Chapter 4

Environmental Change, the Sport Industry, and Covid-19

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In 2019, the novel coronavirus emerged in the city of Wuhan in China and spread across the mainland of the country (Chinazzi et al., 2020; Parnell et al., 2020). The coronavirus (Covid-19) pandemic spread across the world, with approximately 4.7 million reported cases and 300,000 deaths to date (WHO, 2020). The Covid-19 is a severe acute respiratory disease that is highly infectious through human interaction with symptoms as cough, shortness of breath, and sore throat (Strielkowski, 2020). The World Health Organization (2020) identified the Covid-19 as a global pandemic and highlighted that the risk of spreading the virus could be significantly enhanced from social gatherings. Accordingly, at an international level, authorities developed policies to control the spread of the virus, such as social distancing and stay home initiatives (Burton et al., 2020; Strielkowski, 2020).

At the beginning of 2020, an industry affected significantly from the current health policies was the sport industry (Burton et al., 2020; Parnell et al., 2020). The sport industry's principal products and services are highly dependent on global transportation and trade, social gatherings such as sports events, and operations of sport organizations (Babiak & Wolfe, 2009; Kellison & Mondello, 2012). For instance, during sport events, people have to work together in groups for the production of sporting goods and services (Kellison & Mondello, 2012). Considering the complex nature of the sport industry, which brings many people together, the potential threat of spreading the virus globally could have been enhanced if restrictions policies were not applied (WHO, 2020). Globally, sport events were affected the most. Specifically, all types of sport events (i.e., small-scale, mass-participant, major-scale, and mega-scale) were canceled or postponed until further notice (e.g., IOC, 2020; NBA, 2020; UEFA, 2020).

Studies have discussed the large contribution of the sport industry to the quantity of CO_2 emissions (e.g., Triantafyllidis, 2018; Triantafyllidis & Davakos, 2019; Triantafyllidis, Ries, & Kaplanidou, 2018). The vast majority of CO_2 emissions generated are from practices that produce and deliver sport products and services (Kellison & Mondello, 2012). Due to the international restrictions for traveling and commuting, the postponement of sport industrial operations, and

the limitations on consumption and production of sporting goods and services, the sport industry might have an impact on the recent reports of reduced levels of CO_2 emissions in the atmosphere (Cadotte, 2020; Carbon Brief, 2020). According to recent scientific reports, the restriction policies had a positive effect on the quality of the natural environment (Cadotte; Molintas, 2020). In fact, the restrictions on traveling and on business operations are considered to be key factors in reducing CO_2 emissions, when compared to any other crisis in human history (Isaifan, 2020).

Given the support of the literature, the transportation of spectators and operations of sport facilities during sport events have the most significant impact on the natural environment (Chard & Mallen, 2012; Dolf & Teehan, 2015). For example, the burning of fossil fuels by spectators' vehicles, the vast usage of electricity and water by the sport stadiums, and the destruction of natural landscapes have generated the largest amounts of CO_2 emissions (Babiak & Trendafilova, 2011; Dosumu, Colbeck, & Bragg, 2017; Triantafyllidis, 2018). Therefore, as far as the CO_2 emissions that were not released by the sport industry practices are concerned, it is crucial to discuss the positive environmental change that has occurred in the sport industry during the Covid-19 crisis. The purpose of this chapter is to determine the most substantial sport industry practices that may be controlled regarding their impact on the quantity of CO_2 emissions. Ultimately, pro-environmental strategic initiatives in the sport industry could monitor its operations and could reduce CO_2 emissions.

Carbon dioxide emissions, the sport industry, and Covid-19

The following sections provide an overview of the current state of the world regarding the reduced levels of CO_2 emissions from the business operations and practices of the sport industry. **According to** the unprecedented times that Covid-19 created, the following discussion focuses on the positive environmental change that can inspire the sport industry when the crisis is over.

Controlled consumerism and international transportation

The Covid-19 pandemic forced authorities to develop measures of public safety that were applied from corporations across the world and caused a new state of consumerism (Ozili & Arun, 2020). The policies and restrictions created a new market trend (Ozili & Arun, 2020). According to Ozili and Arun (2020), the global market is experiencing controlled consumerism to contain the spread of Covid-19 (Ozili & Arun, 2020). Controlled consumerism is defined as the state where business operations have limited resources and offer fewer products and services (Ozili & Arun, 2020). From a consumption perspective, people have restricted access to products and services to cover their needs and wants (Meng et al., 2020).

Based on greenhouse gas emissions research in 2020, the global concentration of CO_2 emissions has been reduced by almost 40 percent, compared to 2019 (Carbon Brief, 2020). Specifically, findings indicated that before the Covid-19 pandemic, industrial operations in China released 400 million tons of CO_2 emissions per year (Meng et al., 2020). However, during the pandemic, CO_2 emissions have declined by 25 percent, which is equal to a total of 100 million tons of CO_2 emissions (Meng et al., 2020).

Moreover, the measures taken to control the spread of Covid-19 have had a crucial impact on international traveling behaviors. Based on the Global Epidemic and Mobility Model (GLEAM), 200 countries presented significantly reduced numbers of automobile and air transportation practices (Buchanan, 2016; Harper, 2018). At an international level, as noted by Buchanan and Harper, traveling restrictions for containing the spread of Covid-19 resulted in an 80 percent reduction in global mobility. The International Air Transportation Association (IATA) recently published data that declared that the global travel industry is expected to have a $113 billion economic loss. Also, the decline in international and national traveling negatively affected other industries and business practices. For instance, the sport industry, tourism and hospitality industries, recreation, leisure, and entertainment industries have indicated approximately a $200 billion loss worldwide (Buchanan; Harper).

The sport industry and Covid-19

The world of sports is one of the largest industries based on the consumption of sport products, services, and the large transportation usage by producers and consumers that aim to deliver and consume the sport products (Babiak & Wolfe, 2009; Triantafyllidis, 2018). From an organizational perspective, sport entities are governed by a president or commissioner and include hundreds of employees and staff (Babiak & Trendafilova, 2011). The mission of every sport entity is to deliver their products to the consumer in a way that will satisfy their needs and wants (Kellison & Mondello, 2012). The total value of the sport market is estimated at $614 billion, and in 2019 the North American sport market had a value of $73.4 billion (*Business Wire*, 2020). The sport market value consisted of several market segments, such as sport events (i.e., tickets and sponsorships), media rights, and merchandising (IBIS World, 2020). According to *Business Wire*, the stakeholders involved with sport include sports consumers, retailers, organizations, athletes, teams, coaches, media, sponsors, and manufacturers.

In early 2020, all sport operations were canceled or postponed at a global scale due to the rapid spread of Covid-19 (e.g., IOC, 2020, UEFA, 2020). For example, in the United States, all national professional leagues postponed their operations until further notice and some canceled their seasons permanently for 2020. Specifically, Major League Baseball (MLB), which constitutes the sport league with the most games (i.e., 2,430 sport events per season), delayed the start of its shortened season. The National Basketball Association (NBA) was the first

professional league to respond to Covid-19 measures and urged the suspension of its 2019–2020 season. Major League Soccer (MLS) and the National Hockey League (NHL) suspended their seasons as well as many other major and minor sport leagues, amateur and community sport events being postponed until further notice.

Additionally, at the collegiate level, the National Collegiate Athletic Association (NCAA) canceled all the major sport events. For example, the canceled sport events that are considered mega-scale include the NCAA Men's and Women's Basketball Final Four. Specifically, the attendance of the NCAA Final Four is approximately 700,000 spectators (NCAA, 2020).

Sport event characteristics and carbon dioxide emissions

Sport events constitute the ultimate product of the sport industry, and they are characterized by a large number of participants that attend or people who work for the event (Collins & Flynn, 2008; Triantafyllidis et al., 2018). The massive production and over-consumption of sport products and services depend highly on the thousands of sport events that are hosted annually across the world (Chard & Mallen, 2012; Triantafyllidis & Kaplanidou, 2019). The main products of sport events include, but are not limited to, the merchandise of sporting goods and services, their delivery practices to facilitate sport consumption, and the implementation and practice of sport events (Triantafyllidis, 2018; Wicker, 2020). Also, people who travel for sport events are usually individuals who consume sporting goods and services in their daily lives. Consequently, these practices contribute to the vast majority of CO_2 emissions generated.

Moreover, the quantity of CO_2 emissions released by sport production and consumption is associated to the type of sport events. For instance, the type of sport events that has the largest impact on the natural environment includes mega-scale sport events, such as the Olympics Games, the FIFA World Cup, the Super Bowl, the collegiate football games (i.e., American football played in educational establishments in the United States), the UEFA European Cup, and any other sport gathering that accommodates thousands of spectators to watch their favorite team compete (Triantafyllidis, 2018).

During such mega-scale sport events, spectators use different modes of transportation such as single-occupant vehicles (SOV) and carpooling practices (e.g., traveling with family or friends) (Triantafyllidis et al., 2019). Recent evidence indicated that spectators' traveling behavior is equivalent to driving more than 200 miles to attend sport events more than two times per year (or sport season) (Dosumu, Colbeck, & Bragg, 2020; Triantafyllidis et al., 2018). Accordingly, it has been estimated that 210,000 tons of CO_2 emissions is released just by spectators' transportation, with 8 kg of CO_2 generated on average by each spectator (Triantafyllidis et al., 2018).

In the past decade, spectators' consumption habits (e.g., attendance in sport events) have demonstrated exponential growth. According to the literature,

these behaviors will keep rising in the next decade (e.g., Kellison & Mondello, 2012; Triantafyllidis, 2018). From the internal perspective of the sport organizations, the CO_2 emissions are primarily emitted from the functionality needs and maintenance of the sport venues (i.e., indoor and outdoor sport facilities); the transportation of the employees and sport staff, teams, athletes and coaches; and the distribution of the sport products and services to the consumers (Babiak & Trendafilova, 2012).

Sport event cancellations and carbon dioxide emissions that were prevented

Due to the Covid-19, the International Olympic Committee (IOC), which is the governmental body of the Olympic Games, postponed the 2020 Summer Olympics and Paralympics Games in Tokyo until Summer 2021 (IOC, 2020). Accordingly, the Summer Olympics will be celebrated from July 23 to August 8, 2021, and the Summer Paralympic Games will be celebrated from August 24 to September 5, 2021. Similarly, in Europe, the Union of European Football Association (UEFA) postponed the EURO 2020 (European Football Cup) until further notice (UEFA, 2020).

Given the outcome of Covid-19 restrictions towards the sport events, the limited transportation practices of sport teams and spectators, and the reduced functioning of sport facilities, it is vital to explore the CO_2 emissions that have been avoided during the Covid-19 crisis. Based on the most recent scientific evidence, a single sport event that lasts a few hours generates a minimum of one ton of CO_2 emissions (Triantafyllidis & Davakos, 2019). Taken together, the evidence that each spectator generates a minimum of 8 kg CO_2 emissions only by their traveling behaviors, and the average attendance capacity of the large-scale sport event with 90,000 spectators, it is expected to generate up to 720,000 CO_2 emissions (Triantafyllidis, 2018). Accordingly, in 2019, 278 million people attended sport events (Statista, 2020). In 2020, the Statista forecast with the adjusted impact of Covid-19 predicts an average of 114 million people, which represents more than a 50% cut in attendance. Therefore, by calculating the annual impact of traveling behaviors in sport events only by spectators, in 2019 released 2.5 billion tons of CO_2 emissions, compared to the expected 912 million tons of CO_2 emissions that will be generated in 2020. The statistics illustrate that more than 1.5 billion tons of CO_2 emissions will be avoided due to the controlled transportation variable (Statista, 2020). To compare the impact on the environment that was avoided by the transportation of the spectators due to the Covid-19, there is a need to look at the global estimation of the emissions by the operations and practice by all the industries.

Based on the most recent evidence, on average, industrial and human-induced practices emit 36 billion tons of CO_2 emissions in the atmosphere per year (World Data, 2020). If we calculate that 2.5 billion tons of CO_2 are emitted by the spectators' transportation only during sport events, the sport industry might have a

huge impact on the CO_2 emitted annually. Essentially, the sport industry, and particularly the traveling behaviors of sport stakeholders have a massive effect on the natural environment.

Environmental change in sport

In line with the findings and analysis above, the cancellation of sport events globally due to the Covid-19 outbreak can play a key role in the reduced levels of CO_2 emissions reduced in the atmosphere of the earth by the end of 2020. However, there is not enough data to illustrate the precise number of CO_2 emissions by the sport industry and especially from sport events. Inevitably, this chapter recommends the deployment of scientists across the world to collaborate and develop strategic environmental plans that can accurately assess and measure the CO_2 emissions generated by each separate operation and practice of the sport industry and events. For example, an environmental plan that could incorporate environmental management strategies to the operations and practices of sport could initiate the beginning of a new pro-environmental sport era. Due to the lack of a mechanism in the sport industry that is able to measure, report and verify reductions of CO_2 emissions consistently and comparably with their operations and practice in previous years, this chapter calls for further research on environmental management in sport. For instance, research should explore how the sport industry could become a leader for carbon reduction strategies and offsetting practice.

Some initial environmental strategic initiatives are presented in this section. The goals of the strategic initiatives are to increase environmental responsibility to sport organizations worldwide by leading them on how to reduce CO_2 emissions generated from their industrial operations and their sport consumers' practices.

Strategic initiatives

A strategic environmental initiative would assist sport organizations to measure the CO_2 emissions reduction levels annually compared to the previous year. The measurement of CO_2 emissions will be based on the energy and water use of sport organization buildings, sports facilities, the transportation usage for delivering their products and services, and sports consumers' traveling behaviors.

Another strategic initiative is one that would assess the effectiveness of the carbon reduction strategies that each sport organization uses to offset their CO_2 emissions. For example, in the context of sport events, sport organizations could assess the performance and efficiency of spectators, employees, athletes, coaches, team, (in addition to staff transportation practices and sport facilities) in energy, water, and material usage.

The next strategy would track the progress of the carbon reduction and offsetting practices developed and applied by the sport organizations to reduce their CO_2 emissions. To track the environmental progress of sport organizations, a

database able to collect the amount of CO_2 emissions generated by every single sport organization could be utilized as a tactic for strategic initiative three, and be adopted by every sport organization. A database could allow sport organizations to monitor their everyday operations, including the behaviors of their sport consumers (i.e., consumption levels and transportation).

The next environmental strategy would rate the environmental performance of the sport organizations based on the efficiency of their carbon offsetting practices. Specifically, the strategic initiative would evaluate the carbon offsetting practices based on the global standards offered by the United Nations Environment Program (UNEP). Specifically, the standards are indicated annually by the UNEP in carbon metric situational reports, which present the basis for accurate environmental performance and success with global carbon reduction targets. For assessing the environmental performance and efficiency of sport organizations, the pro-environmental tactics applied by sport organizations should be aligned with a timeline to capture the precise sources of CO_2 emissions in order to enable evaluation.

Conclusion

The impact of Covid-19 on the sport industry will take some time for sport organizations to account for all of its consequences. However, the evidence presented in this book regarding the effects of the pandemic on sport, and the discussion in this chapter, have illustrated that now is the time to plan. Governmental bodies of sport should develop well-designed strategies and collaboration initiatives among themselves that will enhance their strong partnerships in the near future. Also, partnerships of all sport organizations with global institutions such as the WHO and the UNEP could be an ultimate solution for public health issues and the global environmental crisis. Such partnerships will play an essential role in the decision-making processes of leaders in sport. Because sport is a powerful tool for positive health and environmental change in our global society, it can continue to be a leader and a positive change agent. At the same time, it can improve its overall environmental performance and maintain a positive influence on people's behaviors. Finally, the global authorities could develop policies and laws that control behaviors and practice across all the industrial and business sectors that are associated with the generation of CO_2 emissions and, ultimately, there will be a stronger likelihood that humanity can solve the global climate crisis, improve public health, and be prepared for any potential global threat in the future.

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