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How Effective and Comprehensive are the Environmental Sustainability Initiatives of
National Professional Sports Leagues?

by

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ABSTRACT

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Professional sports have established their place in the discussion of sociocultural issues and justice reform. Despite sports organizations' intent to promote social responsibility, environmental causes have been relatively disregarded. A combination of unregulated disclosure methods and greenwashing strategies have dominated the legitimization of many sustainability initiatives. Although the MLB, NBA, and NFL have begun implementing environmentally-focused programs throughout their leagues and individual clubs, the question remains as to which professional league is most productive in their crusade for environmental amendments. This paper provides a ranking system to evaluate the efficacy and productivity of the league's sustainability operations, accounting for executive governance responsibility, proper disclosure measurements, and performance-based operations. After a point-based assessment has been conducted to conclude which league has been most successful in their implementation of sustainability programs, subsequent solutions to the individual shortcomings of each league will be proposed. Identifying the implications of the applicability of the existing initiatives and proposed solutions is a crucial component in gaining a comprehensive understanding of each league's actions. The results indicated that the MLB currently has the most inclusive strategy to address the league-induced impacts on the environment, specifically in the success of addressing natural resource consumption. Further dedication to properly implementing socioenvironmental crusades across the league is essential to ensure accountability for the legitimization of existing initiatives and anticipatory actions.

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1. Introduction and Overview

1.1 Introduction

Since the late 1980s, sustainability as a growing societal norm has been a crucial driver of technological innovation and of a global systematic shift to environmentally-focused operations. Consumer preferences for sustainable choices have impacted how food is sold and prepared, the way fossil fuels are extracted, and how movies are made. The industry of national sports has not been unaffected. Sports are a large socioeconomic segment of the entertainment industry, as well as a cultural touchstone, from athletes' responsibilities as role models to the seemingly endless workplace discussions on 'the game last night.' National sports leagues have begun the process of implementing sustainability initiatives into their team operations, sourcing of materials, and stadium waste streams. Although these measures are legitimate, the sociocultural impact that national sports have on not just America, but the world, warrants a heightened level of expectation related to sustainability. Moreover, sports can lead the way in introducing sustainability concerns to a wider audience. Sixteen percent of Americans follow science, while seventy percent follow sports (Trendafilova, 2018). This notable gap provides an opportunity to use sports as an educational driver for promoting sustainability initiatives.

1.2 Research Question

This study investigates the environmental efforts of three largest US sports leagues: Major League Baseball (MLB), National Basketball Association (NBA), and National Football League (NFL), hereby known as the "Big Three." It asks how effective and comprehensive are the environmental sustainability programs initiated by the Big

Three and what lessons can be learned by comparing across the leagues. By providing a framework that addresses the multifaceted requisites that successful sustainability initiatives possess, I rank each league's sustainability initiative in the areas of executive governance, methods of disclosure, and performance operations. The research identifies opportunities for professional sports leagues to become forefront leaders in the sustainability movement. Being able to answer the question of which league is most successful in their implementation of sustainability initiatives will provide opportunities for organizations to better address areas of operations that are failing to implement environmental efforts.

1.3 Research Contributions

1.3.1 Scholarly Contribution

The research previously conducted on the topic of sustainability in professional sports is extensive and substantive, especially given the novelty of the field. The initial discussions of environmental studies in sports began in the early 2000s and publications have been increasing exponentially since then (Anderson, 2006; Falt, 2006). A key group of researchers have conducted the brunt of analytics and sourcing of information, producing vital information on a range of leagues, structuring of initiatives, and how to most effectively engage fans. Research into how to most effectively weave sustainability into sports organizations has seen an exponential increase as more teams release sustainability reports, but finding verified data concluding the success of the efforts has proved challenging resulting from the trepidation of teams to release conclusive results.

My research builds on the existing literature by providing a synopsis of the Big Three's past, current, and expected sustainability efforts, simultaneously identifying gaps in their strategies, offering guidance by addressing individual aspects of how and where sustainability efforts should be directed. I will support the claims of where sustainability in sports is lacking, then take the evaluation a step further by providing resolutions to the relatively unaddressed issues. My evaluations of each league are thorough and unique, using the strengths and weaknesses of each Big Three's distinctive opportunities to take their sustainability initiatives to the next level. Additionally, conducting research into the current sustainability initiatives of teams within each of the Big Three leagues will provide insight to why certain teams are more likely to prioritize certain environmental crusades above others, like why many NFL stadiums have extensive solar arrays but nearly nonexistent water preservation systems. Understanding why organizations act a certain way – and how to resolve their misguided intents – is imperative in the plight to revolutionize professional sports as not just leaders in social justices, but environmental restoration as well.

1.3.2 Policy Contributions

The decisions of high-powered individuals and their obligation to address sustainability have substantial cascading impacts on the environment and the actions of relatable organizations. If more executives in the sports industry adopted sustainable practices, the ramifications would ripple through many other corporations, organizations, and societal norms. For example, many team owners have investments in fossil fuels, technology, and political races. These investments might be better evaluated when compared to what the leagues might support as the world confronts a deteriorating

environment. Additionally, professional athletes are increasingly becoming the forefront role model in children's lives, impacting the way they dress, behave, and participate in athletics (Anderson, 2012). If more professional athletes were sponsored by environmentally-focused companies and demonstrated a lead-by-example approach to sustainability, kids will mirror that behavior. Addressing the issues of economic viability, sociocultural influencing, and participant engagement in sustainability initiatives will breed an environment that promotes creativity and collaboration. By concluding how sports leagues are currently addressing environmental concerns, compared to the most pressing issues of pursuing a sustainable future, the answer to how to better address operations and proper engagement with fans will be revealed.

1.4 Hypothesis

When comparing across the Big Three, I hypothesize that Major League Baseball and its affiliated clubs will possess the most comprehensive and efficient sustainability programs because of the longer season and teams' individual dedication to promoting environmentalism. Second, I hypothesize that the NBA will be ranked second and the NFL will be ranked last. This is because of NBA players' historical dedication to their relentless outspokenness about sociocultural issues, specifically racial injustices. I hypothesize the NFL last due to a lack of cohesivity between the league and affiliated teams, and the magnitude of football stadiums proves difficult when implementing novel environmental systems. I will provide details addressing each league's range of incorporating sustainability into operations, both in the front offices and in the facilities. I will know if my hypotheses are correct by direct comparisons of the sustainability

initiatives promoted by leagues. The total number each league is assigned will reveal which has the most effective sustainability program.

1.5 Research Method and Data Collected

This thesis is based on a comparative case study analysis of the sustainability initiatives of the MLB, NBA, and NFL. This choice of leagues is due to their prevalence in American society. These three leagues are long standing in American society and comprises of equivalent research on their socioenvironmental impact on society. I chose to refrain from analyzing other sports, including but not limited to hockey, soccer, and tennis, because they are less widely discussed in the media and because I have previous knowledge of the Big Three's game structure and history. I chose to focus on men's leagues because they are also more widely discussed, but the implementation of many proposed sustainability ideas can be widely applicable to different sports and women's leagues. I compare both the efficacy of leagues' environmental achievements and how each league can individually address their most pressing negative ecological contribution. In order to do so, I developed a systematic framework to compare sustainability initiatives across leagues.

The framework is modeled on the 21st Century Corporation: The Ceres Roadmap for Sustainability (Ceres, 2010). I refined this general corporate sustainability framework, making it specific to sports leagues. My final comparative framework consists of nine criteria in the general areas of governance, disclosure, and operations. I developed the system by understanding why Ceres chose the main criteria, then chose to adapt it to highlight the unique opportunities that sports provide, like player and fan engagement.

Relationships between fan bases, team operations, league goals, and an organizational push for sustainability will all be observed from both a quantitative and qualitative standpoint. This thesis is a comparative study, both in comparing the efficacy of leagues' environmental achievements and the comparison of how each league can individually address their most pressing negative ecological contributions.

Data on the sustainability initiative of each league were collected from primary and secondary sources. Primary data sources include figures and numbers based on accessible Big Three reporting direct from their websites and new sources. Additionally, dozens of online and print articles were cited to verify the claims made by leagues. Secondary source materials include research by a range of authors on the cohesivity, inclusivity, and success of initiatives implemented by organizations. Secondary research come mainly from the journals *Sports Management Review*, *Journal of Sports Management*, and the *Journal of Management and Sustainability*. I used a combination of search words, including each of the leagues accompanied by key words such as, "environmental programs", "sustainability initiatives", "corporate social responsibility", and "facility operations". I typically used Google or the UC Santa Barbara library research website to find my information.

For the establishment and execution of my ranking framework, I was able to combine qualitative and quantitative data to provide a comprehensive view of the leagues' sustainability extents. I produced the most pertinent information to contribute to each section, including quantitative statistics about individual team's programs, stadium utility consumption, and the economic gains of energy efficiency. Conversely, my qualitative data sourcing focuses on the efficiency of collaboration between executives

and stakeholders, evaluations on disclosure methods, and how engaging with fans can be a double-edged sword. Combined, the data addresses the complexities of analyzing environmental data to better understand where efforts should be addressed, in addition to evaluating the best way to restructure the executive board to maximize communication.

In addition to collecting archival data, I also interviewed five experts in the field of sports sustainability: Dr. Allen Herschkowitz, President of the Green Sports Alliance and environmental advisor to the New York Yankees; Paul Hanlon, Senior Director of Ballpark Operations and Sustainability for the MLB; Eric DiMiceli, Director of Global Corporate Social Responsibility for the NBA; Kathy Behrens, President of Social Responsibility and Player Programs for the NBA; and Dr. Brian McCullough, professor and co-director of the Sport Ecology Group. My interviews with these experts provided primary and novel information in regards to current initiatives in place for these leagues and areas of improvement for both their organizations and sports as an entity. At times, my research reached a compromising position when verifiable statistics fail to support the claims made by leagues. My best judgement was used to accept the validity of certain sustainability efforts, in addition to conducting secondary searches and conferring with the experts listed above to relieve my concerns.

1.6 Thesis Roadmap

The following chapter of this thesis details the existing literature on sustainability in professional sports. It conceptualizes how important the push for sustainability is within the realm of professional sports and establishes a timeline for how sustainability entered the world of professional athletics in the US. I also include relevant research

conducted at the university level and international sports. Chapter 3 provides background information on each of the three sports leagues, discussing the history of each league, its governance structure, and current teams. Chapter 4 comprises of my thorough analysis of each league's sustainability initiatives following the aforementioned roadmap I created, including rationales for each ranking. Chapter 5 provides areas of growth opportunities for each league to address an unsuccessful aspect of their sustainability program. Finally, in Chapter 6, I offer some concluding thoughts, identify the limitations of my research, and provide suggestions for future research directions.

2. Literature Review

2.1 Introduction

Although the field of sport sustainability is relatively novel, there has been an influx of research centered around how and why sustainability in athletics is and is not flourishing. I will be examining primary and secondary sources that both support and refute my points, including seemingly unrelated research which will eventually assist in my frameworking for league-specific initiatives. This includes collegiate examples of environmental efforts, international arena/stadium designing, and sense of place rhetoric. My main research will be focused on the three main professional American leagues: MLB, NBA, and NFL. While there has been much research conducted on revising sport sustainability initiatives, few researchers have evaluated the actual impact they have on the general public and the environment. Multiple articles address fan engagement and provide suggestions for how to best initiate climate change mitigation within the sports industry. I will be analyzing articles that discuss these topics and comparing their modes of data collecting against my own. This will provide a comprehensive understanding of the most legitimate available data. My research will be a compilation of previously published articles on the subject, interviews with experts in the field, and personal theories on how sustainability in sports should rise to its fullest potential.

2.2 Success of Current Initiatives

The norm of sporting events prioritizing sustainability has been proven to transfer into at-home positive environmental behavior (Casper, 2019). The study reported a before-and-after season study that resulted in more acceptance towards the

inconveniences of recycling, increased positivity towards those implementing sustainability efforts, and positive incentivizing of at-home composting (Casper, 2019). Centering a societal norm revolving around respecting the environment is challenging and may require a long-term mindset, but providing an opportunity for spectators to participate in the environmental actions demonstrated at the stadium to eventually implement similar systems at-home is a worthy goal. Additionally, highlighting a sense of place rhetoric in terms of home-team advantage results in increased participation in sustainability initiatives (McCullough, 2016). This participation reduces the fans' environmental impact in areas including transportation to the stadium, waste usage during the game, and pre/post-game activities. A league can only do so much for the sustainability of their operations, so encouraging fan engagement is crucial to achieving environmental goals.

However, after implementing the lowest hanging fruit (recycling programs, community events, etc.), organizers have proved unable to dive deeper into the initiatives that require more time, energy, and money. Initiatives such as reconstructing stadium roofs to incorporate photovoltaic panels or underground water preservation technologies have the potential to produce more consistent annual reporting and reliable strategies for other organizations to mimic (McCullough, 2016). However, the implementation of such preservation technologies has fallen short from a stadium standpoint. Although some facilities have restructured their operations to include sustainability functions, the majority of emissions and waste generation is unfortunately traditional. Stadiums and arenas are massive drivers in both climate change *and* the ability to lighten the environmental impacts of sports, both from their operations and fan engagement.

The first and foremost step towards a successful green sports program is strategic management (Casper, 2015). Historically, the most successful initiatives are those that are well-managed and proficiently planned. Although many sport facilities are already established, many new buildings are set for construction. This is an incredible opportunity to demonstrate environmentalism prior to the functional operations stage. Additionally, post-event stadium maintenance has proved consequential to the success of supporting a sustainable urban environment (Erten, 2006). For example, the San Francisco Giants diverting 94% of their waste to be composted or recycled is evidence that how a facility handles the impacts of an event speaks volumes of the team's sustainability intents (MLB Earth Day, 2020). Utilizing the surrounding urban environment in a sports venue is crucial to the seamless integration of sustainability, using the same environmental methods in the arena as the city it resides in does (Erten, 2006). For example, San Francisco has adopted a strict environmental framework throughout the entire city, which the San Francisco Giants and the Golden State Warriors have matched (SF Planning, 2019).

2.3 Reasons for Inaction

The literature blames lack of awareness as the first reason for inaction. At the college level, much of the research points to an overwhelming lack of communication between athletic departments and its own university, leading to confusion on where priorities lay (Casper, 2012). Although environmental concern is high, the disconnect between concern and action is due to lack of knowledge about how sports can lessen environmental damage (Casper, 2012). For example, in the 2010 World Cup event,

stakeholders were unaware of their operation's contributions to climate change, so they made no effort to mitigate any impacts. However, when their negative contributions were linked to the event, stakeholders developed a new awareness and interest of environmental mitigation (Sotiriadou, 2015). This reiterates the notion that a lack of communication drives inaction, from the fanbase level to the investors circle. There is a clear passion for increased environmentalism in sports, but advancements in the field remain slow moving. In addition to lack of information, when facilities attempt to adopt environmental practices, challenges such as the age of facility, unavailability of funding, and an absence of people eager to initiate and participate in initiatives emerge (Trendafilova, 2014; Schumacher, 2016). Research on the inaction of sustainability in sports is the largest gap in my literature review. I intend to fill this missing information by conducting extensive interviews, analyzing data collections, and inferencing.

2.4 The Game-Changing Impacts of Sustainability in Sports

In a collegiate setting, students at a Division I (D1) football game not only willingly participated in green game-day activities, but actually expected the college athletic department to incorporate environmental actions into sporting events more often (Casper, 2014). A value-belief-norm (VBN) model proposed by Casper (2014) indicates that collegiate respondents to a survey “significantly predicted” pro-environmental behavior in both a stadium setting and in everyday life (Casper, 2014). This supports the assumption that not only are sustainable options preferred, but they are assumed at sporting events. Additionally, a 2019 study offered conclusive evidence that sustainable initiatives at a stadium has an impact fan behavior at home, including an increase in

recycling, compositing, and water conservation (Casper, 2019). This engagement study identifies the persuasive impact that sports teams have on their fan bases, a finding that can have extraordinary influence on the environment if utilized correctly. Sports organizations play an important advocacy role in local and global communities, from both an environmental and social standpoint. Desegregation of sports and the inclusivity of women as both fans and participants in games started with a small movement, eventually building into a historical revolution (McCullough, 2015).

The environmental movement is in the process of breaking its way into the world of sports, similarly to the minority equality movement. Additionally, sports project the emblem of health, showcasing most athletically gifted and extraordinarily healthy people. Currently, this promotion of health and wholeness has not been linked to a healthy environment. However, frameworks for health programs could be applied to sustainability in sports by conceptualizing a common ground for wellness (Lindsey, 2008). Adopting a healthy lifestyle should also reflect a positive impact on the environment, which athletes currently tend not to equate with a sustainable body (Schmidt, 2006). Utilizing the power of the player to combine self-health and a healthy environment has the potential to change the way wellness is perceived on a national level.

Some may argue that the sports sector itself might not play a detrimental role in climate change impacts; however, the widespread viewing and discussions of sports nearly daily significantly influences the majority of Americans (Trendafilova, 2018). Between the expectations of stakeholders and increasingly strict certification requirements, innovation and passion for sustainability must be quickly adopted (McCullough, 2014; Ioakimidis, 2007). True sustainability incorporates social and

economic sectors under the complete umbrella, often referred to as triple bottom line sustainability (Fyall, 2010; Rydin, 2011; Peric, 2016). Economic and social incentives are often powerful enough to drive environmental change. Additionally, corporate social responsibility (CSR) requirements ignite change and novelty in corporations, specifically ones in such high competition like the sports world is (Trendafilova, 2011; Kellison, 2012). It is crucial that environmentalists utilize the power of competitive CSR initiatives to implement sustainability practices into stadium management, team operations, and fan engagement (Trendafilova, 2013). There are far too many options for reducing CO₂ emissions, waste generation, and energy consumption for this discussion to still be placed on the back burner.

2.5 Conclusion

The UNEP's 2018 commentary specifically states that sports events, operations, and secondary impacts of athletics themselves pose a significant threat to the natural environment (Triantafyllidis, 2018). The topic of sustainability in sports is growing exponentially, similarly to how sports themselves are becoming more culturally embedded in many facets of American society. Although this literature review presents a mixture of themes in a variety of contexts, this paper will primarily focus on their application to understanding the relationship between sustainability and global impact that sports possesses. The combination of already implemented initiatives and a review of the opportunities for more substantial growth will provide enough concrete information to draw a conclusive valuation on which sports league is most dedicated to implementing comprehensive initiatives.

3. Background and Context

The creation, adaptations, and sociocultural influences of Major League Baseball (MLB), the National Football League (NFL), and the National Basketball Association (NBA) did not happen overnight. Each of these dominating leagues have been forced to refine their motives to match the cultural shifts society faces. Professional sports are a central gathering place for every demographic, generation, and orientation. The success of the MLB, NFL, and NBA are the well-earned results of decades of struggles and fine-tuning how the sport should be played. Each league has been plagued with scandals, compromises, and near internal destruction, but the successes have been the biggest game changer of all. Moments like Jackie Robinson breaking the color barrier in 1947, Joe Montana's "Hail Mary" throw to Dwight Clark to eternally memorialize "The Catch", and the tragic passing of Kobe Bryant bringing the world to its knees have all deeply impacted not just the sports industry, but nearly every aspect of daily life (Maaddi, 2019). The background information for the MLB, NFL, and NBA illustrate a memorable timeline of how, when, and why these leagues grew into the international phenomenon they are today. Professional sports have changed the way society functions and this chapter is important in illustrating the delicate, controversial process each league has endured to become the international sensation they are today.

3.1 MLB

Introduction

Major League Baseball has been coined "America's pastime" due to its leisurely watching, unrestricted time limits, and the beauty of the home run. Historically, the MLB

has been the leader in total fan attendance against any other sports league in the world, with over 73 million fans in attendance during the 2014-2015 season. No other international or national league came close to that number, with the NBA in third place at nearly 22 million (Gaines, 2015). Since its origin in the late 1800's, baseball has persevered through world wars, sociocultural shifts, and other budding sports that threatened to distract its fan base. However, the MLB organization has over a century of experience in seamlessly adapting to social and political barriers, all while focusing on the game everyone seems to know and love. The following will provide historical context of the founding and progression of the MLB, including both the positive and negative milestones that made the MLB what it is today.

Historical Background

Although official baseball was being played as early as 1846, America's first professional baseball club – the Cincinnati Red Stockings – formed in 1869. Shortly thereafter in 1871, baseball's first major league was established as the National Association of Professional Base Ball Players (History Editors, 2019). However, the league was plagued with controversy and corruption, eventually being portrayed as a rowdy band of drunken players coached by managers with gambling addictions. It was no surprise that the league was bankrupted within five years' time (Knuppel, 2018). William Hulbert, a businessman and coal trader out of Chicago, founded the National League of Professional Baseball Clubs on February 2, 1876, or what is now currently known as the National League (NL). Hulbert became the owner of the Chicago White Stockings, established new rules for playing and front office regulating, and garnered support for seven other teams to join the newly formed NL (History Editors, 2019). After the

Chicago White Stockings clinched the very first NL pennant on September 26, Hulbert was elected president of the league. (Knuppel, 2018).

In 1901, the American League of Professional Baseball Clubs (AL) was founded by Ban Johnson, who eventually became the AL's first president. The creation of the AL was intended to be a more upstanding version of the NL, which had developed a stereotype of being overly rough (Bendix, 2008). The rivaling leagues eventually signed a National Agreement which combined the two into one "major league" and, in 1903, played the first NL vs. AL World Series (Knuppel, 2018)¹. Major League Baseball remained relatively stable over the next few decades, until the ending of World War II revolutionized air travel. The westward expansion of baseball became a major discussion, especially after the Brooklyn Dodgers and the New York Giants both expressed a desire to relocate. In 1958 at the Los Angeles Memorial Coliseum, the Los Angeles Dodgers and the San Francisco Giants met for opening day (Bendix, 2008). This western expansion symbolized a new era in professional baseball and required the Major League to make changes as well, resulting in the AL and NL adding teams to their rosters. In 1969, a century after its introduction, Major League Baseball had evolved into a two-division league, each with twelve teams, spanning across the entire country.

These additional teams resulted in dividing leagues into eastern, central, and western divisions to allow for more organized scheduling. Although the NL and AL had been cooperating as legally separate entities since 1903, Bud Selig, Commissioner of Baseball at the time, merged the leagues into one cohesive organization in 2000. Today, a total of thirty teams play for the MLB, 15 in each league, with 29 teams located in the United States and one in Canada (Appendix A1). Each team competes in 162 games per

¹ The first World Series was the AL Boston Red Sox against the NL Pittsburgh Pirates in a nine-game

regular season, after which five teams from each league advance into a four-round playoff tournament. The conclusion of the MLB season is the World Series, where the two league champion teams compete in a best-of-seven series (Bendix, 2008).

Conclusion

Major League Baseball provided foundational support and a reliable basis for all other professional sports. Baseball has been a defining part of America's history since the 1800's, experiencing many of the sociocultural shifts that the US had to remain flexible with as well. Throughout war, racism, loss, and financial disparities, the MLB has stoically adapted to the changes.

3.2 NBA

Introduction

Basketball is a sport unlike any other, comprised of extraordinary player diversity and requiring a level of technicality that has turned the game into an artform. Legendary players have transformed the sport from a street-style, gritty pastime, to one of elegance, perception, and immeasurable hours of dedication. Since its formation in 1949, the NBA has endured major social shifts in addressing fan engagement and establishment shifts by highlighting specific successful players and teams. The NBA has nearly seventy years of adapting to cultural trends and overcoming major political barriers, while simultaneously establishing itself as a dominant force on the international athletics stage. The technicality and skills required to excel in basketball make NBA players even more admirable; each three-pointer or dribbling sequence looking as practiced as well-rehearsed ballet. The following will provide background context for the growth of this

novel league, placing special emphasis on the way players and teams have influenced the league in an unconventional way.

Historical Background

The Basketball Association of America (BAA) was established in 1946 and included eleven teams playing in major cities across America and Canada. Although there were basketball leagues established prior to the BAA, this was the first time a league had the structure and resources available to make its presence legitimate. The BAA was successful for about three years and, in 1949, merged with the National Basketball League (NBL) to form what is now presently known as the National Basketball Association (NBA).

This new league composed of seventeen teams spread across cities large and small, playing in similarly sized arenas. From the 1949 merger until the 1953-54 season, the NBA dwindled in size until only eight franchises remained: the New York Knicks, Boston Celtics, Philadelphia Warriors, Minneapolis Lakers, Rochester Royals, Fort Wayne Pistons, Tri-City Blackhawks, and Syracuse Nationals². The league, especially the franchises based in smaller cities, faced financial troubles that led to their untimely demise on the NBA court. However, the league experienced a massive expansion from 1966 through 1974, increasing the league to eighteen teams. The NBA expanded two teams into Canada in 1995 and established the women's professional league, the WNBA, in 1996. The final team added to the 30-team roster seen today was in 2004 with the Charlotte Bobcats. Each team now plays 82 games per season, equally divided between home and away games (Smith, 2019). The league is split into two conferences, East and West, then further split into three divisions per conference (Appendix A2).

² All of these teams are still in the league today, although the last six have changed either name or location.

Establishing rules to make the game watchable was a struggle for the first few decades of the NBA, resulting in early low fan engagement and a seemingly endless stream of fouling and stalling (holding the ball for minutes on end). The implementation of the 24-second shot clock and team foul limitations in 1954 made the sport more entertaining to watch, allowing for higher scores, less fouling, and a heightened level of competition. In the first season of using shot clocks and regulating quarterly fouls, average points per game (ppg) increased from 79.5 to 93.1 ppg (Smith, 2019). Additionally, the three-point line so revered today was put into effect for the 1979-1980 season. ESPN made its first debut in 1979 as well, with a nightly program called “Sportscenter” drawing daily attention from basketball fans across the nation. This exponentially increased fan participation, revenues, and viewership, resulting in players demanding higher salaries and bonuses (Smith, 2019). Today, the minimum salary for a first-year player is \$300,000, with many players making millions of dollars per season.

Basketball, more so than other professional sports, has become an international sensation as a direct result of specific players and intricately curated teams. Wilt Chamberlain and Bill Russel in the 1960s changed the game in a way never witnessed since. It was a tirade of domination for the entire decade, with Russell winning eleven championships in thirteen seasons and Chamberlain still holding some of the most impressive records in the NBA (Smith, 2019). The 1970/80s were blessed with Larry Bird (Boston Celtics) and Magic Johnson (Los Angeles Lakers), with their two respective teams winning eight out of ten championship titles in a decade. When Michael Jordan joined the NBA in the 1984 draft, basketball – and the world – became utterly dominated by Jordan. The branding power that Jordan leveraged for Nike, Coca-Cola, Gatorade, and

basketball in general altered perceptions on the appeal of branding (Smith, 2019).

Through Jordan's salary and business endeavors, he became one of the highest paid athletes in history, all while influencing fashion, finance, and team ownership.

Since Jordan's entrance onto the stage, many players have made an impact on the sport that goes far beyond the court. Influences like LeBron James and Kobe Bryant have transformed the sport of basketball into a way of life for viewers and players alike. Since the rise of these all-star players, one doesn't even have to watch basketball to easily recognize some of the players. This extensive sociocultural reach is more impactful than other professional sports partially due to the result of individual players finding their voice on the world stage, commenting on political issues and walking the runway in some of the most prestigious designer clothes in the world.

Conclusion

The National Basketball Association is a game based on flair and fundamentals, statistics and headlines. Basketball has grown to dominate the international stage, including 108 international players on the 2019-2020 NBA roster. This international growth is a direct result of immortalizing certain charismatic players and basketball attire becoming an expensive, designer streetwear trend. Throughout shifts in political tensions and a seemingly endless stream of lighthearted rivalries between teams, the NBA has thrived in focusing the media attention on the successes of player's sponsorships and charities.

3.3 NFL

Introduction

Football has defined professional sports leagues in the 21st century, raking in hundreds of millions of dollars per season and hosting the most-watched annual sporting event in the United States, the Super Bowl. A series of television contracts and charismatic player personalities have resulted in the National Football League (NFL) becoming a household-defining sport. The NFL hosts one game per week per team, much different than the MLB and NBA who schedule teams to play multiple games per week, often back-to-back. This infrequency of games builds suspense and excitement for the weekend games, fans often spending an entire Sunday on the couch watching football. Although baseball has claimed the title of “America’s national pastime”, football is the most popular spectator sport in the US with no world sporting league coming near the average crowd that the NFL aggregates. In 2014, the average NFL regular-season game drew 68,776 fans; the next highest league gathering only 43,500 (Gaines, 2015)³. Parity across the league is a major cause for the excitement drawn by the NFL because no matter the team or location, each has a completely equal opportunity to win the Super Bowl. The following will dive into the unique, compelling process that led the NFL to its current status as America’s favorite league and how football became a religion.

Historical Background

Although the NFL has become a staple in American sociocultural progression, the fame and fortune took decades to become reliable. Since the 1890’s, multiple football leagues have tried to rise to prominence, only to fall victim to controversy, financial struggles, or a lack of viewership. Football itself was rising in popularity, but it lacked the

³ The German Bundesliga is the next most attended sport.

structure and leadership to have a league rise to success. Jim Thorpe, an athlete for a small Ohio football league, gathered several Ohio owners to a meeting that would eventually result in the formation of the NFL. In 1920, Thorpe recruited owners and coaches from additional teams, including New York and Illinois, coming together to agree on naming their merged league the American Professional Football Association (APFA), naming Thorpe the President (Fiorillo, 2018). Just two years later in 1922, the APFA rebranded itself to become the NFL and expansion teams began to establish themselves across the Northeast and Midwest (Fiorillo, 2018). This local expansion was a positive for more competitive league play, but the reluctance to move westward proved fatal for gaining higher viewership.

In 1932, the NFL held the first Championship Game⁴, resulting in much higher engagement and inspired the league to develop a more structured composition for team divisions and a lengthier playoff season. The Eastern and Western Divisions were established (although most western teams were still residing in the Midwest), and the restructure was so successful that fans began to become enamored with their local team and the hopes of a legendary playoff run. From the 1920s to 40s, some teams disappeared from the NFL while others were erected in their place, although many teams playing in the 1940s are still playing today, including the New York Giants, Green Bay Packers, and Philadelphia Eagles (Fiorillo, 2018). In 1946, Cleveland Rams owner Dan Reeves threatened to leave the league entirely unless he was granted permission to relocate to Los Angeles. Three years later, the Los Angeles Rams, led by Reeves, were in the Championships as the first West coast team. Additionally, *Plessy vs. Ferguson* required any organization leasing the LA Coliseum be integrated, resulting in the Los Angeles

⁴ The Chicago Bears beat the Portsmouth Spartans 9-0.

Rams being the first NFL team to acquire African American UCLA star Kenny Washington in 1946.

However, most teams were integrated by the late 1940s. The integration process was successful with the massive exception of the Washington Redskins, owner George Marshall leading the charge. Marshall implacably refused to sign or draft black players until 1962 for no reason other than racism, until the Redskin's stadium lease was threatened to be nullified, forcing Marshall to cede his position (Fiorillo, 2018). The 1950's proved a vital period for engagement in the NFL as a result of expansion and impressive championship runs. The timing was opportune, lining up perfectly when fans were growing weary of the Yankees absolutely dominating the baseball field.

When the American Football League (AFL) rose to competitor-status and threatened to "steal" teams from the NFL, the two dominating leagues cancelled all bidding wars and decided to merge in June of 1966. This amalgamation combined to form 24 teams and resulted in four additional expansion teams by 1970. The AFL and NFL union resulted in the first version of a Super Bowl, with both "leagues" playing separate regular seasons to decide a champion for each, then playing in a final World Championship Game⁵. The 1970s shaped the NFL through additional expansion teams, a rise in Super Bowl popularity, and the Miami Dolphins clinching a perfect 14-0 regular season. During this critical time, many franchises became legendary dynasties that developed faithful fanbases, resulting in many all-star players joining the team to make it even stronger. The 2000s introduced a dynasty so distinguished that it has endured nearly two decades of stardom: the New England Patriots. Since 2001, coach Bill Belichick and

⁵ The first AFL-NFL World Championship Game was between the NFL Green Bay Packers and the AFL Kansas City Chiefs; the Packers swiftly defeated the Chiefs.

quarterback Tom Brady have grown the Patriots into an unstoppable force, combined with nationwide fans and a brick-wall defense. Brady's entrance onto the field in 2001 until present has been legendary, the Patriots winning 77.7% of their regular-season games, appearing in the Super Bowl nine times, and winning the title six times.

Currently, the NFL is comprised of 32 teams split evenly between the AFC and NFC (Appendix A3). The regular season runs for seventeen weeks with twelve teams entering the playoffs. Today, the Super Bowl is essentially a national holiday and minor rule changes has made the game faster-paced to highlight passing and tackling, two skills that fans are most enticed by. A 2008 poll concluded that the NFL was America's favorite sport, the percentage totaling that of baseball, auto racing, and hockey combined (Rovell, 2014). Sixteen regular season games are played per season, meaning dedicated fans organize their entire week around when their team is playing. A combination of savvy television deals, extraordinary athletes, and regional competition has awarded the NFL the highest per-game attendance rates of any domestic sports league in the world. Football, through the successes of the NFL, has become a worldwide phenomenon.

Conclusion

The National Football League has grown from a disorganized, overly distributed conglomerate of teams, to an internationally dominating force. The impressiveness and aggression that football relies on easily captivates fans covering the globe and the home-team support is unparalleled in other sports. The monopolization of football, television, and even players has become a phenomenon unlike any other. Football has been and will continue to dominate the 21st century and utilize the league's unstoppable influence to shape fashion, politics, and society.

4. Investigating the Comprehensivity of Professional Sports Leagues'

Sustainability Initiatives

4.1 Introduction

It is important to utilize a singular, unbiased rubric when analyzing the Big Three's sustainability programs. Thus, for the purpose of justly comparing the effectiveness and methodology of the three league's sustainability initiatives, I will use foundational requirements based off the Ceres Roadmap for Sustainability model (see Appendix B1). The Ceres Roadmap assists in company missions to make economic, environmental, social and political improvements. In regard to the current importance of social sustainability, Ceres states, "...integration of sustainability into core business systems and decision making, and capturing the competitive advantage this offers, becomes ever more crucial." (Ceres, 2010). The roadmap highlights favorable areas for high potential impact, but does not cover every area of sustainability implementation. Consequentially, I will be altering the key expectations of the Ceres Roadmap to be better adapted to highlight publicly available statistics and the efficacy of embedding sustainability into the unique marketing opportunities provided by professional sports, specifically. The roadmap distributes responsibility and areas of concern into three broad categories: Executive Governance and Stakeholder Engagement, Sustainability Performance Signaling, and Operations Management. These areas include nine subcategories that clarify and define the responsibilities that leagues are accountable for, summarized below (see Appendix B2 for the complete roadmap outline):

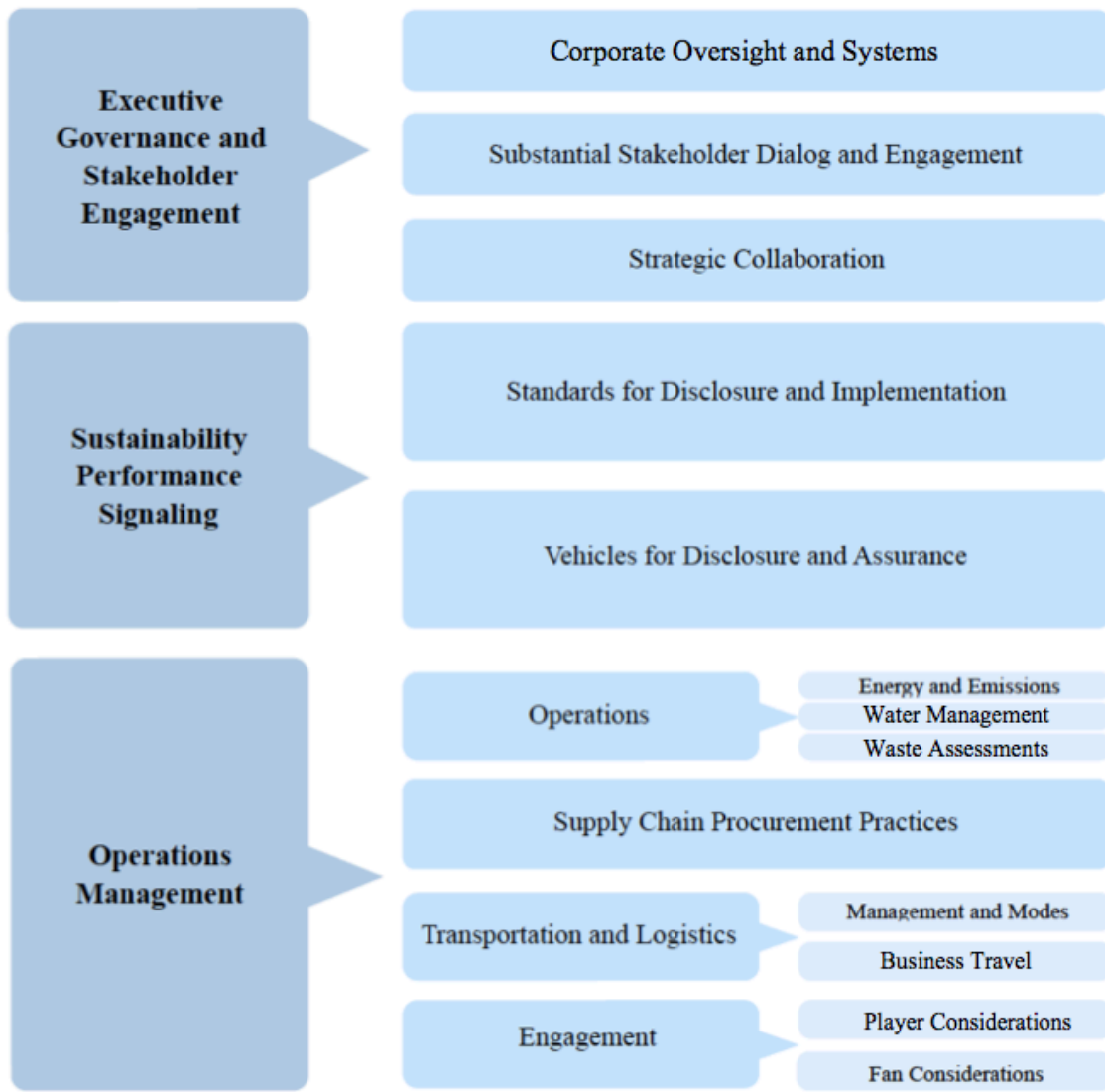


Figure 1: Roadmap to Assess Sustainability in Professional Sports

Each subcategory expectation will be evaluated and awarded points based on a combination of comparing the intended goal of the initiative against its actual efficacy, continuity between league-wide and team-specific efforts, and the initiatives assistance for the leagues achieving a comprehensive and coherent strategy for sustainability efficiency. An expectation receives a score on a scale of 1 to 5, 1 signifying the lowest possible score and 5 being the highest possible score. The points will be tallied to create a

total score for each league. Subchapter 4.5 (page 75) provides a summarized table tracking the total points for each league. The league that garners the highest amount of points from the combined expectations will answer the question: Which professional sports leagues' sustainability program is the most comprehensively successful?

4.2 Applying a Sustainability Framework to Major League Baseball (MLB)

Baseball has been a staple of American history throughout the decades, drawing in crowds from all socioeconomic backgrounds, ethnicities, and generations. The sport has altered national consumption patterns and influenced societal norms, essentially creating the television industry and fueling Cracker Jack's rise to prominence. The MLB has repeatedly demonstrated baseball's power to influence their fans and the sports industry, more recently dedicated to implementing comprehensive sustainability programs across the nation. The MLB's current global prominence took nearly a century, but the elevated status of the league's social responsibility accomplishments has established the necessary skills it requires to incorporate top-to-bottom environmental initiatives in team operations, stadium efficiency, and league oversight.

4.2.1 Executive Governance and Stakeholder Engagement

Corporate Oversight and Systems

The structural composition of executive boards is decisive when controversial issues of how to propel the organization forward are discussed, especially when deciding the specifics of how to direct attention to environmental concerns. There are eight

executives – all male – listed on the MLB’s online executive webpage, six of which have background descriptions outlined on the website. Implications of sustainability or environmental responsibility are absent from executives’ job descriptions, and none of them have educational background in scientific fields. For those with LinkedIn pages, there is no mention of the climate situation, environmental endeavors, or basic laboratory experience. Paul Hanlon is the appointed Senior Director of Ballpark Operations and Sustainability, the highest position of power for sustainability concerns. When we discussed his responsibilities in the summer of 2019, Hanlon expressed gratitude and admiration for the thirty clubs and their efforts to pursue sustainability throughout their operations. While the MLB’s appointment of a sustainability enforcement team, led by Hanlon, is a positive step towards implementing a top-down approach, it is apparent that its focus is not purely on sustainable strategizing as Hanlon’s responsibilities mainly lie with operations management. A successful sustainability strategist cannot also be balancing an entire job description’s worth of operational challenges and coordination. Thus, it is clear the MLB lacks a corporate structure that allows for proper sustainability endeavors. In order to resolve this problem, the MLB should direct efforts to a twofold approach of restructuring their front office and include more individuals with environmental responsibility experience.

In November of 2018, the New York Yankees appointed Allen Hershkowitz as an environmental science advisor assigned to focus on “energy use, waste management, water conservation, and food services,” at the stadium (Associated Press SI, 2019). Prior to his job with the Yankees, Hershkowitz was a senior scientist at the Natural Resources Defense Council for 26 years and helped establish the Sport and Sustainability

International organization. Hershkowitz's position was groundbreaking as it was the first time a scientist was appointed to lead the discussion on how to most effectively maintain/increase revenues while implementing sustainability initiatives for an MLB organization (Associated Press SI, 2019). Furthermore, his focus is solely on environmental issues, not to be overloaded with other requirements like managing operations or leading department communications. This is a positive step towards the inclusion of sustainability experts in the executive discussion. Still, the unstable assignment of responsibility at the corporate level has resulted in the MLB's incomplete attempts at influencing sustainability endeavors from a top-down approach.

Substantial Stakeholder Dialog and Engagement

Stakeholder responsibilities and interests are becoming increasingly misrepresented due to uncertain governance and developing relationships between leagues and international organizations (Rosentraub, 2000). Spectators and fans are often underappreciated as stakeholders in professional sports; without the obsessive, familial attachment millions of sports fans have developed for a team or city, sports would not possess the dominating presence they hold in society today. While encouraging fans to contribute to stadium-based sustainability efforts can garner additional support for the team and environment, it can inadvertently implicate the fans as the problem. Including fans in sustainability initiatives can peripherally generate an unfortunate accountability argument: are fans responsible for their consumption and use of resources while visiting a stadium? Alienating sports fans by pushing sustainability on them has the potential to cause contradictory results, especially when observing sports is often a much-needed escape from reality. The MLB hosts "green games" and implements "green teams"

during certain series as a mechanism to engage fans or, at the very least, encourage fans to take notice of the environmental impact their actions have while at the ballpark. However, these temporary and nonrepetitive examples of fan engagement have proven to be less effective in attempting to educate fans. When compared to other marketing efforts, green games lack of recognition and continuity fell short (Rosentraub, 2000). Furthermore, sporting events as an entity are a complicated space to recruit fans to participate in environmental contributions as a result of the identity salience hierarchy, which contributes to fans' not connecting their environmental identity to the stadium (McCullough, 2016). If the identity salience hierarchy theory was to be emphasized with an environmental mindset, the functionality of the stadium would be of higher importance to fans, resulting in a more visible connection between fans' presence and their environmental impacts.

Strategic Collaboration

Major League Baseball has become the first professional sports league to induct all thirty clubs as members of the Green Sports Alliance, an organization dedicated to "leveraging the cultural and market influence of sports to promote healthy, sustainable communities where we live in and play." (Green Sports Alliance, 2020). The Green Sports Alliance, co-founded by Allen Hershkowitz, the aforementioned Yankees advisor, emphasizes how stakeholders from the sporting world can be actors of change for developing a healthy, sustainable world. This strategic collaboration between the largest sustainable sports consultant organization in the world and one of the largest leagues in professional sports is a massive win. The partnership signals how an environmental focus in interdisciplinary fields is crucial to curb the effects of climate change and prefaces the

impending economic shifts that the United States will be eventually forced to undertake, where capitalism, environmentalism, and NGO's must coexist to prevent climate-driven crashes.

The MLB has also teamed up with Bonneville Environmental Foundation to tackle day-to-day and long-term environmental challenges (MLB Green Partners, 2020). Bonneville has assisted the MLB in All-Star Events and postseason games and aligns itself with the MLB's goals to offset energy and water usage by purchasing credits. More specifically, Bonneville specializes in selling renewable energy certificates and water credits to empower businesses to address their environmental footprint. Their mission to tackle both imminent and persistent issues relating to sustainability is appealing for organizations eager to produce quick results. The MLB has been outspoken promoting their relatively basic solutions to large events, like resource offsetting (MLB Green Partners, 2020). While the concept of carbon offsetting is idealistic and noble, the actuality of quantifying emissions from a major sporting event is relatively untested. Sports organizations have become codependent on the availability and legitimization of carbon credits, which fails to address the actual problem of sustainability and the climate crisis: transitioning the world to a self-sustaining, cyclical economy (Schmidt, 2006). Some view the offsetting industry as an equitable substitute for instigating actual change, when in reality the proposition of assigning hypothetical "credits" to a resource belittles its importance. Luckily, many sports organizations, including the MLB, have been transitioning away from depending on offsetting, which functions to "greenwash" the organization by buying themselves out of environmental responsibility (Polonsky, 2010).

Teams have initiated partnerships with local environmental groups to promote environmental causes by including fans in the celebration. For example, the Tampa Bay Rays work with the Tampa Bay Water organization through the ‘Break a Bat, Plant a Ball’ program which, for every bat broken during a game, funds the introduction of oyster balls on the Floridian reefs, supporting oyster population growth in struggling habitats. Another team has taken the collaboration initiative to a groundbreaking height: The Milwaukee Brewers have partnered with SC Johnson to repurpose one million plastic cups from the Brewers’ Miller Park into company cleaning product bottles. This collaboration is the first US sports partnership that has been able to successfully link a waste stream to a specific product, closing the recycling loop and filling a necessary gap in the material recycling market. The availability of products that have the potential to be recycled is abundant and opportunistic, but the products that incorporate recycled materials into development are severely underdeveloped. SC Johnson has split open an industry that could thrive between professional sports and plastic-based product companies: a seemingly endless stream of readily available, economically profitable products (MLB Club Initiatives, 2020). The Brewers have a history of promoting environmental opportunities within the organization and the community and the collaboration to pursue a closed-loop recycling system.

Total Executive Governance and Stakeholder Engagement Score: 8/15

Score Rationale

Although Paul Hanlon’s appointment is a great step towards bringing sustainability into the executive conversation, there is not a strong enough support system

behind Hanlon to ensure proper implementation of sustainability initiatives. Balancing league-wide operations and ensuring efficient environmental programs is too grand of an undertaking for one position to be responsible for. Additionally, Hershkowitz's appointment to the Yankees is a novelty position for an individual team, but his position has appeared seemingly honorary and lacks accountability. The MLB has been successful in finding capable strategic partnerships to undertake the responsibility of executing sustainability programs.

4.2.2 Sustainability Performance Signaling

Standards for Disclosure and Implementation

Over twenty MLB clubs have collaborated with Measurabl to “measure, manage and report sustainability metrics at their stadiums.” (Measurabl, 2020). This data collection company has simplified environmental, social, and governance (ESG) data management to assist organizations in tracking performance and analyzing trends, which certain MLB teams use to report and disclose their sustainability information. Although Measurabl's original intent was to fill a gap in the real estate market's information sourcing, it has been successfully applied to the MLB for data automation and solving ballpark operations challenges. Since using Measurabl, teams have been provided with efficiency-maximizing opportunities and potential areas for improvement (Campelli, 2020). This undertaking to become more accountable with documenting the efficiency of sustainability efforts is a positive step towards more comprehensive environmental strategies. Data is pulled directly from the utility provider to analyze the information, eventually leading towards sustainability solutions (Campelli, 2020). To summarize,

Measurabl first engaged with the MLB when it was looking for a way to streamline the sustainability data collection at its ballparks. Measurabl was able to provide data automation, KPIs [key performance indicator] and analytics to assist all ballpark operators in progressing sustainability. The MLB introduced us to the Green Sports Alliance because we thought if this is helpful to the MLB's ballparks then it's likely to assist sports leagues, teams, and venues everywhere. Measurabl has helped both organizations automate ESG data, benchmark performance, and drive operational efficiency by identifying areas to improve. (Campelli, 2020).

Although the intent to implement a more accountable tracking system is worthy, the execution of the analytics software has fallen short of successful. There is little-to-no available information regarding Measurabl and teams' usability with the program. However, if the reporting metrics are, in fact, accurate and advantageous, then this is a prime opportunity for the MLB to share their successes with fellow leagues and sustainability experts. So why haven't they?

Vehicles for Disclosure and Assurance

The MLB and its constituents have done an excellent job marketing and promoting the environmental initiatives integrated throughout their operations. Press reports, website pages, social media, and presentations have all been curated for internal and external deliverance outlining the impressive initiatives implemented league-wide. Although specific statistics and quantitative measurements are not readily available, the Natural Resource Defense Council announced that "among all sports leagues, Major League Baseball has the best-developed environmental data measurement program" (Hershkowitz, 2012). While the MLB has systems in place to substantiate the long lists of sustainability efforts conducted within the league, it has chosen to refrain from producing said statistics. The MLB's collaboration with the Green Sports Alliance places the

responsibility of disclosing and dispersing relevant environmental information pertaining to the MLB on the Green Sports Alliance. Outsourcing sustainability responsibility to specialists in the field frees up time for MLB employees, but at what cost? The Green Sports Alliance is relatively unreliable in producing actual statistical verification about their programs and collaborations, in addition to having little information about the MLB on their website. It appears that many third-party sustainability organizations are seemingly more interested in gaining corporate clout and procuring high-stakes partnerships with large sports organizations. For the MLB's sustainability initiatives to have maximum efficiency, more work must be done within the organization to ensure the successes of their employees work. Developing an internal sustainability team to undertake the responsibilities of the Green Sports Alliance is the first step in producing legitimized disclosure documentation.

Total Disclosure Score: 5/10

Score Rationale

The partnership with Measurabl to track, report, and analyze MLB sustainability measurements is a worthy undertaking. Having a collective space where all teams and league employees can visualize achievements and find assistance on issues is exactly what is currently absent from sports sustainability. However, the methods of disclosing the findings fail to ensure the validity of the software and what type of information goes into the tracking system. This score would be much higher if the MLB established more transparent methods of disclosure.

4.2.3 Operations Management

4.2.3.1 Operations

Greenhouse Gas Emissions and Renewable Energy

At the start of the 2019 season, nineteen out of thirty MLB clubs had installed LED field lighting in their parks, a type of lighting that has proved to enhance fan experience and save 45% energy compared to standard lighting. LED lighting is also only directed where needed and is beamed with better uniformity, therefore reducing the negative repercussions of player's constant movement on the field. The New York Yankees have manipulated the opportunities of LED lighting so successfully that the energy saved is comparable to powering 45 homes (Wright, 2018). The Boston Red Sox have partnered with their local electricity supplier to offset 100% of the park's electricity consumption with wind and solar generation. Similarly, the New York Mets offset 100% of their carbon emissions by renewable energy certificates and voluntary emission reductions. Solar is also climacteric in the plight to reduce energy consumption, with ten clubs utilizing this power source. In San Diego, the Padres have installed the MLB's largest solar array and will produce over 12 million kWh over 25 years (Wright, 2018). Efficient, intentional renewable energy programs are the first step in establishing a successfully sustainable facility, and many clubs have demonstrated the socioeconomic opportunities that can arise from such implementation.

Water Management

During the 2019 All-Star Series in Cleveland, OH, the MLB implemented water filtration systems and supplied reusable water bottles to reduce single-use bottles purchases. Seven major league teams – Miami Marlins, Milwaukee Brewers, Washington

Nationals, San Francisco Giants, Baltimore Orioles, Atlanta Braves, and the Minnesota Twins – have gained LEED certification for their stadiums by efficient water management systems and reducing greenhouse gas emissions. In 2019, the Arizona Diamondbacks installed synthetic turf grass manufactured with natural, environmentally responsible materials. The turf substitute will reduce water consumption required for lawn maintenance by 90% per season, equating to nearly two million gallons preserved a year. Additionally, the Minnesota Twins implementation of a rainwater recycling system has the potential to purify and reuse almost 20 million gallons of rainwater. To adapt to the harsh Texas climate, the Rangers have developed an effective irrigation system redirecting water used during ballpark operations to filtrate it back into landscaping (MLB Earth Day, 2020). Implementing water management systems that can recycle and store water is becoming an increasingly important strategy as many American cities face histories of drought and higher levels of water taxing (Climate Reality, 2018). Stadiums are needing to adapt their water needs to better reflect the delicate state many cities are currently in, with expected levels of heightened crisis in the coming years.

Waste Assessments

The San Francisco Giants have dominated the field of recycling and waste diversion through aggressive separation and composting programs. The Giants' recycling center team sorts over eight million pounds of waste each season, diverting *over 94%* to recycling or compost facilities. The Club's waste diversion efforts have been recognized by the California Department of Resources Recycling and Recovery and, in 2012, were awarded the Governor's Environmental and Economic Leadership Award, the state's highest environmental honor (Hershkowitz, 2012). The Boston Red Sox and Pittsburgh

Pirates have implemented similarly aggressive waste reduction strategies, including single-stream waste sorting and diverting recycling out of landfills. The Washington Nationals and Minnesota Twins require all disposable foodservice ware to be certified compostable and all concession items to be recyclable or reusable. Using a bulk cooking oil system called OilMatic, the Los Angeles Angels clean and convert used waste oils into renewable biofuel. The system additionally reduces waste by limiting the packaging and delivery that contributes to oil's unfortunately damaging lifecycle. Using recycled plastic milk jugs as building material, the San Diego Padres constructed all their recycling bins and the Detroit Tigers made a section of fan bleacher seats. The Cincinnati Reds and Houston Astros donate excess food from events to local feeding organizations. In Los Angeles, the Dodgers redirect the green waste generated at the stadium into composted mulch spread across the grounds (Hershkowitz, 2012). The opportunity for waste elimination processes can reach far beyond the standard recycling structure, proven by the creativity that many clubs have adopted to comprehensively reduce waste, from plastic straws to kitchen oil.

4.2.3.2 Supply Chain Procurement Practices

Twelve major league clubs operate on-site gardens and/or farms, subsequently used for educational, environmental, and procurement processes. These green spaces are available for fans to experience and the harvested produce is cyclically implemented into the stadium's concessions, promoting closed-loop procurement and drastically reducing additional procurement impacts, including transportation, vendor costs, and sourcing. The gardens are representative of the clubs efforts to promote environmentalism at the local

level by providing a public, educational gathering space for events and fans. The Pittsburgh Pirates' garden produces over 300 pounds of fresh produce seasonally, which can be seen and consumed in premium seating area menus. The Washington Nationals strategized their growing seasons to be sustainable for three growing cycles, yielding constant production, economic stability, and limiting the negative consequences of monocropping (MLB Earth Day, 2020). This type of local and on-site procurement is an outstanding example of the type of creativity and dedication to sustainability that every sports organization should unequivocally support.

4.2.3.3 Transportation and Logistics

Transportation Management and Modes

Professional sports place a heavy burden on transportation-based pollution and the environmental by-products that accompany global transportation. The ramifications of spectator travel, weekly cross-country team flights, and transportation of vendor materials are a substantial and relatively unavoidable cost. The MLB experiences these transportation woes more desperately than other leagues: each team plays 162 games per season, totaling a league average of 2,430 games without including postseason. That outstanding number is double the NBA (1230 games/regular season) and nearly tenfold against the NFL (256 games/regular season). When taking the average number of fans per game across each league in 2018, the MLB hosts nearly 50 million more fans per season than the other two leagues must accommodate. That is 50 million more people who require transportation, 50 million more people who require sustenance provided in disposable service ware, and 50 million more people contributing to waste generation.

The MLB is in a complicated predicament of needing to implement a system that accounts for the heightened influx of spectators while maintaining the environmental missions of the league and clubs, and as of late there is limited evidence that explicates efforts from the league to reduce operations-based transportation pollution.

Business Travel and Commuting

The MLB Headquarters is located in the heart of New York City, where commuting is often unavoidable. Employees of the MLB are granted commuter benefits in their compensation and benefits packages to incentivize utilizing the extensive public transportation system (MLB Careers, 2020). Barring relatively unspecified commuter benefits, it is unclear if the MLB offers other opportunities to lighten the transportation footprint or if any effort is made to reduce the impact of logistics or fleet operations.

Multiple teams have begun the process of integrating more extensive public transportation systems to conveniently access their respective stadiums. The SF Giants have demonstrated nearly two decades of dedication to sustainable management and operations practices. One of their sustainability initiatives is exceedingly devoted in comparison to other teams and leagues, demonstrating a 75% reduction in conventional commuting choices for employees (MLB News, 2019). Giants executives have enforced appealing opportunities for ridesharing services and promoting the power of public transit to their employees and fans. The Atlanta Braves have implemented an extensive electric vehicle-charging program, which includes 60 charging stations in the parking lot of the ballpark, open to players, employees, and fans. Similarly, the Seattle Mariners charging stations – open 24/7 – have eliminated nearly 3,300 kg of car emissions. The Colorado Rockies host “Bike to the Game” days throughout the season where spectators are

incentivized to choose biking over driving to the ballpark. The Chicago Cubs are conveniently located near popular public transportation hubs, in which they consistently promote and incentivize public transportation, including free bicycle valet services for fans and employees. The Los Angeles Dodgers have set their eyes outside of the park, working with the city government to restructure the area surrounding the park to increase accommodations for public transportation, biking, and walking (MLB Earth Day, 2020).

4.2.3.4 Engagement

Player Contributions

Brent Suter, a left-handed Milwaukee Brewers pitcher, entered the league in 2016 and underwent Tommy John surgery in 2018, an unfortunately typical surgery for pitchers to repair torn ulnar collateral ligaments in the throwing elbow. Sidelined for nearly two seasons, Suter utilized his time on the disabled list to found an environmental initiative, ‘Strike Out Waste’. He has fully transformed the Brewers dugout to replace the hundreds of Styrofoam cups used daily with reusable water bottles, substituted plastic for reusable grocery bags, and has been crusading for additional ballclubs to incorporate solar and LED lighting in their stadiums (McCalvy, 2019). Daniel Norris of the Detroit Tigers has adopted a nomadic approach to reducing his personal transportation impacts; instead of flying to spring training each year, he drives a 1978 Volkswagen van from Tennessee to Arizona. Norris is an ambassador for 1% for the Planet, films adventure videos to promote environmental protections, and gives advice to other players looking to contribute. Nelson Cruz, an outfielder for the Seattle Mariners, has done extensive work in bringing sustainable infrastructure to his hometown Las Mantas de Santa Cruz,

Dominican Republic. These players' enthusiasm for responsible waste and energy consumption across the MLB has consequentially inspired other players, teams, and organizations to see the opportunities that sustainability has to incite real change (Chester, July 2018).

Fan Considerations

A study conducted by Andrea Weed on the effects of game-day promotions impacting game attendance and engagement concluded that the type of promotional material does not have a correlating relationship between choice of game or increased fans in attendance (Weed, 2015). However, this study refrained from investigating the heightened appeal for green games or environmentally-informative giveaway promotions. The results of this study lead to inquiry regarding sustainability initiatives for two reasons:

1. Would studying the appeal of green promotional activities produce contradictory findings than the dispersion of bobbleheads or hosting a singles night?
2. Regardless of the former question's conclusion, if the promotional giveaways are relatively un motivating for spectators' attendance, why not make all promotions environmentally responsible or educational?

If fans are to attend the games on a similar level regardless of what the first 10,000 people would receive as gifts, promoting environmentalism through an already established program is a seemingly obvious change to implement across the league.

<p><i>Total Performance Score: 16/20</i></p>
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Score Rationale

It is evident that MLB teams are exceptional at implementing sustainability initiatives within their respective stadiums. Teams have quite successfully implemented

sustainability initiatives at the operations level, with many stadiums addressing multiple types of environmental concern.

<u>Total MLB Sustainability Score: 29/45</u>
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4.3 Applying a Sustainability Framework to the National Basketball League (NBA)

The NBA has been making headlines for their relentless vocalization of relevant issues, specializing in racial injustices and promoting education programs. The actions of the NBA and affiliated teams reveals supportive executive leadership and fiercely protective coaches demonstrated by providing a safe platform for players to express their political opinions. However, environmental concerns are noticeably absent from the limelight. The saving grace of the NBA's dedication to a sustainable future is the efforts executed by individual teams. The league as an entity lacks an overarching voice of reason and effort that is necessary for maximizing efficiency of sustainable endeavors. Nevertheless, the work spearheaded by third-party organizations have propelled the NBA to a respectable status of actively pursuing a more comprehensively sustainability framework for the upcoming years. The success of the actions will lie in the promotional components that influence sports and non-sports fans alike, including tactics the NBA has been previously successful in when influencing fashion, promoting political commentary, and empowering youth.

4.3.1 Executive Governance and Stakeholder Engagement

Corporate Oversight and Systems

Sustainability at the corporate level is relatively undiscussed. In fact, sustainability and/or environmental efforts are not mentioned in any of the league website's department summaries, employee directories, or career categories. Although certain individual teams have begun to incorporate sustainability into employee's job responsibilities, the executive front office is lacking in incorporating environmentally focused values into the company mission. They do, however, prioritize social responsibility and community engagement, but the initiatives mainly lie with social justice reform and local development, which is a positive sign of moving towards incorporating environmental justice into the conversation. The NBA heavily relies on third-party organizations to lead, execute, and deliver information regarding the league's trackable data in regards to sustainability endeavors. There are two director-level leaders in promoting conscious sustainability plans and ensuring CSR throughout all levels of management: Kathy Behrens and Eric DiMiceli. In August 2019, I conducted a phone interview with Kathy Behrens, President of Social Responsibility and Player Programs for the NBA. As one of the highest executives in the league and one of the most powerful women in sports, she "oversees all NBA programs that coordinate league and player social responsibility efforts, promote youth basketball development, support player growth and education, and enhance the marketing opportunities for current and former players." (NBA Careers, 2020). During our interview, I inquired on what proportion of her day-to-day is dedicated to organizing sustainability efforts within the league. She was unable to provide a definite answer.

I also spoke with Eric DiMiceli, Director of Global Corporate Social Responsibility for the NBA in regards to any pertinent information he has about the sustainability initiatives currently in place within his organization, in addition to inquiring about the corporate structure of communication. DiMiceli informed me that they choose to conduct sustainability operations using mainly third-party organizations because the NBA lacks the resources and available time to track the follow-ups and analytical conclusions of many off-site initiatives, including the international programs the NBA leads. With the help of outside NGOs, the NBA is able to conduct their part for the environment and promote key marketing opportunities for smaller organizations. Additionally, he explained the NBA's awareness-focused campaigns to address environmental causes for their fans and employees and the challenges the NBA faces with promoting cohesivity between teams and the league. He also informed me of a monthly meeting held between NBA teams and a secondary meeting between professional sports leagues to discuss trends in sustainability and how fellow sports organizations can assist one another in collaborative initiatives. DiMiceli alleviated many concerns I inquired about the functionality of the NBA's environmental structure, informing me that the facilities department is largely in charge of initiating sustainable opportunities within the league and teams.

Substantial Stakeholder Dialog and Engagement

In Rosentraub's Sports Stakeholder Pyramid, the players rank in the second tier out of five. Typically, players are considered stakeholders for the incentive to earn high salaries and win championships. However, they are also provided marketing and collaboration opportunities that can contribute to the local community and participate in

preserving the global environment (Rosentraub, 2000). NBA players are active participants in social justice reform, specifically with local youth groups and sports-related programs. As a result of the Covid-19 pandemic, multiple players including Kevin Love, Joel Embiid, and Blake Griffin donated a portion of their salaries to compensate hourly employees who lost their income as a result of all sporting events being postponed (NBPA, 2020). NBA players are unapologetically vocal about their opinions on a range of social injustices, including “race relations, the gulf between liberals and conservatives, [and] American nativism vs. globalism...” (Branch, 2018). This is a direct result of the league’s unified force dedicated to protecting and supporting players’ right to free speech and to protest. Additionally, the league prides itself on being a league of players, most visible in the actions led by the National Basketball Players Association (NBPA), a players union that is comprehensive, representative, and provides opportunities for additional marketing programs to advance players’ careers, both current and retired (NBPA, 2020). The league’s relentlessness to support and defend players’ choices to wear their beliefs on their shooting sleeve is how all leagues should prioritize players because, without them in the game, what’s left?

Strategic Collaboration

The NBA has teamed up with the Green Sports Alliance, the Natural Resource Defense Center (NRDC), and, in 2019, signed onto the UN Framework Convention on Climate Change’s (UNFCCC) Sports for Climate Action Framework, the first US professional sports league to do so. The NBA is a crucial addition to the UN’s budding framework, centered around five principals:

“Principal 1. Undertake systematic efforts to promote greater environmental responsibility
Principal 2. Reduce overall climate impact
Principal 3. Educate for climate action
Principal 4. Promote sustainable and responsible consumption
Principal 5. Advocate for climate action through communication”
(United Nations Climate Change, 2018)

It has been nearly a year since the NBA signed up to participate in the UN’s framework, which clearly outlines the objectives and responsibilities that each principal requires members to adhere to. Principal 1 states that, at minimum, sports organizations should contribute to “establishing responsibility for sustainability at the board level by defining sustainability strategies and implementing robust approaches to reducing their climate impact,” (United Nations, 2018). Thus far, to public knowledge, the NBA has not announced any changes at the executive board level. Principal 5 outlines ideas and opportunities for organizations to promote their sustainability goals with the public through announcement resources including but not limited to broadcasting channels, social media, and association/federal networks. The NBA has begun to tackle this goal by announcing their collaborations with the UNFCCC and the Green Sports Alliance on the NBA Green website, but the “articles” about the respective collaborations lead directly to the organization websites without any additional information on how they plan to collaborate.

NBA Green is one of eight subprograms under the NBA Cares organization, the league’s social responsibility program that strives to address issues that face the global society. The NBA, whether intentionally or not, keeps the majority of information regarding environmental efforts exclusive to this site, yet nearly every page is seemingly unfinished or include links that lead to invalid sources. On a “Did you Know?” page on

NBA Green, there is a list of elusive, vague efforts that “many NBA” teams and arenas are participating in, concluding with encouraging ways fans can “reduce, reuse, and recycle” (NBA Green, 2020). At the conclusion of the page, there is a link to the NRDC Greening Advisor for “the latest full list of tips from NRDC” to provide fans additional ways to adopt a greener lifestyle; the link is invalid. On the NBA Green mission page, the only information is a short statement as follows:

“Through NBA Green, the NBA has partnered with the Green Sports Alliance to generate awareness and funds for protecting the environment. The NBA is taking steps to be more environmentally friendly and will continue to explore ways of reducing its impact on the environment through community outreach programs, generating awareness among fans and greening its operations.” (NBA Green, 2020)

There is an NBA section on the Green Sports Alliance site, but it leads to an empty page. Although this statement is a positive step towards incorporating sustainability throughout league-wide operations, it lacks specifics and provides a hyperlink to the general Green Sports Alliance homepage, which also lacks concrete examples on how the NBA plans to adhere to and support their mission.

Total Executive Governance and Stakeholder Engagement Score: 8/15

Score Rationale

The unreliable placement of environmental responsibility within the corporate structure of the NBA leaves room for miscommunication and a lack of accountability when addressing sustainability opportunities. Although there are incredibly capable people working within the ranks, like Eric DiMiceli, there is a notable lack of support system behind his intents. That being said, the strategic partnerships available for the NBA opens the conversation to include diverse groups in the conversation.

4.3.2 Sustainability Performance Signaling

Standards for Disclosure and Implementation

In 2012, the NRDC released the “Game Changer Report”, detailing how the sports industry was preparing to “save the environment”. The report’s director was Allen Hershkowitz, a senior scientist for the NRDC and co-founder of the Green Sports Alliance. The largest section dedicated to the NBA’s sustainability endeavors focused on the 2009 All-Star Game and Green Week, an event that occurred three years prior to the publication of the report. Additional case studies analyzed for the report included reporting on the Miami Heat’s success with acquiring corporate sponsors as a direct result of their sustainability contributions (Hershkowitz, 2012). The information outlined in the Heat’s section of the report is a prime example of how increasing an organization’s public environmental efforts has direct economic and cultural effects.

Vehicles for Disclosure and Assurance

The NBA has proved the most difficult to find verified, quantitative information about the specifics of sustainability initiatives. Not only is there limited information published, but the majority is from unreliable online sources and provides little-to-no actual data. The majority of information that provides statistical information regarding the NBA’s sustainability efforts are from 2014 and prior, often mentioning efforts that have not been implemented yet and lack subsequent links to where the verified information originated. For example, multiple sources, including the NBA and NRDC, stated that the league has initiated an online resource called ‘Mosaic’ to track their environmental impact. The system “operates as an online tool that allows all NBA teams to track and analyze cost-saving measures that could implement while trying to reduce

their carbon footprint”, which, if legitimate, would be an exceptional way for teams to build on one another’s endeavors (McCullough, 2017). When I inquired about the functionality of Mosaic during my interview with Eric DiMiceli, he stated that the league no longer uses Mosaic and has moved onto using a platform called South Pole to track league and team sustainability efforts. However, the majority of data consolidation occurs internally from the facilities department and is distributed across the departments.

I identified another communication lapse between the NBA and an outside organization. In the previously mentioned Game report produced by the NRDC, it states that: “NRDC created and customized Greening Advisors that were distributed to all NBA teams and posted on the NBA’s HomeCourt intranet site. These web-based advisors provided a comprehensive toolkit for teams and arenas to green their operations.” (Hershkowitz, 2012). I was unable to find any information connecting relevant sustainability NBA information to a HomeCourt database.

<i>Total Disclosure Score: 5/10</i>

Score Rationale

The NBA’s partnership with the Green Sports Alliance is a move towards a more inclusive discussion about addressing the league’s contributions to climate change, but the questionable validity of the Alliance’s sweeping claims of initiatives leaves room for improvement. Establishing a more official system of tracking sustainability programs will greatly benefit the NBA’s missions to address its ecological footprint.

4.3.3 Operations Management

4.3.3.1 Operations

Greenhouse Gas Emissions and Renewable Energy

Compared to the league as an entity, individual teams have demonstrated more comprehensive goals to implement sustainability throughout operations. Eight teams' arenas have achieved LEED certification: Miami Heat, Sacramento Kings, Portland Trail Blazers, Golden State Warriors, Houston Rockets, Brooklyn Nets, Orlando Magic, and Atlanta Hawks. The Portland Trail Blazers have partnered with local utility companies to offset 100% of their energy into renewable energy programs and completed 53 energy projects to comparably save over 7.2 million miles of vehicle gas emissions. The Blazers also generate wind energy from a local farm to ensure that "environmental and economic benefits are felt in the communities where [their] fans live, learn, and play." (Trail Blazers, 2020). The "3's for Trees" program plants three trees for every three-pointer scored during the season, totaling 2,487 trees for the 2019-2020 season. The Miami Heat save \$1.6 million annually from their "greening and responsible energy consumption measures" and garnered over \$1 million in corporate sponsorships dedicated to obtaining LEED certification for the arena (Hershkowitz, 2012). Staples Center, home to the Los Angeles Lakers and Los Angeles Clippers, implemented a 1,727-panel solar array and high-efficiency lighting to become the first US arena to receive ISO 14001 certification⁶. The ISO certification allowed for greater reach through the organization by including all levels of management into addressing sustainability, including human resources, vendors, and guest services.

⁶ The ISO 14001 certification is a framework outlining an organization's environmental practices and goals, including how to hold employees responsible for environmental tasks. Unlike LEED, ISO 14001 requires third-party auditing to ensure the program is on track and following federal laws.

The Golden State Warriors moved into the newly constructed Chase Center in San Francisco, CA for the 2019-2020 season. The Chase Center was built with an eco-conscious mindset, including but not limited to low VOC chemicals for interior and exterior finishes and a light-colored roofing material with a high solar reflectance index (SRI). The center is powered by wind energy which will “offset 70% of the facility’s electrical use for two years.” (Chase Center, 2019). When the Sacramento Kings began construction on their new Golden 1 Center, sustainability was “etched in the project from the very beginning, from venue construction to maintenance,” resulting in the first 100% solar-powered professional sports venue (Campelli, 2018).

Water Management

The Miami Heat permanently installed water meters to track and report weekly water consumption, including irrigation. This has saved over \$10,000 annually by addressing the management of landscaping drip systems. The Portland Trail Blazers have restored 488 million gallons of water to over 30 miles of the Deschutes River Conservancy and a program where, by simply texting “Blazers” to 47474, 1,000 gallons of water will be restored to Oregon’s river. The Brooklyn Nets Barclays Center’s green roof reduces the arena’s stormwater runoff by 2 million gallons annually and minimizes the heat absorbed by the arena. The Milwaukee Bucks, Cleveland Cavaliers, and Houston Rockets have implemented water management systems to reduce consumption, including low-flow toilets and choosing native landscaping that requires lower levels of water maintenance (Beals, 2014). Additionally, the Golden State Warriors’ Chase Center collects and treats greywater for lavatories use (Chase Center, 2019).

Waste Assessments

In 2008, the Portland Trail Blazers diverted 38% of their waste from landfills; in 2018, it was up to 87% as a result of their composting program that allows vendors to divert over 1.5 million pounds of waste annually and composting 100% of food waste. The Blazers upcycle old team gear into products that can be purchased at their clothing center, use only compostable serveware, and have donated nearly 30,000 meals to families in the last six years. During construction of the Orlando Magic's Amway Center arena, over 8,000 tons of construction waste was diverted from landfills, used 20% recycled and 30% regionally sourced materials for construction, and thoughtfully chose a location that was easily accessible by public transportation (Orlando Magic, 2011).

4.3.3.2 Supply Chain Procurement Practices

The Miami Heat has established environmentally responsible procurement practices and solid waste purchasing policies, resulting in 43% of purchases to be deemed sustainable (Hershkowitz, 2012). The Portland Trail Blazers source 55% of all food and beverage within a 100-mile radius and promote local concession stands throughout the arena, including a local beer partner which transports their beer to the area via walking with a handcart. At the Sacramento King's impressively sustainable arena, approximately 90% of food and beverage are sourced within a 150-mile radius and 36% of the construction materials come from recycled sources, including using material from the structures that were demolished to build the new arena. The Portland Trail Blazers have partnered with ServiceMaster who cleans the arena with environmentally friendly practices and saves 400,000 gallons of water waste annually. All cleaning supplies meet

LEED standards and all toilet paper and paper towels are 100% recycled. The offsetting programs implemented by the Blazers aids in preventing deforestation in Kenya and the Democratic Republic of the Congo (Hershkowitz, 2012).

4.3.3.3 Transportation and Logistics

Transportation Management and Modes

The Staples Center in Los Angeles, CA incentivizes spectators to use public transportation through discounted tickets and promotions, in addition to implementing bike racks on the property. The Miami Heat, located in a city with an average annual high of 81 degrees and low of 72 degrees, made strides to reduce their contribution to a “heat-island effect” by putting their parking lots underground (AmericanAirlines Arena, n.d.). The Dallas Mavericks have collaborated with the Carbonfund Foundation to offset their corporate business travel impacts. As a result, their mitigation has assisted in protecting nearly 500,000 acres of the Amazon rainforest and billions of pounds of CO₂ emissions (Carbonfund.org, 2019). The Portland Trail Blazers hired Green Building Services – an external consultant – who calculated that 58% of their carbon footprint relates to guest commuting, 11% employee commuting, and 4% business travel. Portland’s executives took the statistics seriously and were deeply intertwined with enabling the success of environmental achievements which, according to the team’s director of sustainability Justin Zeulner, was a key reason that the sustainability team was able to be so successful so quickly. The team applied for local and federal grants to implement electric vehicle charging stations and bike infrastructures, saving \$1 million while investing \$500,000 across three years. Now, more than 30% of Blazers spectators’ transportation is via light

rail, bus, biking, or walking. The Blazers teamed up with Christenson Electric to host 26 electric parking spots, the largest concentration of electric vehicle stations in the entire state (Trail Blazers, 2020).

Business Travel and Commuting

The largest contribution that professional sports teams have, yet is relatively unavoidable, is air travel. Teams often fly two to three times a week to new cities during the season. In the 2018-2019 season, teams traveled more than 1.3 million air miles. To rephrase, in the 2018-2019 season, teams exerted 31,842 metric tons of carbon dioxide into the atmosphere. Teams on the West Coast face higher emission rates due to the lack of nearby teams, flying farther and more frequently (Varriano, 2019). A solution the depleted Western American basketball presence has the ability to strengthen the Western Conference and decrease CO₂ emissions by adding expansion teams to the coast, most reasonably in Seattle, WA and Las Vegas, NV. Adding more teams to the league roster sounds counterintuitive for decreasing the carbon footprint of the league as a whole, but the reduction of frequent cross-country flights will quickly pay off. Beginning to grasp the seriousness of airline travel emissions is absolutely essential for looking to a more sustainable future.

4.3.3.4 Engagement

Player Contributions

Lauri Markkanen, power forward for the Chicago Bulls, is part of his homeland Finland's '#DontChoke' campaign, promoting a no-red-meat lifestyle. Markkanen uses his social media presence to promote his sustainable lifestyle, including minimizing

electricity and driving an electric car (Mules, 2019). The players' combined contribution to the Covid-19 pandemic has totaled nearly \$40 million in donations and 1.5 million meals, some paying for staff members' entire lost paychecks. NBA players are contractually required to participate in multiple community volunteering events each season and often choose to go above and beyond the call to show physical and financial support to their cities, most often with human rights issues and youth engagement (Woike, 2020). This contractual requirement for supporting their local community provides an idyllic opportunity to add an environmental volunteering requirement to contracts. If cities see their NBA superstars contributing positively for their community, the positive reverberations would be immense.

Fan Considerations

In 2017, the NBA launched the Energy All-Stars 'Time Out Tips' campaign with the intention of "[becoming] one of the most environmentally impactful campaigns ever promoted by a sports organization." (Hershkowitz, 2017). It featured legendary former NBA and WNBA players whose goal was to inspire 1 million energy-saving actions through fan engagement. After completing a sustainable activity, fans would text a number to confirm and the estimated collective actions were calculated. The six energy-saving actions promoted were:

1. Blocking drafts by weatherproofing windows and doors
2. Unplugging electronics when they're not being used
3. Switching from warm- to cold-water washing
4. Setting computers and other electronic devices to sleep mode
5. Replacing the five most-used light bulbs with more efficient bulbs
6. Installing a programmable thermostat, or adjusting the settings a few degrees (Hershkowitz, 2017).

The decision to involve fans in the energy-specific initiative came from phrasing the initiative to inform fans on the unexpected impacts that small household changes can have on the global environment if everyone does their part. US households consume 22.5% of the country's energy and the average house *wastes* 3,400 kWh yearly. The NBA projected that tens of thousands of emission tons would be avoided by the campaign and thousands of fans would be creatively educated on important environmental concerns (Hershkowitz, 2017).

Total Performance Score: 12/20

Score Rationale

Many teams have made great progress in including sustainable practices into facility operations and community development. However, with implementing structural changes, there is always more work to be done. While many teams are making valiant efforts to address their ecological footprint, there are still teams who have exerted limited time and energy into tackling these issues.

Total NBA Sustainability Score: 25/45

4.4 Applying a Sustainability Framework to the National Football League

The National Football League has been pursuing a greener operations system for the past twenty-five years, initially starting with a small recycling program during Super Bowl XXVIII. Presently, the NFL and its teams' sustainability initiatives combine to save

an annual \$100 million (Campelli, 2019). The NFL accounts for the way other organizations have implemented their environmental strategies, including public service announcements and providing easily accommodatable examples to engage fans. Jack Groh, director of the NFL's environmental program 'NFL Green' believes the way to "get things done" is to entertain, not to preach. Utilizing the power of entertainment and collaboration, the NFL's initiatives highlight the opportunities readily available for leagues, teams, and fans to engage in. The Super Bowl is the most globally anticipated event in sports and television history, and Groh knows it; "We are the NFL, we have a different approach to this kind of stuff. We think about sustainability in everything." (Campelli, 2019).

4.4.1 Executive Governance and Stakeholder Engagement

Corporate Oversight and Systems

Historically, the NFL has lacked corporate cohesivity when addressing controversial issues at the league and team level. In 2016, San Francisco 49ers quarterback Colin Kaepernick chose to kneel during the playing of the National Anthem in protest against police brutality and the treatment of African Americans and minorities. He told NFL Media in an exclusive post-game interview that, "I am not going to stand up to show pride in a flag for a country that oppresses black people and people of color," (Wyche, 2016). Although the 49ers chose to support their player's decision to refrain from participating in the tradition, the NFL league organization proved unable to reach a decision for reprimanding Kaepernick. Eventually, the owners voted to respect his decision and did not implement any rules regarding the anthem. But the damage had

already been done. NFL commissioner Roger Goodell claimed he doesn't "necessarily agree with what [Kaepernick's] doing," and speaks for fellow board executives when saying "we believe very strongly in patriotism in the NFL." (Mather, 2019). Kaepernick's last game was January 1, 2017 because his contract was nullified and he has yet to be signed by another team. Aside from the relatively vague statement from the NFL, there was scarce additional support from the organization and the silence spoke volumes.

This collapse of player-ownership relations sprung a tumultuous CSR future for the NFL, who rebutted by addressing other sociocultural issues in an effort to rebrand the league's legitimacy, one of which was increased promotion of NFL Green initiatives. The systematic structure of the NFL executive board is uncondusive to addressing challenges that face the entire league, primarily due to the size of the board. The Executive Committee includes one representative from all thirty-two teams, in addition to the league commissioner, and most changes in game ruling require three-fourths board approval. Comparatively, there are only eight MLB executives who lead similar decision-making roles. This is not to implicate that, because of board size, the MLB is more effective in implementing sustainability measures, but it is worth noting that decision accuracy is often maximized by smaller group sizes (Kao, 2014). Discussing environmental efforts at the league-level has proven challenging when thirty-three people are involved. As a result, the majority of addressing environmental responsibility falls on the NFL Green program – primarily led by Jack Groh – and individual teams (Williams, 2015).

A team that has exceptionally incorporated a strong, united front for highlighting environmental efforts is the Philadelphia Eagles. The Eagles have established an

environmental green team within the front offices that include staff from all departments to ensure “everyone [is] on the same page [where they] decide how to proceed with our green mission in order to develop a strong program.” (Hershkowitz, 2012). Team executives met with employees to introduce environmental issues affecting the stadium and led trainings on how to approach situations using an environmental mindset. An end-of-season meeting is held where every department produces their annual data for review, then work together to address solutions certain departments can implement to reduce their respective ecological impact. Don Smolenski, Eagles president, states, “If you don’t have the support of all your managers, department heads, and all employees, you won’t be able to effectively implement your green programs.” (Hershkowitz, 2012). Educating staff has been the largest cause of success for the efficiency of Philadelphia’s stadium, an actuality that should kickstart other teams’ and leagues’ reluctance to embrace employees in solving environmental matters.

Substantial Stakeholder Dialog and Engagement

Director Groh claims his concerns lie less with “greening” and more so with turning cities into self-sustaining, socioeconomically responsible communities for all residents. Communicating with and incorporating stakeholders is why NFL Green has been extraordinarily successful in incorporating the social element of human nature into building a sustainable future, together (Hershkowitz, 2012). A groundbreaking collaboration for the Super Bowl’s efforts to reduce the event’s ecological footprint includes a sustainability corporate sponsorship with Verizon, the first of its kind (see Appendix A2). The partnership has led to twenty-one tree planting events, three pollinating events, and collecting over 53,000 pounds of electronic recycling (Verizon,

2017). Groh expresses the gratitude and fortune that has come from partnering with Verizon, which has expanded the annual budget dedicated to environmental issues exponentially and has allowed for the expansion of many programs. Groh’s distinction of Verizon providing actual hands-on work throughout communities differs from similar partnerships, where the funding party often only contributes to benefit from a CSR green marketing scheme (Campelli, 2019).



Figure 2: Map of Atlanta, GA illustrating locations of Verizon-led initiatives

From an individual team standpoint, Darryl Benge, assistant general manager of CenturyLink Field and home to the Seattle Seahawks, has incorporated one of the most comprehensive sustainability systems into operations and stadium facilities. Benge expressed that the team’s decision to incorporate sustainability into operations was a response to fans expressing their interest for a greener space. Seattle consistently tops the

list of America's most sustainable cities, so the decision to turn the city's most revered sports team into an environmentally-focused organization was palpable (Addison, 2017).

Strategic Collaboration

The past ten Super Bowls have ranked as the ten most-watched of all-time, with the past eight being the most-watched programs in US history, especially the 2015 Seattle Seahawks versus New England Patriots game topping 114.4 million viewers (Sports Media Watch, 2020). The NFL understands the potential impact this type of viewership can have and aims to incorporate sustainability programs into stadium operations and televised environmental reminders throughout the game. The environmental impact of an event of this size is not only a burden on the stadium, but on the entire city that is fortunate enough to host each year; it requires hundreds of thousands of feet of decorative fabric, tons of timber and building materials, and often the need to build entire offices from the ground up. For the past twenty-five years, the city hosting the Super Bowl has "[worked] with local partners to develop and implement a wide array of sustainability projects," giving attention to ensuring that materials used for the singular event can be multipurposed in a recovery network to provide an additional lifecycle for the items⁷ (NFL Green, 2012). From the repurposing program, the NFL has enlisted over ninety nonprofits to maximize inclusivity and expenditures of the often once-used materials.

One of these programs, assisted by the US Forest Service, is a tree planting program in the host-city community during the Super Bowl and produces annual tracking information about the trees' continual environmental benefits. Similarly, the Green Bay Packers have also teamed up with the US Forestry Service and the Wisconsin Department

⁷ The recycling and upcycling of the Super Bowl materials was so successful that Groh spent 18 months educating the X Games directors on how to host a similar repurposing event.

of Natural Resources to establish ‘First Downs for Trees’, planting a tree for every first down made during the season to offset the team’s annual transportation emissions. Since 2011, over 5,100 trees have been planted throughout the community, resulting in nearly \$25 million in benefits from stormwater runoff reduction and air quality improvements (Packers, 2019). In conclusion, the NFL has done an exceptional job utilizing the power of strategic collaboration by teaming up with organizations – large and small – to maximize marketing opportunities and impose a positive environmental impact on American cities. The NFL has clearly thought through the stages of procurement and disposal with a sustainability mindset, lightening the environmental and economic impacts that Super Bowl host-cities are responsible for.

Total Executive Governance and Stakeholder Engagement Score: 10/15

Score Rationale

The work accomplished by Jack Groh and his NFL Green team has produced valuable partnerships and increased conversation about the benefits of adopting a corporate environmental mindset. The collaboration between the NFL and the annual Super Bowl host city shows great intent for structuring an event around sustainability.

4.4.2 Sustainability Performance Signaling

Standards for Disclosure and Implementation

The NFL releases an annual social responsibility report to summarize their work to address education and economic advancements, police and community relations, and criminal justice reform. In 2019’s sixty-page report, only one page outlined the NFL

Green initiatives, an unfortunately degrading oversight for the work conducted by the program. The Minnesota Vikings stadium, the first US sports facility to achieve LEED Platinum for operations and maintenance, uses a platform called Arc to monitor their sustainability progress on a monthly tracking system, including water and energy consumption, waste management, and air quality. The data collected also tracks the way the stadium interacts with spectators and employees, which resulted in implementing an AtmosAir system that lowers VOC concentrations during games (Karr, 2016). The Philadelphia Eagles ‘Go Green’ campaign engages fans to acknowledge the stadium’s and their individual carbon footprint through recycling promotions, water conservation solutions, and composting initiatives (Karr, 2016). In an effort to include spectators in their sustainability efforts, the San Francisco 49ers’ stadium has an interactive display depicting real-time building operations focused on sustainability, including energy measurements and water monitoring. When spectators are able to visualize and comprehend the environmental efforts being conducted by their team, it is more tangible for discussion and potentially bringing the mindset into their homes. Efficient disclosure methods are a crucial addition to the programs implemented by the NFL.

Vehicles for Disclosure and Assurance

The size of the NFL’s governing board proves challenging in appeasing the mission and goals of all members. Appointing one member of each team to the executive board does, however, provide a space for frequent meetings to discuss the efforts conducted by individual teams with the opportunity to collaborate on environmental efforts. For example, the strategies led by the Philadelphia Eagles have been extraordinarily successful in comparison to its counterparts, so these meetings provide an

opportunity for the Eagles sustainability leaders to divulge the specifics of their programs to educate others. The NFL Green program is more expansive than the sustainability initiatives of the MLB and NBA, as they set more goals and update the website more frequently with current and anticipated sustainability events. However, statistics are notably lacking in many documents published by the NFL, alluding to either a reluctance to publicize the actual productivity of their initiatives, or an inability to divulge the statistics due to an agreement with third-party organizers.

Total Disclosure Score: 5/10

Score Rationale

Similarly to the other aforementioned leagues, transparent and verified sustainability reporting is a major issue in professional sports. Although the NFL does produce an annual CSR report, mentions of environmental initiatives are sparse. The large board of directors leaves room for unresolved topics and a heightened inability to reach a collective decision on sustainability-related topics.

4.4.3 Operations Management

4.4.3.1 Operations

Greenhouse Gas Emissions and Renewable Energy

The Super Bowl is the largest single event contributor of energy – and largest coalition of viewers – during the entire NFL season, so many of the league’s sustainability efforts are directed to this one event. Renewable energy credits (REC) are purchased to offset 100% of all consumed energy from the designated game venue; but,

as previously stated, carbon offsetting via REC purchases is an unsustainable way to approach the increasing challenge of controlling greenhouse gas emissions.

The Washington Redskins, Atlanta Falcons, and Houston Texans have all implemented extensive solar arrays that capitalize on the economic benefits of creating and storing energy, in addition to reducing local heat island effects. At MetLife Stadium, the 350-kW solar array harnesses enough energy to support the stadium's daily energy consumption. The Philadelphia Eagles stadium is such an important feat in environmentalism that the stadium consumes *zero* electricity from the local power grid by using a combination of on-site wind, solar, and biofuel. In fact, the stadium generates so much power that it sells excess energy back into the power grid, sometimes up to six-times the energy required for home games. The innovative energy program will save the team \$60 million over 20 years (Karr, 2016).

Water Management

The implication that many teams have refrained from participating in even the simplest emission-avoidance procedures does not bode well for the other crucially important forms of sustainable operations that pose heightened implementation challenges, including water management, transportation logistics, and environmental education. For example, water consumption during NFL games is substantial enough to warrant concerns over the implications of how to retroactively manage the irrigation systems already in place. At full stadium capacity, 75,000 people will be in attendance, each of which will conservatively demand 3 gallons of water per capita (person/attendee). Based on capacity and consumption, every NFL game requires 225,000 gallons/day solely devoted to spectator usage during the ten home games each team plays (Caprio,

2015). Additional water is required for cooling towers and discharging heat compiled by the air conditioning process, which requires two towers equipped with three 750-ton cells per cooling tower for addressing garnered heat during the game. The towers are operational for an average of 8-hours per gameday, totaling: 270 gallons/minute * 60 minutes/hour * 8 hours = 129,000 gallons/day. The amount of water consumed is, at minimum, 354,000 gallons/game – not including field maintenance, stadium cleaning stipulations, and team consumption. Additionally, if the stadium hosts an average of 20 non-NFL related events per year, each at a moderate 50% capacity, another 242,100 gallons will be required to support the functions of said events. For the other 335 days a year, simply maintaining and operating an NFL stadium requires 85,000 gallons/day⁸ of proposed baseline water demand (Caprio, 2015). In total, the average NFL stadium's water consumption is as follows:

$$\begin{aligned} &(\text{NFL home game: } 354,000 \text{ gallons/day} * 10 \text{ games/season}) + (\text{Non-NFL events:} \\ &242,100 \text{ gallons/day} * 20 \text{ events/year}) + (\text{Operational-only days: } 85,000 \\ &\text{gallons/day} * 335 \text{ days/year}) = \mathbf{36,857,000 \text{ gallons/year.}} \end{aligned}$$

Well over half of that staggering statistic comes from idling upkeep and unsustainable irrigation systems during off-days, dwindling the city's water supply. Cities and even entire states are fast-tracked to run out of water in the coming years, a fact undiscussed in NFL reporting.

Waste Assessments

As part of one Super Bowl initiative dedicated to sustainability-focused operations, a thorough solid waste management program has been implemented in a variety of setting, not just the featured game stadium. The NFL Experience, Media

⁸ Average NFL Stadium: 17 net-acres * required 5,000 gallons/net acre-day = 85,000 gallons/day

Centers, and local hotels are also involved in accounting for the environmental impact of the event. Unserved food from the 2020 Super Bowl totaled over 35,000 pounds and, although it was donated to local residents in need, that number desperately requires reevaluation to reduce energy wasted on food preparation for future Super Bowls and regular season games (NFL Twitter, 2020). Additionally, in the weeks leading up to the Super Bowl, a program called the Super Kids-Super Sharing Sports Equipment and Book Donation project incentivizes students to donate items to be distributed to local youth organizations. The 2019 donation program recovered over 40,000 pieces of sporting equipment and school supplies that will go to children without access to these materials. Not only did the program support local youth, but it prevented 40,000 pieces of usable gear from entering a landfill (Oliviero, 2019).

The Philadelphia Eagles have maintained a 99% waste diversion rate since 2012, equating to reducing landfill additions by 1.7 million pounds annually. In Seattle, the Seahawks have been using compost-only service since 2010, along with an educational campaign informing fans about how the program works and how/where to dispose of different types of food and beverage served at the stadium (Game Changer Report). Since 80-90% of Seattle's fan base is season ticket holders, the accessibility of promoting the team's environmental initiatives is efficient and easy for fans to remember for future games they will likely attend.

4.4.3.2 Supply Chain Procurement Practices

Hosting an event relative to the size and desirability of the Super Bowl can have a contradictory impact on the host-city, similar to countries hosting the World Cup or

Olympics. Although the economic and marketing benefits of being a host city are appealing, the environmental factors of accommodating a colossal event can be detrimental. The NFL accepts this challenge and has committed to leaving the host city better than it was before. Each season, the NFL Environmental Program maintains a record of the nonprofits and local contacts that the operators communicated with while implementing the sustainability aspects of the game, then shares the information with local governance to be better equipped to handle future events of similar volume (Evans, 2019). A lack of knowledge often obstructs the potential for overarching sustainability efforts, but the database offers convenient accessibility to city-specific endeavors. From a team perspective, the Philadelphia Eagles have intertwined sustainability into nearly every aspect of their supply chain. The dedication to comprehensive sustainability throughout the operations system extends to vendors, mandating that all vendors use green-certified materials in the stadium (Hershkowitz, 2012).

4.4.3.3 Transportation and Logistics

Transportation Management and Modes

Similarly to the issue of poor water management, the challenge of equipping stadiums with green transportation options is relatively unresolved. For the 2020 Super Bowl in Miami, FL., ridesharing services (ex: Uber, Lyft) worked with law enforcement and event organizations to develop a system that would make ridesharing as accessible as possible. However, the results were less than ideal. “Due to limited road access and spatial constraints, drivers were not able to access the designated rideshare lot. As a

result, contingency measures were taken to reduce congestion, by dispersing riders and drivers to additional pickup points in the surrounding area,” resulting in heated confrontations between police, Super Bowl organizers, and spectators desperate to get home (Vassolo, 2020). Miami-Dade County provided eleven buses, but failed to properly promote this alternative, cheaper option to fans. Responsibility for the communication breakdown and failure to account for the basic transportation operations required to host a Super Bowl fell on the NFL.

Investigating further, findings show that the Super Bowl has a history of failed transportation availability. Super Bowl XLVIII, hosted at MetLife Stadium in New Jersey, is traditionally a location easily accessible by multiple forms of public transportation, but there is a high proportion of visiting fans uneducated on the local public transportation system. NJ Transit and the NFL jointly developed ‘The Playbook’, a plan outlining controlling mass transit services during the Super Bowl. The cooperation of multiple agencies was required to seamlessly manage different aspects of the transportation process, including enhancing rail services and affiliated facilities, offering a Super Pass for unlimited riding during Super Bowl week, and providing an NFL-operated Fan Express bus from nine different locations across the area. However, after an “unexpected” number of fans chose the public rail service, the transit system collapsed. Security, the number of running trains, and entrance into the stadium all exceeded the anticipated levels, resulting in many fans waiting well over an hour for transportation assistance to and from the game (Gopalakrishna, 2019). The NFL must direct attention to the uncontrolled public transportation calamity that is occurring not just during the Super

Bowl, but during the entire season. If sustainability is weaved into the framework addressing fans' choice of transportation, similar collapses will not occur.

Business Travel and Commuting

According to Bob Eller, the Baltimore Ravens Senior Vice President of Operations, well over 100 people travel with each team. Each spring, those in charge of transportation services for all 32 teams meet to compare ideas and strategies to most efficiently transport the teams to any given stadium. For many teams, primarily on the East Coast, accessibility to away-games can be accommodated by buses, trains, and the Amtrak system, which severely cuts down on airplane emissions (Gagnon, 2016). This is a positive step towards integrating sustainable modes of transportation between cities, and the fact that those in charge of these decisions already meet to handle logistics opens up a window for including environmental impacts in the discussion. However, history has proved these strategies incapable of establishing efficient modes of transportation for fans and teams alike.

4.4.3.4 Engagement

Player Contributions

Giovani Bernard, Cincinnati Bengals running back, has individually partnered with SonLight Power, an organization that designs and installs solar power solutions, to equip a Haitian school with an on-site solar power generation system (Chester, August 2018). An extraordinary use of talent was portrayed by Russell Wilson, Seattle Seahawks quarterback, when he starred in a 'Strawless in Seattle September' campaign hosted by

the Lonely Whale Foundation in an effort to minimize unnecessary plastic consumption. As a result, the Lonely Whale Foundation claimed to have eliminated two million plastic straws from public use in just one month (Chester, August 2018). Chris Long, founder of the charity Waterboys and defensive end for the Philadelphia Eagles, is on a mission of “providing clean, accessible drinking water to rural communities in East Africa”. After winning the Super Bowl in 2018, he rallied twelve climbers to tackle Mount Kilimanjaro to raise awareness of the water crisis impacting East Africa (Chester, August 2018).

Fan Considerations

The NFL launched an annual corporate social responsibility campaign called ‘A Crucial Catch’, then subsequently studied by researchers to observe the productivity of public social media engagement arising from the campaign. The study examined “how NFL teams communicate their CSR efforts on Facebook using Charity Support Behaviors (CSB),” then analyzed which type of social media post was most positively engaged with. Sports fans often form an emotional attachment to their team which can catalyze an urge for a deeper connection and affiliated psychological correlation, whether being positive or negative. “As a result, the connection fans feel towards a team directly impacts extemporaneous thoughts and actions, such as self-esteem... and support [of] team sponsors,” confirming the notion that fans will mimic the actions and choices of their respective team (Devlin, 2017). The NFL and its affiliated programs are the most watched events in television, promising a nearly verifiable conclusion that, if more NFL teams promote sustainable actions and partner with environmental organizations, their fans will – subliminally or consciously – strive to intrinsically link their identity to the team’s sustainability performance.

*Total Performance Score: **12/20***

Score Rationale

The NFL has done an exceptional job addressing the environmental challenges that coincide with the Super Bowl. However, some teams have fallen short of addressing their facilities contribution to environmental degradation. Football stadiums are substantial and consume a considerable amount of resources just to maintain the facility, a realization that not enough teams have properly addressed.

Total NFL Sustainability Score: 27/45

4.5 Table of Scoring

Area	Expectation	League		
		MLB	NBA	NFL
Executive Governance & Stakeholder Engagement	Corporate Oversight and Systems	3	3	2
	Substantial Stakeholder Dialog and Engagement	1	3	3
	Strategic Collaboration	4	2	5
Sustainability Performance Signaling	Standards for Disclosure and Implementation	2	2	2
	Vehicles for Disclosure and Assurance	3	3	3
Operations Management	Operations	5	3	2
	Supply Chain Procurement Practices	5	3	4
	Transportation Management and Modes	3	3	2
	Fan and Player Engagement	3	3	4
Total:		29	25	27

5. Review and Solutions to Shortcomings in Areas of Sustainability

My research and analysis reveals that Major League Baseball has implemented the most thorough sustainability program across the ranks of their organization, specifically in the sector of operations management. Nearly every MLB team has proved their dedication to promoting sustainability in their respective organizations, most notably the San Francisco Giants and the Milwaukee Brewers. A clear effort is made to embed strategic collaborations throughout the management and implementation process of environmental efforts, an indicator of higher executives being involved in the conversation. The NBA and NFL are not far behind, though, and with just a few corrections of where to redirect their sustainability strategies, they have the potential to be far more impactful than the MLB's current status. The following chapter puts forth a framework for how each league should address their sustainability initiatives using the unique strengths each league possesses to maximize productivity. In order to produce legitimate and comprehensive results from implemented sustainability initiatives, professional sports leagues and teams must be diligent in adhering to:

1. Transparent disclosure methods and continual assessments of their ongoing environmental programs
2. Corporate restructuring to integrate sustainability experts into the executive discussion
3. Refraining from participating in, falling victim to, and promoting green-washed programs and/or organizations

5.1 Major League Baseball: Producing Legitimate Sustainability Reporting

After gaining a deeper understanding of the extensive work the MLB and its clubs have done to promote sustainability throughout their stadiums and in the executive level, the question is raised: why isn't this topic a bigger discussion? Why haven't other leagues

begged for the implementation plans to conduct similar programs? The answer is found in the lack of statistics that accompany many of the sweeping claims promoted by teams. Without verification of how the implementation process and follow-up monitoring was evaluated, current and future efforts towards improving sustainability cannot be properly discussed.

Policies and initiatives can only be improved if employees and stakeholders are given adequate transparency on the outcomes of current efforts. To this end, the MLB needs to release an annual sustainability performance signaling document in order to be taken seriously in the framing of environmental initiatives. According to Dr. McCullough, “the progression of environmental performance in the sports sector is constrained by the apprehension of upper management,” and their trepidation to disappoint stakeholder owners with their reporting (McCullough, 2020). The implication of this fear of dissatisfaction severely degrades the importance and legitimacy of many great sustainability initiatives that are well deserving of peer-reviewed investigations. If information about these initiatives was widely distributed, it could be used to assist other organizations with their programs. Fearing retribution from executive stakeholders is a proven misconception as well, with all levels of stakeholder actually providing better support and often increasing an organization’s reputation when reporting is disclosed to the public. Without publications to enforce the validity of initiatives, sports organizations are “potentially greenwashing and participating in sporadic environmental sustainability activities, requiring minimal effort.” (McCullough, 2020).

A more transparent communication system will also have an auspicious impact on spectator participation as well. Fans are a key stakeholder group and studies have proven

that fans with lower levels of team dedication actually increase their identity with the team after the organization communicated their environmental performance (McCullough, 2020). Therefore, the most productive strategy that Major League Baseball needs to focus on is conducting *internal* investigations into the actual *implemented* effectiveness of the environmental programs they so publicly promote. These efforts ensure that third-party organizations aren't puppets assisting in the greenwashing façade, and track the success of initiatives while in actual operation, as opposed to only divulging their projected results. Proper communication disclosure measures are imperative to the overall sociocultural significance of sustainability initiatives, an execution that is significantly lacking in the MLB's efforts to embrace sustainability practices.

With the legitimacy of verified reporting and reviewing the effectiveness of existing initiatives, the MLB's successes would have the opportunity to become exponentially more impactful on moving towards a future of self-sustaining sports facilities and operations. After addressing the challenge of transparency, other potential initiatives clubs can participate in are seemingly endless. For example, on any given night during the MLB's season, each team will use at least 100 baseballs, equating to just a few pitches for each ball (Broderick, 2011). Although many of the balls are given to fans or used in batting practice, the manufacturing process required to construct these millions of balls each season is a worthy cause for further investigation. An easy solution to jersey manufacturing and its landfill contributions is to begin the process of incorporating recycled materials into team jerseys and sellable fan gear. Responsibly produced apparel will publicly promote the environmental frameworks that the league has invested in by putting sustainability in the forefront of all publicity and merchandise sales. These are

just a few of the ways that the MLB can start incorporating sustainability as a continual process and omnipresent goal, instead of projecting it as an afterthought.

5.2 National Basketball Association: Involving the Players

The National Basketball Association's globalization has pervaded the ranks of society more effectively than any other national sports league. The NBA has over 117 million social media followers⁹ and over a billion global citizens have access to the televised NBA finals, so promoting environmental causes from the league's platform can be extremely impactful. LeBron James alone has 45.9 million Twitter followers. Meanwhile, all thirty MLB teams *plus* the MLB league Twitter pages have a collective total 44.35 million followers. The reach to everyday citizens is enormous. It is clear that one tweet from LeBron James about the importance of environmental protections across sports leagues and entire countries could educate thousands on an important aspect of responsible sports management. The political and cultural clout makes the NBA uniquely positioned to inspire their fan base to adopt sustainability in the arena and in their own homes. The previous successes of the NBA incorporating their players into high-fashion and political grievances have exceeded the objectives of many environmental organizations eager to partner with influential figures. For example, the Golden State Warriors employed their widely known athletes, including Klay Thompson and Stephen Curry, to star in PSAs that focused on water saving solutions and promoting electric vehicles. While NBA player's contributions to economic and social matters have been substantial, incorporating the environmental impacts of the sports industry into the discussion is the only way to achieve a sustainable future.

⁹ This total is from a combination of Twitter, Instagram, and Facebook.

The largest shortcoming of the NBA is the lack of oversight that league executives have over the responsibilities of players. Although players do have autonomy of their actions, they are also employees of an organization and should be held to a higher standard of using their influential prowess to benefit the city and country that revere them. A solution to the issue of players' reluctance to vocalize environmental concerns is to add a required environmental volunteering clause to contracts. Currently, players' contracts include a minimum volunteering requirement, but these efforts are often directed to social justice reforms and youth development programs. Adding an environmental aspect to that requirement will open opportunities to combine environmental initiatives with community building activities, thereby introducing a much needed socioenvironmental emphasis on how cities balance the positive economic benefits of sports teams with the negative environmental consequences of such large-scale operations.

In addition to the inclusion of athletes in addressing sustainability goals in teams and leagues, smaller but equally crucial initiatives should be added to the operations of NBA stadiums. The NBA is highly dependent on third-party organizations to promote, organize, and measure success of many programs "initiated" by the league. However, this lack of responsibility for the subsequent monitoring of the operational success of sustainability programs allows for large gaps in statistical reporting. Additionally, said third-party organizations (i.e. Green Sports Alliance) are seemingly uninterested in the analytical requirements that ongoing initiatives require, usually deferring to reiterating only the initial expectations of programs yet to be implemented. The NBA needs to

redirect their efforts to establish sustainability as an internal responsibility, starting with reformatting the NBA Green website and program.

5.3 National Football Association: Engaging Fans

Nearly 180 million fans tuned in to watch the 2019-2020 season, with football accounting for 24% of all sports viewing, a shocking statistic after knowing that football comprises of only 6.5% of live broadcasted sporting events (Young, 2019). Utilizing the complexities of NFL's domination over sports fans has been successful in rallying millions of viewers for nearly every game, and similar strategies should be implemented to include fans in the environmental efforts conducted by the league. Using the identity salience hierarchy theory, organizations have the resources available to "leverage one of their most valuable assets, fans' affiliation to their team's brand, to increase fans' sustainable behaviors." (McCullough, 2016). Since the NFL has the most dedicated and expansive fan support system, the league is in the most beneficial position to influence their fans' contributions to environmental efforts. Contrary to the NBA fanbase, whose concerns lie mainly with only their chosen team, NFL fans often spend an entire day watching many different teams compete across the country. The unrivaled bond that many football fans have to their players, cities, and Super Bowl chances yields an obvious solution to the promotion of green transportation, reduction of plastic consumption, and natural resource conservation. Using sense of place to connect fans to their team's stadium will assist in the accessibility of implementing sustainable solutions throughout operations, inspiring fans to follow suit. Although fans may be reluctant to engage with programs while attending the game itself, leveraging affiliation with the

team will increase fans' compliance with the established changes, including eliminating straws and reducing plastic bottle sales (McCullough, 2016). The NFL has arrived at a crossroads in how to better address their environmental contributions, but the decision to focus on fans' engagement with sustainable goals will fill a gap that lies with uneducated and uninterested fans. If their team is demonstrating comprehensive environmental efforts by both marketing and actual implementation, fans will adopt similar objectives both at home and at the stadium.

In addition to the advantageous options that the NFL's loyal fanbase provides, the extensive marketing strategies already in place can be manipulated to include environmental crusades in the conversation. 46% of NFL's mascots are endangered, including tigers, jaguars, dolphins, and lions. The combined NFL teams are valued at nearly \$80 billion (Bercovitch, 2018). Siphoning off 0.0001% of the league's annual profits for conservation efforts would make a massive difference in not just employing protective measures, but in publicizing the dismal future of thousands of species without proper mitigation efforts. Another source of funding that can be directed to cover sustainability mitigation and implementation costs can come from Super Bowl commercial advertisements. The 2019 Super Bowl commercials generated \$300 million dollars in revenue, with the average 30-second clip costing \$4.5 million (Wu, 2020). This is one of the rare times that viewers are willing and actively excited to watch commercials, making it a prime opportunity to put a company's best foot forward. If this aspect of the marketing process can include environmental information to educate viewers, the repercussions could be immense.

Another aspect of sustainability the NFL has overlooked is their corporate structuring. Although Jack Groh has done great work for the NFL Green program, that is where the executive oversight begins and ends. Without a sustainability expert on the board or, at the very least a corporate social responsibility executive, the future of successful sustainability implementation will never reach its full potential. NFL owners should mirror the NBA's communications by hosting bimonthly discussions about prevalent successes and challenges that each team is facing in their environmental goals. Strategic collaboration is a key indicator of success in the productivity of sustainability initiatives and in order to become a leader in the sports sustainability movement, the NFL must quickly shift to more inclusive discussions and hold executives to a higher environmental standard.

6. Conclusion

I hypothesized that the MLB would possess the most comprehensive and successful implementation of sustainability initiatives, followed by the NBA and finally the NFL. Although I was correct about the MLB being the most capable, I misjudged the efficacy of the NFL's strategic partnerships and dedication to lightening the ecological footprint of the Super Bowl event. Additionally, the MLB was mainly successful as a result of individual team's persistence to incorporate environmental efforts into the operations and functionality of the facilities. I am pleased to find that all three leagues have made progress in addressing the unsustainable aspects that professional sports impose on the natural environment.

The intent of this investigation into the efficacy of environmental sustainability initiatives in professional sports leagues was motivated by a desire to understand why organizations structure their sustainability initiatives and how to improve the statistical success of said initiatives. Understanding the reasoning behind an action is obligatory when proposing a structural critique, such is why I composed a comprehensive summary of the leagues' current initiatives before promoting alternatives. By ranking the three leagues and their respective teams on an easily comparable rating system, I was able to address the strengths and weaknesses of each league to find that Major League Baseball has the most diverse and successful sustainability initiatives currently in place. Nearly every MLB team has a system in place that addresses a certain issue of natural resource depletion or greenhouse gas emissions, including many stadiums that have incorporated a plethora of environmental efforts like the San Francisco Giants' Oracle Park.

Additionally, the appointment of Paul Hanlon as the league's senior director of ballpark

operations and sustainability opened up the opportunity for individual teams to appoint their own sustainability coordinator and see that sustainability is being taken seriously at the highest level of governance. Although the MLB was ranked above the others, the league still lacks cohesion between the league offices and individual clubs, fails to properly disclose sustainability initiatives' statistical results, and fails to properly address fan engagement in environmental efforts. To summarize, there is still much to be done.

The implication that Major League Baseball is the most successful in striving to adopt environmentalism throughout the structural ranks is a major win for the league, which is often overlooked and underappreciated on the national stage in comparison to football and basketball. The results shine a positive light on the work Hanlon has done to promote sustainability throughout the organization, including incorporating MLB Green into a number of club-specific efforts. The findings do not imply that the NFL and NBA are failures in understanding how to most effectively use sustainability to promote economic and social discussions, but they are still working through some of the issues that the MLB has been addressing for a longer timeline. The shortcomings of the NBA Green website and program are evident in the lack of information derived from the source, implying the manager has no appreciation for the functionality of the environmental program. Additionally, the Philadelphia Eagles' contributions to all-inclusive sustainability efforts is a major success for the league, but simultaneously highlights the deficiencies of other teams, many of which have virtually no sustainability programs in place.

The practice of researching and analyzing the efficacy of professional sports leagues should be relatively accessible and transparent. However, the reluctance of

organizations to disclose the results of both specific and all-inclusive initiatives proves challenging for the future of the field. My findings contribute to the understanding that, without the appointment of sustainability leaders at the executive level and publishing peer-reviewed information about environmental efforts, the goal of sports and sustainability sharing an interdisciplinary space is an increasingly distant goal. The previously published information I analyzed provided a foundation for me to contribute my own findings and theories, ideas which I believe have the ability to influence league executives into reflecting on the mistakes they've made thus far and, with any hope, redirect their focus to begin implementing legitimate sustainability initiatives as opposed to the greenwashed versions currently in place.

Evaluating the successes of the MLB's efforts to adopt sustainability in stadiums and league-wide communications suggests that they are on a better path to success than previously assumed by scholars in the field. I chose to highlight the positives and negatives that each league has contributed, eliminating bias and honing in on the opportunities readily available to correct shortcomings. This thesis also establishes a necessary renovation of current policies in place because, to put it simply, there are none. Without league oversight dictating the responsibilities of their affiliate organizations, the burden of environmental responsibility falls on no one.

Not only do the findings of my paper challenge the lack of accountability for implementing substantive sustainability goals, but this document in itself makes the case that organized sports affect the environment merits discussion and socioeconomic evaluations, from researchers and sports executives. I was granted access to only publicly available information, in addition to a few pieces of information provided by my

interviewee contacts, and was still able to successfully execute a ‘report card’ for each league, followed by quantified, legitimate, and realistic initiatives that leagues and teams can implement *today*. I did not have access to documents that the highest level of researchers are barely privy to, but still produced a range of environmental initiatives that have the power to outdo most currently in circulation. My findings contribute to the current wave of research attempting to understand the complexities of organizations’ choices about environmental issues. My research also assists in promoting how important it is to identify areas of improvement to find environmental and economic solutions to problems plaguing the entire sports industry.

A serious limitation of my research was a lack of accessible statistics to validate the self-proclaimed initiatives leagues have claimed as successes. While interviewing Dr. McCullough, he shared the frustration with leagues’ intentional secrecy around disclosure measures and repetitive refusal to allow researchers access to the data behind many initiatives. McCullough is one of the top sports sustainability researchers who has no intention of promoting initiatives that have no conclusive evidence to support them. The fact that leagues cower behind non-disclosure agreements when pressed about the validity of environmental efforts is the fundamental antithesis of sustainability; why would an organization want to hide the methods and results of their seemingly incredible programs? If the initiative is so successful and the leagues value the promotion of global environmental sustainability in the corporate system, wouldn’t they want to disclose their findings so other organizations could follow suit?

The only logical reason behind the aggressive reluctance to divulge the outcome of sustainability efforts is because they aren’t as successful as they’re marketed to appear.

“Greenwashing” is rampant in the sports industry, hyperbolizing the league’s dedication to sustainability by promoting programs that have little-to-no actual impact. To limit bias and greenwashing in my thesis, I strove to discuss programs that have multiple sources that promote their relevancy, being especially cautious in identifying vague or ill-defined environmental efforts. I was fortunate to interview experts in the field who were able to validate the legitimacy of certain publicized initiatives I was questionable about. If I were to reconduct the focus of my thesis to address the limitations of my research, I would have expanded my list of experts to communicate with for a more comprehensive analysis of which initiatives are marketing ploys and which are statistically-proven successes. However, in the grand scheme of my research and findings, I am content with the amount of sourcing and verification I conducted to ensure proper publication of the information I analyzed.

Research into the efficacy of sports sustainability initiatives is only just beginning. The opportunities professional sports provide for influencing socioenvironmental norms are growing with each proposition of higher accountability and modern technological advancement, and environmentalists understand the weight that carries. By identifying that Major League Baseball holds the most publicly comprehensive sustainability structure, future researchers can use these successes and apply similar methods to other leagues, promoting interleague collaboration and support.

Sports thrive on a singular strategy to incentivize athletes to play, fans to participate, and billions of dollars to flood the industry: competition. Turning sustainability into a competition will transfer the timeless threat of sports rivalry from the game itself to the way the game is operated, the way the game impacts the natural

environment. If teams can monopolize the economic provisions that a city often depends on, they should certainly adopt the environmental responsibilities that accompany their actions. The direction of research into sports sustainability has limitless options, and all avenues must be explored to provide legitimate implementation strategies specific to a sport, team, city, or demographic. Without the resources that prove how and why an initiative is successful, organizations will continue to promote their vague, elementary environmental efforts while framing them as revolutionary successes. The future of this research depends on increased disclosure methods from professional sports organizations, working with researchers desperate to change the path our planet is headed.

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8. Appendices

Appendix A1: Major League Baseball Team Roster

Major League Baseball Teams			
National League		American League	
Team Name/Location	Owner	Team Name/Location	Owner
Arizona Diamondbacks Phoenix, AZ	Ken Kendrick	Baltimore Orioles Baltimore MD	Peter Angelos
Atlanta Braves Atlanta, GA	Liberty Media	Boston Red Sox Boston, MA	John W. Henry
Chicago Cubs Chicago, IL	Thomas S. Ricketts	Chicago White Sox Chicago, IL	Jerry Reinsdorf
Cincinnati Reds Cincinnati, OH	Bob Castellini	Cleveland Indians Cleveland, OH	Larry Dolan
Colorado Rockies Denver, CO	Charles Monfort	Detroit Tigers Detroit, MI	Christopher Ilitch
Los Angeles Dodgers Los Angeles, CA	Mark Walter	Houston Astros Houston, TX	Jim Crane
Miami Marlins Miami, FL	Bruce Sherman	Kansas City Royals Kansas City, MO	David Glass
Milwaukee Brewers Milwaukee, WI	Mark Attanasio	Los Angeles Angels Anaheim, CA	Arturo Moreno
New York Mets Corona, NY	Fred Wilpon	Minnesota Twins Minneapolis, MN	Jim Pohlad
Philadelphia Phillies Philadelphia, PA	John S. Middleton	New York Yankees Bronx, NY	Hal Steinbrenner
Pittsburgh Pirates Pittsburgh, PA	Robert Nutting	Oakland Athletics Oakland, CA	John J. Fisher
San Diego Padres San Diego, CA	Ron Fowler	Seattle Mariners Seattle, WA	John W. Stanton
San Francisco Giants San Francisco, CA	Charlie Johnson	Tampa Bay Rays St. Petersburg, FL	Stuart Sternberg
St. Louis Cardinals St. Louis, MO	William DeWitt, Jr.	Texas Rangers Arlington, TX	Ray Davis
Washington Nationals Washington, DC	Lerner Enterprises	Toronto Blue Jays Toronto, Ontario	Rogers Communication

Data from MLB Team Contact Information (2020)

Appendix A2: National Basketball Association Roster

National Basketball Association Teams			
Eastern Conference		Western Conference	
Team Name/Location	Owner(s)	Team Name/Location	Owner
Atlanta Hawks Atlanta, GA	Tony Ressler	Dallas Mavericks Dallas, TX	Mark Cuban
Boston Celtics Boston, MA	Wycliff Grousbeck and Steve Pagliuca	Denver Nuggets Denver, CO	Stan Kroenke
Brooklyn Nets Brooklyn, NY	Mikhail Prokhorov	Golden State Warriors San Francisco, CA	Joe Lacob and Peter Guber
Charlotte Hornets Charlotte, NC	Michael Jordan	Houston Rockets Houston, TX	Leslie Alexander
Chicago Bulls Chicago, IL	Jerry Reinsdorf	Los Angeles Clippers Los Angeles, CA	Steve Ballmer
Cleveland Cavaliers Cleveland, OH	Dan and Gary Gilbert, Gordon Gund, Usher	Los Angeles Lakers Los Angeles, CA	The Buss Family
Detroit Pistons Detroit, MI	Tom Gores	Memphis Grizzlies Memphis, TN	Robert J. Pera
Indiana Pacers Indianapolis, IN	Herbert Simon	Minnesota Timberwolves Minneapolis, MN	Glen Taylor
Miami Heat Miami, FL	Micky Arison	New Orleans Pelicans New Orleans, LA	Tom Benson
Milwaukee Bucks Milwaukee, WI	Marc Lasry and Wesley Edens	Oklahoma City Thunder Oklahoma City, OK	Clay Bennett
New York Knicks Manhattan, NY	James Dolan	Phoenix Suns Phoenix, AZ	Robert Sarver
Orlando Magic Orlando, FL	RDV Sports, Inc.	Portland Trail Blazers Portland, OR	Paul Allen
Philadelphia 76ers Philadelphia, PA	Large conglomerate of owners	Sacramento Kings Sacramento, CA	Vivek Randadive
Toronto Raptors Toronto, Ontario, CDN	Larry Tenenbaum	San Antonio Spurs San Antonio, TX	Peter Holt
Washington Wizards Washington, DC	Ted Leonsis	Utah Jazz Salt Lake City, UT	Gail Miller

Data from NBA Checkli (2019)

Appendix A3: National Football League Roster

National Football League Teams			
American Football Conference (AFC)		National Football Conference (NFC)	
Team Name/Location	Owner	Team Name/Location	Owner
Baltimore Ravens Baltimore, MD	Steve Bisciotti	Arizona Cardinals Glendale, AZ	Bill Bidwill's Estate
Buffalo Bills Orchard Park, NY	Kim and Terry Pegula	Atlanta Falcons Atlanta, GA	Arthur Blank
Cincinnati Bengals Cincinnati, OH	Mike Brown	Carolina Panthers Charlotte, NC	David Tepper
Cleveland Browns Cleveland, OH	Jim and Dee Haslam	Chicago Bears Chicago, IL	Virginia Halas McCaskey
Denver Broncos Denver, CO	Joe Ellis	Dallas Cowboys Arlington, TX	Jerry Jones
Houston Texans Houston, TX	Janice McNair and family	Detroit Lions Detroit, MI	Martha Ford
Indianapolis Colts Indianapolis, IN	Jim Irsay	Green Bay Packers Green Bay, WI	Green Bay Packers, Inc.
Jacksonville Jaguars Jacksonville, FL	Shahid Khan	Los Angeles Rams Inglewood, CA	Stan Kroenke
Kansas City Chiefs Kansas City, MO	Clark Hunt and family	Minnesota Vikings Minneapolis, MN	Zygi Wilf
Las Vegas Raiders Las Vegas, NV	Carol and Mark Davis	New Orleans Saints New Orleans, LO	Gayle Benson
Los Angeles Chargers Inglewood, CA	Dean Spanos	New York Giants E. Rutherford, NJ	John Mara and Steve Tisch
Miami Dolphins Miami, FL	Stephen Ross	Philadelphia Eagles Philadelphia, PA	Jeffrey Lurie and Christina Weiss
New England Patriots Foxborough, MA	Robert Kraft	San Francisco 49ers Santa Clara, CA	Dennis York and Jed York
New York Jets E. Rutherford, NJ	Robert Johnson IV and Christopher Johnson	Seattle Seahawks Seattle, WA	Jody Allen
Pittsburgh Steelers Pittsburgh, PA	Art Rooney and family	Tampa Bay Buccaneers Tampa, FL	Bryan Glazer and siblings
Tennessee Titans Nashville, TN	Amy Adams Strunk	Washington Redskins Landover, MD	Dan Snyder

Data from NFL Team Owners (2019)

Appendix B1: Ceres Roadmap for Sustainability Flow Chart

This is the Ceres Roadmap for Sustainability structure of assessing a company's ability to implement thorough environmental efforts. I used this template as a basis to formulate my personal roadmap to better include sports into the assessment.



Appendix B2: Comprehensive Roadmap for Assessing the MLB, NBA, and NFL's Sustainability Initiative Programs

Executive Governance and Stakeholder Engagement

- **Corporate Oversight and Systems**
 - Engaging internal and external stakeholders and considering stakeholder concerns
 - Is sustainability incorporated into management and day-to-day decision making
 - Incorporating sustainability considerations into board discussions
- **Substantial Stakeholder Dialog and Engagement**
 - Systematically diverse stakeholders and regularly engage with them
 - Disclose how stakeholder's concerns are being addressed
 - Disclose and engage stakeholders on strategy and business-making
- **Strategic Collaboration**
 - Collaborate and engage across sectors and civil society to innovate, scale, and open source sustainability solutions

Sustainability Performance Signaling

- **Standards for Disclosure and Implementation**
 - Disclose all relevant sustainability information using sector-relevant indicators
 - Disclose sustainability risks and opportunities, data, and financial filings
 - Demonstrate integration of sustainability into systems and decision making
- **Vehicles for Disclosure and Assurance**
 - Release sustainability information through a range of vehicles, including reports, corporate websites, investor communication, and social media
 - Verify key sustainability performance data to ensure valid, verified results

Operations Management

- **Operations**
 - Greenhouse gas emissions and renewable energy
 - Water management
 - Waste assessments
- **Supply Chain Procurement Practices**
 - Policies and Codes / Measurement and Disclosure
 - Measuring supplier performance data
 - Comprehensive socioenvironmental sourcing and procurement
- **Transportation and Logistics**
 - Transportation management and modes
 - Reducing impact of logistics and fleet operations
 - Prioritize efficiency and low-carbon transportation modes
 - Business travel and commuting
 - Decrease impact of business travel and commuting through incentives
 - Provide workplace infrastructure to facilitate low-carbon commuting options
- **Engagement**
 - Player Contributions
 - Player's voluntarily contributing or spearheading environmental efforts
 - Interaction between players, fans, and their city
 - Contractual requirements to engage in volunteering
 - Fan Considerations
 - Incorporating fans in stadium sustainability practices
 - Incentivizing fans to participate in environmental efforts at-home