environmental sporting groups are commonly seen today. Groups like Ducks Unlimited and Trout Unlimited actively preserved the natural wetlands and streams that waterfowl and trout inhabit. These two groups also work closely with the Department of the Interior shaping federal environmental policy.

Environmental impact of participatory sports

Additional research has been conducted to evaluate the environmental footprint and carbon emissions from activities surround participatory sports (Chard & Mallen, 2012; Wicker, 2019). These researchers have explored the impact that our common participation in sport can have on the natural environment. This is not to say that sport participation should be prohibited or that it is bad because it has an impact on the natural environment. Rather, it is necessary to understand the areas that our behaviors have a determinantal impact on the natural environment and where there are opportunities to improve upon current behaviors to reduce our impact on the natural environment, because without it access to and our ability to participate in sport will be compromised. That is, sport organizations (e.g., recreational, youth) and participants should examine common practices of transporting athletes to and from practices and competitions (Chard & Mallen, 2012).

Wicker (2019) found that team sports performed better than individual sport participants with regards to maintaining a smaller carbon footprint when comparing activities surrounding their respective sport/activity (e.g., practices, camps, competitions). Interestingly, sport participants involved in nature-based sports had the highest carbon footprint. This could be explained by the distance that is required to travel to such locations. You could draw the parallel of an avid skier located in Texas would have a significantly greater carbon footprint associated with her sport activity than a cyclist in living in the same town. That is, the skier must travel by car or plane to ski resorts in the Rockies or Sierra Nevada Mountains; whereas, the cyclist could cycle in town or travel a short distance to cycle in a rural area. In short, minimizing the environmental impact of individuals, sport activities, or sport organizations is not to say that they must cease all behaviors, but rather each behavior and activity should be examined and considered against more sustainable alternatives (e.g. using mass transit, buying used sporting equipment, choosing local tournaments; McCullough et al., 2018)

OPPORTUNITIES FOR GREEN SPORT

McCullough and Cunningham (2010) discussed the pressures that would lead entities and organizations within the sport sector to implement environmental sustainability initiatives. These pressures included functional (i.e., better ways of doing business), political (i.e., internal or governmental pressures to behave in such a way), and social (environmental movements and societal demands). They outlined possible outcomes for sport organizations that have since been substantiated in subsequent empirical research. These outcomes include cost savings (Casper et al., 2014), competitive advantage (Casper et al., in press), increased goodwill perceptions (Inoue & Kent, 2012), and increase fan identification (Casper, et al., 2017; in press).

However, moving beyond the benefits of these early adopters, more focus has been placed on understanding the processes that sport organizations go through to implement and maintain environmental sustainability initiatives. McCullough, Pfahl, and Nguyen (2016) examined the progress across the sport sector and characterized this progression as the green waves of environmental sustainability in sport.

Much like waves, McCullough and colleagues (2016) argued that the progression of environmental sustainability would have ebbs and flows, or progress and regression. More or less, there would be two steps forward and one step back especially considering the hesitancy of sport practitioners to implement environmental sustainability initiatives (Casper, Pfahl, McSherry, 2014; Green Sports Alliance, 2016). As a result, they proposed that there are currently three distinct waves of sustainability in sport, which can be applied to the sport sector, in general, and individual organizations, specifically. Organizations advance to the next wave based on organizational learning through a process known as diffusion of innovation. Simply put, an organization can learn through their own experiences and from others on how to advance their organizational best practices. In the sections below, I describe these three waves.

Wave One

The first wave captures organizations within the first steps of exploring or implementing environmental sustainability initiatives whether for strategic reasons (Trendafilova & Babiak, 2011) or responding to institutional pressures (McCullough & Cunningham, 2010). Sport organizations try to generate awareness of their sustainability efforts by conveying messages and educational programs to engage fans to participate in these initiatives. The initiatives themselves are rather straightforward and are typically highly visible. For example, an organization may implement a waste management program by introducing recycling or even composting, which is still limited at sporting events. Although there are many moving parts in a waste management program, making the initial success of the program difficult to achieve, sport organizations opt to implement this initiative because it is highly visible and most often an environmentally friendly behavior that most spectators already do at home. Other initiatives may be to install low flow toilets, urinals, and sinks throughout the stadium. This does not require much effort on behalf of the spectators to be environmentally friendly, but signage can educate fans on the new fixtures in the restrooms and the reason why the organization upgraded them.

Wave Two

Organizations advance to the second wave by advancing the sophistication of their sustainability efforts. This would include increased communication and educational efforts by the organization to engage spectators and inform them about the various program and how to properly participate in these efforts. The organization also starts to evaluate their initiatives seeking to improve the function and efficiency of their efforts. For example, an organization may conduct waste audits, examining if there is cross contamination in the various waste streams. That is, someone examines whether recycling is in the landfill waste bin or vice versa. The measurement efforts may also include tracking the total weight of each category of waste collected throughout the stadium. Some stadium managers even record where and when pickups occur to understand the flow of waste during an event. This information can help sport practitioners increase their educational programs and communications. For example, if there is a high level of cross-contamination of landfill waste in the recycling waste bins, signage, messaging, and even event staff can be placed at the waste receptacles to decrease cross-contamination.

Wave Three

The third wave marks when an organization permanently adopts an environmental sustainability initiative and integrates it into organizational planning. That is, there is strategic planning surrounding the environmental efforts to ensure that these efforts and participation are being optimized. For example, when the University of Washington Huskies went through a major renovation of their football stadium, waste management was a top priority in the redesign of the facility. Waste management collection areas in a stadium take up a lot of space and need to be configured for optimum performance. This area of the stadium, although not seen by fans, contributed to the Athletic Department's increase recovery rates. In fact, the

Huskies adopted a zero-waste mindset and utilize a two-stream waste system only compost and recyclable waste. They do not sell anything in the stadium that needs to be disposed of in the landfill.

Building on the previous example from Wave Two, a sport organization may seek to further advance its sustainability initiatives by engaging more stakeholders. For example, on a college campus, an athletic department may engage the waste management department, the campus recycling department (if they are separate), the local waste hauler, the sustainability office, the transportation office, and others to form a green committee (McCullough, Kellison, & Wendling, 2018). These added perspectives can help further advance the sophistication, efficiency, and outcomes of sustainability initiatives. More or less, the sport organization acknowledges its own limitations and limited expertise and defers to outside help from stakeholders with an invested interest in the success of the organization's sustainability initiatives. The most advanced organizations are in the third wave. The future of environmental sustainability in sport looks to the influence of sport organizations on spectator's everyday lives.

FUTURE TRENDS OF ENVIRONMENTAL PROGRAMS

As the sport sector becomes more engaged in minimizing their environmental impacts, new opportunities will be presented for increased revenue and business ventures. Professional sport teams can look to new environmentally friendly companies as new avenues for sponsorships. Existing sponsors who want to promote their environmentally friendly products can have easy access to the sport market. New sporting goods organizations that offer environmentally friendly aspects or other responsible business practices can be tied together to gain market share. As sport organizations upgrade and build new facilities, environmentally friendly aspects can be incorporated to attract new customers and members.

As environmental management aspects become more prevalent and visible in sport various environmental behaviors should encourage fans and spectators to act more environmentally responsible. Smith and Westerbeek (2006) described sports as carrying a "green virus" that can promote social change across populations. The power of sport can inspire more people outside of the sport sector to incorporate environmentally friendly practices into their own lives. Sport has been promoted as the forum to provide social change.

Perhaps most encouragingly as the collective efforts of humankind address the adverse effects of climate change, the United Nations has engaged many business sectors to improve their environmental performance. The sport sector, for example, has been a major focus for the United Nations to not only improve and engage the sector in being more environmentally responsible but to use its social platform to convey the importance of more sustainable behaviors among their fans. The social platform of sport has been used to draw awareness, change attitudes, and advance social causes involving race and gender. The United Nations believes that sport can lead by example and encourage fans to be more environmentally responsible at sporting events and in their everyday lives. In 2018, the United Nations announced at the Meeting of the Parties 24 (COP24) in Poland, the Sports for Climate Action Framework. For more information about the Sports for Climate Action Framework see Exhibit 7.2.

Exhibit 7.2: Sports for Climate Action Framework

In 2017, the United Nations hosted a conference of leading sport practitioners and academics to discuss the ways to engage the sport sector in climate action – or the active effort to reduce carbon emissions resulting in climate change. The fruits of this meeting resulted in the Sports for Climate Action Framework that encourages sport organizations to be models of environmentally responsible business practices and to educate, communicate, and encourage sport fans to choose more environmentally sustainable behaviors. The Framework also includes a pledge that sport organizations can commit to the Framework's guiding principles. More information can be found at <https://unfccc.int/climate-action/sectoral-engagement/sports-for-climate-action>.

CHAPTER SUMMARY

Sport will be forever tied to the environment. As environmental issues become more profound and exposed, sport must respond to the long history of environmental impacts through immediate action. The evolution of environmental sociology will introduce new considerations must be given to the health of the environment and its impact on human interaction. In response to the deterioration of the natural environment, sport has responded to protect its intimate relationship with nature. Modifications in the interactions between humans and sport organizations with the environment occur at all levels of sport, from international events like the Olympics to individual participation in sports. The future of sports' interaction with the environment will be dictated by a collective effort in and outside of sport, but special considerations need to be taken to ensure the viability of the environment to sustain humankind and to support sport.

DISCUSSION QUESTIONS

1. What are the differences between the perspectives of sociology and environmental sociology?
2. What are steps that sport organizations are taking to reduce their environmental impact?
3. Several organizations have provided guidelines for sport organizations to follow to become more environmentally friendly. From your perspective, do these programs have a positive or negative impact on the environment? Why or why not?
4. Describe the waves of environmental sustainability in sport. What might be missing from these waves? What wave do you think your favorite team is in?
5. What future opportunities does the "green" movement provide for sport organizations?

RECOMMENDED READINGS

- McCullough, B. P., & Kellison, T. B. (Eds.). (2018). *Routledge handbook of sport and the environment*. London: Routledge. (A handbook written as a guide to change the managerial paradigm of running environmentally responsible sport organizations.)
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- United Nations. (2018). *Sports for Climate Action Framework*. Retrieved from <https://unfccc.int/climate-action/sectoral-engagement/sports-for-climate-action>. (An outline and commitment for sport organizations to proactively engage in environmentally responsible behaviors to combat climate change in and through their organizations.)

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