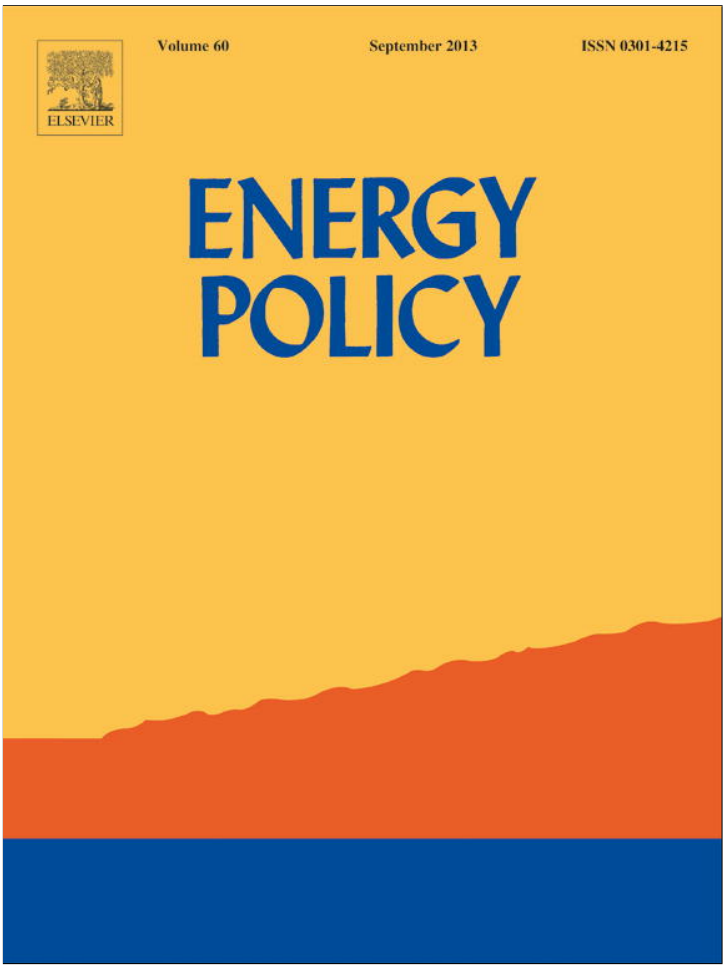

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Climate policies in the U.S. at the stakeholder level: A case study of the National Football League

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HIGHLIGHTS

- The article analyzes the role of stakeholders in influencing climate policy-making in the U.S.
- A case study of the National Football League (NFL) and their 32 franchises is carried out.
- The research identifies pioneering teams and describes their actions.
- The motives of pioneering action are identified.
- State and non state actors that were involved in innovation and diffusion of green programs in the NFL are pinpointed.

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ABSTRACT

This article analyzes how stakeholders are able to influence climate policy-making in the U.S.; emphasis is placed upon the most popular sports league in the United States, the National Football League (NFL). An empirical analysis of the 32 NFL franchises identifies pioneering clubs that have introduced ambitious green programs that include the utilization of renewable energies, the adoption of energy efficiency measures and carbon offsetting policies, as well as the facilitation of public transport and electric cars. Apart from environmental concerns, this paper identifies several drivers for pioneering actions: economic motives, pressure exerted by the local environment, public relations, and political incentives such as the promotion from the federal government's stimulus package. Finally, this article investigates the role that state actors, such as the Environmental Protection Agency, and non-state actors, such as the Natural Resources Defense Council, play in the innovation and diffusion processes of environmental programs in the NFL.

1. Introduction

This article analyzes the role of the professional sports sector in the United States in combating climate change; in particular, a case-study on the most popular sports league in the U.S., the National Football League (NFL) and its 32 franchises is conducted. The main research questions of this work are: what efforts are made to reduce greenhouse gases in the NFL and what motivates the clubs for pioneering in fields such as using renewable energy, energy efficiency measures, and carbon offsetting?

The assumption of this work is that main stakeholders such as professional sports teams are able to influence policy-making in large U.S. cities and states. The article seeks to contribute to the academic debate about bottom-up processes in U.S. climate policy as a result of the absence of climate governance at the federal level. For Rabe (2011, p. 496), "the possibility of a federal takeover of this arena seems unlikely to occur in the near future." The existence of a divided government at the federal level is one of the main reasons for this assumption; a divided government is defined as one in which "one major political party controls the presidency and the other controls Congress" (Schmidt et al., 2011, p. 363). Upon the completion of this research paper, the Republicans controlled the House of Representatives and the Democrats controlled the Senate and the presidency. Even if one party controls the presidency and both houses, it is difficult to achieve a majority for environmental legislation. For example, in the first two years of Democrat Bill Clinton's presidency, the Democrats also held a majority in both houses; nevertheless, his effort to introduce carbon taxation failed. There is no unanimity among Democrats and Republicans; factions within the same party also exist along constituency lines. Members of Congress from the Rust Belt Region usually oppose climate legislation. The Rust Belt, also known as

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the Manufacturing Belt or the Factory Belt, is situated within parts of the Northeastern United States, the Mid-Atlantic States, and portions of the Eastern Midwest.

Taking the difficulties for policy change at the federal level into account, authors such as Selin and VanDeveer (2011, p. 295) are "calling for more regionally focused empirical research and analysis." Policy change in the U.S. often starts at the stakeholder, local and state levels. They serve as a "laboratory" (Aulisi et al., 2007), and proven success might spill over to the federal level: "The evolving reality of climate change policy development, in the U.S. and abroad, relies heavily on sub-national initiative" (Rabe, 2011, p. 494). According to Derthick (2010, p. 58) U.S. climate change politics is better understood as "compensatory federalism": "Sub-national entities are compensating for a lack of meaningful federal action. … This leaves room for more ambitious policy action at the supranational level as well as for collaborative initiatives by groups of states and provinces or transnational networks of cities and private actors" (Selin and VanDeveer, 2011, p. 297).

The domination of the sub-national level started in 1998 after the United States had signed the Kyoto Protocol but the Senate failed to ratify it. In 2001 the Bush Administration decided to withdraw formally from the treaty. For Rabe (2011, p. 499) "this recognition, alongside the continued inability of Congress to advance serious climate policy created an open intergovernmental field for state government engagement." A race for climate-friendly economic development thus started at the stakeholder, local and state levels (Mintrom, 2009; Rabe, 2011, p. 501). Selin and VanDeveer (2011, p. 298) argue that policy experiments at the sub-national level provide avenues of policy diffusion and learning: "North American policy leaders in the public, private, and civil society sectors also already work to disseminate their policy initiatives and lessons to other jurisdictions and across national boundaries." The networks that contribute to the horizontal diffusion of green programs among NFL franchises and other professional sports teams are identified further below in this work.

Most research on climate change has focused "on the international level as the primary locus of climate change governance" (Betsill and Bulkeley, 2007, p. 448). According to Rabe (2008, p. 105), "climate change has conventionally been framed as an issue that would be addressed by an international regime established through negotiation among nation-states." This article seeks to contribute to the academic debate about "bottom-up American climate policy" (Rabe, 2008, p. 107) and to the examples of actions being undertaken at the local level, a topic that has become accepted as a legitimate area for research over the past decade (Betsill and Bulkeley, 2007, p. 448). There is a "significant role many authors have attributed to local governments and communities in putting sustainable development into practice" (Betsill and Bulkeley, 2004, p. 489).

Betsill and Bulkeley (2007, p. 448) emphasize that "partnerships between public and private actors around particular projects are becoming a key feature of local climate change policy." Examples for such partnerships between public and private actors related to this research are, among others, building new, environmentally friendly sports venues, encouraging fans to come to the matches by public transport, and carbon offsetting the emissions from away-games travel.

For this work the NFL was chosen as a case study because it is not only the most watched sports league in the U.S., but also holds the record for the largest average sports league attendance in the world. Along with English Premier League, the NFL leads in TV viewing rates and revenues (Dietl et al., 2009, p. 60).

Previous research on cities and climate change identified "a gap between words and action" (Betsill and Bulkeley, 2007, p. 452). According to Betsill and Bulkeley (2007, p. 454) the reason for this gap is the lack of financial resources, technical capacity and staff to develop and implement local climate change policies. This research focusing on climate policies in the NFL shows that there are significant opportunities for action to address local concerns if cities partner with major local stakeholders such as professional sports teams that possess significant administrative and financial capacities. Contrariwise, stakeholders such as professional sports teams need approval and support for many measures (for example for planning stadiums and the infrastructure around them) by the local authorities. Therefore, there is a two-way dependency between stakeholders and local politicians. However, the NFL teams hold powerful positions because they can threaten to move away to other locations if their demands are not met. Werner and Wilson (2008, p. 361) analyze the opportunities American federalism provides for businesses by stating that "politicians, regardless of ideology, eager for re-election will ward off this catastrophe by giving business what it wants and will do so." The identified "privileged position" of business is particularly strong in American Football with only 32 NFL franchises and far more cities interested in hosting a team in the country's most popular sports league. However, taking responsibility for societal problems (such as climate change) by NFL clubs is important for being accepted locally, as most fans attending the matches are from the host city and state.

Due to the large crowds attracted, every NFL game creates a significant environmental impact. Apart from the direct impact on the environment, this article assumes that significant indirect effects also exist: if the popular NFL clubs were to adopt green policies, they might motivate their fans and other stakeholders at the local level to imitate their actions and thereby help local policy makers to achieve their environmental goals.

Recent publications in this journal have dealt with energy and climate policy legislation at the federal level (see Bang, 2010; Cheah and Heywood, 2011; Dixon et al., 2010; Harris, 2009; Morrow et al., 2010; Skodvin, 2010); other articles have compared the energy policies of different U.S. states (Carley, 2009; Delmas and Montes-Sancho, 2011); two articles have compared U.S. and German energy policies (Laird and Stefes, 2009; Portman et al., 2009); Bang et al. (2007) have focused upon U.S. participation in international climate change agreements. Other articles have examined energy intensity in U.S. commercial buildings (Andrews and Krogmann, 2009), jobs in the U.S. clean energy industry (Wei et al., 2010), innovations in the wind energy industry (Berry, 2009), and energy consumption by the U.S. electric power sector (Gil-Alana et al., 2010). Nevertheless, an article that deals with the relationship between climate policy and the professional sport sector in the U.S. (or any other country) is new for this journal and the academic debate on U.S. climate policy.

The article proceeds as follows: the next section discusses the methodology adopted throughout the paper and explains the reason behind studying the professional sports sector in the U.S.; it explains the structure of this article as well as its research questions and the sources used for the data collection. In addition, a literature review on issues related to this research is presented. A study of the green programs adopted in the National Football League (NFL) follows the methodology, and an analysis of the drivers behind these programs is conducted. Then a section on the actors involved in the innovation and diffusion processes of green programs in the NFL is presented. Finally, concluding remarks are made.

2. Methodology

An academic research of the National Football League's green programs could study the garbage produced on match days and

teams' recycling programs. According to the Washington Redskins, for example, they are the biggest recyclers in the state of Maryland (Redskins Bring Solar Power to FedExField, 2011). According to *ESPN*, the Washington Redskins held the second largest average attendance in the NFL (83,172 during the 2010 season) (NFL Attendance – 2010, 2010). A study could also examine whether or not stadiums are built in areas of environmental concern, the land consumption for the stadiums and parking slots, which construction materials are used for building the venues, or how ambitious the water conservation system is. For instance, the Gillette Stadium, home of the New England Patriots, has its own wastewater treatment plant (Nolan, personal communication, August 2, 2011). However, this article focuses upon the energy sector, analyzing i.e. the use of renewable energies in the NFL as well as the promotion of energy efficiency measures in the stadiums, mass transportation for fans on match days, and carbon offsetting for away-game travel. After the green programs are described, the research question of this article is addressed: what motivates (some) NFL clubs to be active in combating climate change? Is it a real environmental concern or is it a green-washed billion-dollar business? After describing the green programs and analyzing the motivations behind them, this work finally analyzes which state and non-state actors play a role in encouraging NFL teams. Are there any policy instruments that support energy innovations in the NFL, or is action done without such incentives?

There is no specific data available on the carbon footprint of the NFL, and one could argue that the 32 NFL teams (divided into two divisions: the American Football Conference and the National Football Conference) might only have a minor share in all the greenhouse gas emissions of the U.S.; however, this article operates under the assumption that due to the popularity of sports, specifically the NFL, green innovations by NFL teams can influence individual and political action more than any societal actor or other business. Furthermore, there is global media coverage of the NFL. Therefore, innovations from the National Football League might have a global influence not only like in the past on issues such as team practice or fan entertainment, but also in the future on issues such as how to build and operate stadiums. Thus, this research is related to the academic debate on the environmental impact of sports (see Schmidt, 2006) as well as Corporate Social Responsibility (CSR) in professional sports.

According to Schmidt (2006), the discussion on the environmental impact of sports, whether played or watched, has two objectives: "to reduce the ecological footprint of sports activities and to exploit the popularity of sports to raise environmental awareness in general" (p. A 287). Schmidt discusses the growing relationship between sports and the environment and writes,

> … the sports and environment movement continues to grow. … During the early 1990s, the linkage between them had barely been made. But now sports and the environment are indelibly linked – from the glitziest athletic spectacles, played out on the world stage, to the everyday games played by billions of ordinary people – and from this current generation of sports enthusiasts, a new generation of environmentalists may be emerging (p. A 295).

In order to address the debate on corporate social responsibility in professional sports, a definition of CSR ought to be presented. According to the Commission of the European Communities (2006), corporate social responsibility is a concept "whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (p. 2). Babiak and Trendafilova (2009) describe CSR "as a set of actions aimed to further some social good, beyond the explicit pecuniary interests of the firm, that are not required by law … and go above and beyond what companies are legally required to do" (p. 31).

According to a survey by Sheth and Babiak (2010) that studied CSR priorities in the NFL, the Major League Baseball (MLB), the National Basketball Association (NBA), and the National Hockey League (NHL),

> … the item with the highest mean value was a concern for fan safety. The next highest value was for the contribution to youth sport programs. The lowest valued statement was a concern for ecological/environmental initiatives. … The responses reflect that, on the whole, teams tend to practice what is familiar (e.g. youth sport and school programs) over those that are less traditional for a sport team (i.e. disaster relief, human rights, the environment, and the arts). It seems from this initial data that sport teams tend to be strategically spending their CSR dollars in areas that match their core competencies as a business (p. 440).

In a comparative study on CSR in the UEFA as opposed to the NFL, Dietl et al. (2009) arrived to a similar conclusion: "A common ground between both leagues is that they focus on social projects and only marginally invest in environmental projects" (p. 73). However, this article will show that conditions are currently different and that the National Football League and some of the NFL franchises have adopted measures to combat climate change.

Little empirical research on the NFL's CSR efforts in combating climate change has been done. In a 2006 article, Babiak and Wolfe discussed CSR initiatives related to the February 2006 Detroit Super Bowl XL, among the initiatives discussed was a tree planting effort to offset carbon emissions (2006). Babiak and Trendafilova (2009) have analyzed CSR in professional sports under the subtitle "motives to be green." There are studies that cover all the professional sports leagues in the U.S. and all their CSR efforts (Babiak and Trendafilova, 2009; Sheth and Babiak, 2010; Babiak, 2010). Most green efforts in the NFL are not covered by existing studies because they mainly took place between the years 2009 and 2011 (this study includes all developments until August 2011 —viz. right before the start of the 2011–2012 NFL season), which is after the publication of the previously mentioned articles.

Among its other sources, this article relies on 15 semi-structured interviews conducted by the researcher in person. According to Leech (2002), semi-structured interviews offer a combination of flexibility and structure that "can provide detail, depth, and an insider's perspective, while at the same time allow [ing] hypothesis testing" (p. 665). While serving as a Visiting Scholar at the Center for Transatlantic Relations at the Johns Hopkins University in Washington, DC, I interviewed 13 stakeholders in the U.S.: David Krichavsky, the director of community affairs from the NFL headquarters in New York; the representatives of the NFL franchises who manage their clubs' green programs: Henry Rzemieniewski from New York, Darryl Benge from Seattle, Julie Hirshey from Philadelphia, and Jim Nolan from the Greater Boston area; experts on U.S. climate policy from think tanks: Arne Jungjohann from the Heinrich Böll Foundation and Alexander Ochs from the Worldwatch Institute; experts on U.S. climate policies from NGOs: Jeramy Shays from the American Council On Renewable Energy and Katherine Stainken from the Solar Energy Industries Association; representatives of state actors: Andrew Bellina from the Environmental Protection Agency; representatives of non-state actors: Allen Hershkowitz from the Natural Resources Defense Council and Mark McSherry from ProGreenSports. I also interviewed Kathy Babiak, a professor from the University of Michigan who has published work on corporate social responsibility in professional sport. Besides my work in the U.S., I conducted two interviews in Europe: I interviewed Ulf Schrader,

a German professor who is an expert on corporate social responsibility and sustainable consumption and Guri Bang, a Norwegian scholar who works on U.S. climate policy.

In addition to an evaluation of newspapers and websites, other sources of data for this article were reviews of the academic literature on CSR in sports, of the environmental impact of sports in general, and of U.S. climate policy. I analyzed all the issues of the daily newspaper *The New York Times* since 2004 when the first NFL team, the Philadelphia Eagles, began its green energy program. Furthermore, I studied the websites of the NFL and all the 32 NFL franchises. Information on green programs can be mainly found online under the "Community" page.

3. Environmental programs in professional sport: an empirical analysis of the case of the National Football League (NFL)

According to the interviews that I have carried out and my evaluation of all the NFL teams' websites, ten out of the 32 NFL teams had a green program as of August 2011 (right before the beginning of the 2011–2012 NFL season). The teams in question were the New York Giants, the New York Jets, the Seattle Seahawks, the Philadelphia Eagles, the New England Patriots, the Houston Texans, the Minnesota Vikings, the St. Louis Rams, the San Francisco 49ers, and the Washington Redskins.[1]

Table 1 summarizes the measures to combat climate change by NFL clubs. For the purpose of describing the teams' climate change programs, I have created the following seven categories:

- Average utilization of the stadium: The carbon footprint of a NFL team may be significantly reduced if the team agrees to share its stadium and infrastructure with another professional sports team (for instance from the Major League of Soccer [MLS]) and if other events (such as concerts) take place in the stadium as well. In addition to the 11 teams listed in Table 1, there are seven stadiums (Miami, Pittsburgh, San Diego, Louisiana, Tampa, Georgia, Oakland) where not only one NFL but also another professional sports team is playing (in Miami even three teams share the stadium).
- Energy-related objectives: Some teams have formulated particular goals for renewable energies, while other clubs strive to reduce their energy consumption, greenhouse gas emissions and energy costs. In a couple of cases, NFL teams seek achievements in both fields (renewable energies and energy efficiency).
- Renewable energies: Some teams have installed or plan to install solar energy in their stadiums (or related buildings); other NFL franchises purchase green electricity.
- Energy efficiency: Examples for energy efficiency measures are "Energy Star" labeled equipment and lighting, light sensors and "cool roofs" to reduce the need for air conditioning.
- Carbon offsetting: Teams can work on offsetting the emissions from away-game travel, for example by tree planting initiatives.
- Electric cars: Teams in the NFL can promote the use of electric cars by providing fans with electric charging stations. Another opportunity is to have electric vehicles for the transportation of the team and the club's staff.
- Other measures: The previous categories include most of the clubs' measures to combat climate change, but some more exist, such as educational environmental measures on match days in the stadium.

[1] Two other teams had at least a single green activity carried out: The Baltimore Ravens and the Green Bay Packers. Since this is not part of a consistent green program this is not part of the table in this section that summarizes the clubs' green activities.

Most NFL clubs are only active in up to two of the previously mentioned categories. The clubs from New Jersey (New York Giants and New York Jets), Massachusetts (New England Patriots), Seattle (Seahawks), and Philadelphia (Eagles) were identified in this research as pioneering American professional sport teams since they are active in five to seven of the eight categories.

4. Drivers for green energy programs in the NFL

I have classified the drivers for NFL franchises to develop green energy programs into the following five categories: Ecological motives, economic motives, political incentives, cognitive environment, and public relations.

4.1. Ecological motives

The New England Patriots are aiming "to make environmentalism a staple of corporate responsibility" (Johnson, 2007). The Philadelphia Eagles, for example, wish to improve "the quality of life in the Philadelphia region" (Website Philadelphia Eagles) with their green program. On the one hand, the clubs want to limit their own contribution to the pollution of the environment; The Minnesota Vikings, for instance, have "the mission of developing sustainable business practices and utilizing renewable energy in an effort to lessen the team's impact on the environment" (Planet purple, 2010). On the other hand, some NFL franchises want to educate their fans about global warming and raise awareness for issues such as renewable energies, recycling, etc. According to the New England Patriots, their green program "not only reduces our carbon footprint, but could help build awareness so that other organizations have an opportunity to make a similar choice for the environment" (Johnson, 2007). On their website, the St. Louis Rams address their fans with, "We look forward to you joining us in going green and making our planet a better place for our children and future generations of Rams fans!" ("St. Louis Rams", 2011). According to the Philadelphia Eagles owner Christina Lurie, "game days have a huge environmental impact considering traffic, trash, energy and material consumption, and water use. They are also opportunities for education and awareness" (Potter, 2007). The Seattle Seahawks want to "inspire, educate, and inform the public about how they can participate in fostering environmental stewardship within our communities." Regarding their solar plant, the Seattle Seahawks emphasize that "it's an opportunity to show to our guests and patrons that photovoltaic power is an option in the northwest" (Solar panels to help power qwest, 2011).

Perhaps the most noticeable renewable energy project in the NFL is the planned 80 twenty-foot spiral-shaped wind turbines on the Philadelphia Eagles' stadium roof. The idea is that every car that drives by the Lincoln Financial Field on the main highway of the United States' East Coast, Interstate 95, will be able to see the installation (Krichavsky, personal communication, July 8, 2011).

4.2. Economic motives

In times of rising energy prices, clubs consider renewable energy installations and energy efficiency policies as effective cost-saving measures. The Seahawks president, Mc Loughlin, emphasized, "it's going to save us money in the long run" (Farnsworth, 2011). According to the representative of the New England Patriots that I interviewed, the electricity consumption of the Patriots was reduced by 26% and the natural gas consumption by 43% between 2003 and 2010; however, the Patriots do not wish to disclose the amount of money that they have saved as a result of these reductions (Nolan, personal communication, August 2, 2011). According to the Seattle Seahawks, the solar panels that they

Table 1
Measures to reduce the carbon footprint in NFL franchises by August 2011.

Stadium (City, Capacity)	Number of teams using the stadium (Team, League)	Energy related objectives	Renewable energy installations in the stadium and purchase of green energy	Energy efficiency measures in the stadium	Carbon offsetting	Promotion of electric cars	Other measures
Century Link Field Event Center (Seattle/ Washington, 67,000)	2 (Seahawks, NFL and Sounders FC, MLS)	21% reduction in annual utility costs and reduction of 1346 metric tons per year	Installation of 3750 solar panels (830,000 kW h) by August 2011	White "cool roof" Efficient lighting			Educating spectators about solar technology; information kiosks on the stadium grounds
Lincoln Financial Field (Philadelphia/ Pennsylvania, 69,144)	1 (Philadelphia Eagles, NFL)	Becoming self-sufficient in energy and being the world's first major sports venue to convert to self-generated renewable energy	Installation of 80 20-foot spiral-shaped wind turbines; 2500 solar panels (15% of the stadium´s power each) and a 7.6 MW dual-fuel generation plant by September 2011 Additional purchase of green electricity since 2009	Reduction of energy consumption by 50% from 2003–2010 due to different unspecified measures	Tree planting to offset the emissions from away-game travel ("Eagles Forest")		Reimbursing employees for purchasing green electricity Converting used kitchen oil from stadium operations to biodiesel Machines in stadium run with biodiesel
New Meadowlands Stadium (East Rutherford/ New Jersey, 82,566)	2 (Giants and Jets, both NFL)	Operating the stadium using 25–35% of the electricity from alternative sources Cut energy consumption by 10% in 2011	Installation of 23 wind turbines (90 KW) and 11,000 solar panels (2.4 MW) by the end of 2011	Use of "Energy Star" labeled equipment and lighting Installation of light sensors No AC on non-event days			Voluntary evaluation by the EPA every six months plus other measures to reduce the entire environmental footprint
Gilette Stadium (Foxborough/ Massachusetts, 68,756)	2 (3 starting in 2012) (New England Patriots, NFL and New England Revolution, MLS) (UofMass Minutemen football from 2012)	Continuous reduction of energy consumption	525 kW h photovoltaic installation since 2010 In 2007 signing of a four-year deal to buy renewable energy (wind) to match electricity demand of all game-days	Motion sensors for all lighting More energy-efficient video boards Adjustments to AC		Electric vehicles charging station starting in 2012	
FedExField (Prince George's County/ Maryland, 85,000)	1 (Washington Redskins, NFL)	Planning to install a solar power system providing a portion of the stadium's electricity needs on game days and generating enough power to serve all of its electrical needs on non-game days	2 MW photovoltaic installation (8000 solar panels) planned by September 2011			Plan to open 10 electric vehicle charging stations by September 2011	
Reliant Stadium (Houston/ Texas, 71,500)	1 (Houston Texans, NFL)			Installation of light sensors	Planting of a tree for each offensive touchdown by the Texans at a home game	All team transportation vehicles are electric (no oil consumption, no CO_2 emission)	
Mall of America Field (Minneapolis/ Minnesota, 64,111)	2 (Minnesota Vikings, NFL and Big Ten's UofMinnesota Golden Gophers, local baseball team)	General objective to use renewable energy resources	Buying as much renewable energy (wind) to offset 100% of energy demand of stadium and all other home games in 2010–11 season	Plants in front of AC intake are lowering the intake temperature from 120°F to 80°F	In 2010 planting of 100 trees (as part of "2nd Annual Planet Purple Week")		Employees participated at "World Car Free Day"
Edward Jones Dome (St. Louis/ Missouri, 66,000)	1 (St. Louis Rams, NFL)		Reducing carbon dioxide release by 342,000 pounds by purchasing renewable electricity		In October 2010 hosting a "green game" by offsetting their fan's and opponent's flight		In 2010 hosting a "Rams Green Week" (several educational environmental measures)

Table 1 (*continued*)

Stadium (City, Capacity)	Number of teams using the stadium (Team, League)	Energy related objectives	Renewable energy installations in the stadium and purchase of green energy	Energy efficiency measures in the stadium	Carbon offsetting	Promotion of electric cars	Other measures
					travel carbon emissions		
Candlestick Park (San Francisco/ California, 70,207)	1 (St. Francisco 49ers, NFL)		New stadium 2014 will have solar panels				

installed in August 2011 will "generate over 830,000 kW h of electricity annually and … will result in a 21% reduction in annual utility costs ($280,000)" (Solar panels to help power qwest, 2011).

The Natural Resources Defense Council states that the energy conservation programs of the Philadelphia Eagles have reduced electricity consumption at the Lincoln Financial Field by more than 33% since 2003 ("Solar electric energy for your stadium or arena", 2011). Belson (2010) portrays the Philadelphia Eagles' green efforts. He writes,

> The team composts more than 25 t of organic waste, and more than 10,000 gallons of grease and used kitchen oil last year were sent to processors that converted it into biodiesel. These and other measures, including halving the amount of water used by urinals, have helped the team save more than $3 million since 2005.

Sponsorship of clubs' green programs poses another – possibly more important – economic motive. "There is a lot of green advertisement money," emphasized the founder of ProGreen Sports with whom professional sports teams consult regarding their green efforts (McSherry, personal communication, July 21, 2011). The Director of Community Affairs of the NFL explained, "Corporate America is adamant about informing the public of how environmentally responsible it is. It uses the NFL to get the message across" (Krichavsky, personal communication, July 8, 2011). According to Belson (2010), "The Eagles, like other teams, have been able to generate new revenue by selling sponsorships to companies interested in being linked to their green initiatives."

4.3. Political incentives

The recent boom in building solar plants in NFL stadiums can be explained with reference to the renewable energy grants program that was part of the American Recovery and Reinvestment Act (ARRA) of 2009. "For many years, we considered investing in solar energy in our stadium, but it was simply not economical. Our view changed with the American Recovery and Reinvestment Act. Without the ARRA, we could not have built our solar plant," reported the representative of the Seattle Seahawks (Benge, personal communication, July 15, 2011).

The American Recovery and Reinvestment Act was passed by Congress in February 2009 as a direct response to the economic crisis. In the media, ARRA is often called the "stimulus package." The approximate cost of the economic stimulus package was estimated at $787 Billion. Apart from the expansion of unemployment benefits and other social welfare provisions, the ARRA included direct spending for education and health. Furthermore, the Recovery Act targeted infrastructure development and this included the energy sector. The Act allocated around $40 billion for investments in energy efficiency and renewable energy programs (The American Recovery and Reinvestment Act of 2009, 2009).

Part of ARRA's renewable energy grants program is an upfront federal grant of 30% for photovoltaic (PV) installations that is paid by the U.S. Department of Treasury on the day the solar plant goes into operation. In December 2010, Congress added another year to the Treasury Program by extending the construction-start deadline through the end of 2011, but left the placed-in service deadline at the end of 2016 (Shays & Stainken, personal communication, July 26–7, 2011).

Additionally, many states, municipalities and utilities offer their own incentives (some of them can be combined with federal programs).[2] For example, energy efficiency measures in the Seattle Seahawks stadium were partly financed by the local utility (Benge, personal communication, July 15, 2011).

4.4. Local environment

Professional sports clubs have to respond to their local environment. Most of the fans that go to the matches are from the local area. It is important for clubs to meet their fans' expectations so as to keep them as costumers who identify with the team, buy match tickets, and purchase fan merchandise. As such, if a club is based in an area with green customers, it will likely adopt a green program to satisfy the local environment. San Francisco, "the heart of the green consumer movement" (McSherry, personal communication, July 21, 2011), is a case in point. The new stadium that is being built in Santa Clara will include solar panels and a green roof (Niners show Santa Clara officials, 2009).

San Francisco is also an example of one out of many stadium projects in the U.S. that needed approval by referendum. Referendums are "a prominent feature of state-level politics in parts of the US, especially the South-West" (Gallagher, 2008, p. 252). In stadium referendums, usually the main issue at question concerns the overall cost of the project and the portion of public money allotted to it. However, promises of an environmentally friendly sports venue can present convincing arguments. The new 49ers stadium was approved with nearly 60% of Santa Clara voters in a referendum in June 2010 (Judge, 2010). The referendum in Washington State on the Football/Soccer Stadium Act in 1997 had a narrower acceptance rate than the one in Santa Clara; it was only approved by 51.1% of the voters (Referendum bill 48, 1997). Possibly, this may be due to the fact that unlike Santa Clara, a city in California with a population of about 100,000 people, the

[2] A comprehensive source of information on state, local, utility and federal incentives and policies that promote renewable energy and energy efficiency is the database DSIRE. DSIRE is an ongoing project of the N.C. Solar Center and the Interstate Renewable Energy Council. DSIRE was established in 1995 and funded by the U.S. Department of Energy (Database of State Incentives for Renewable Energy, 2011).

referendum on the stadium in Seattle was a state-wide ballot; it was approved by 820,364 and rejected by 783,584 voters (Website Ballotpedia). In order to convince the population, it was not enough to simply promise them an environmentally friendly stadium; other promises had to be made, one of which was the promotion of local arts in the stadium (this promise was kept and a Stadium and Exhibition Center Art Program has been launched).

According to the corporate social responsibility literature, the main motive behind organizations' CSR activities is to seek legitimacy in order "to be good corporate citizens worthy of desired tax breaks and subsidies from the government" (see Babiak and Trendafilova, 2009, p. 35). Professional sports clubs need to have a good relationship with the local politicians. They need them not only in order to co-finance stadiums, but also for investments in necessary infrastructure (access roads and public transport or permits for practice facilities … etc). On the other hand, local politicians need the support of other stakeholders to fulfill certain policy goals. By August 2011, in light of the "US Mayors Climate Protection Agreement," 1054 mayors had signed "to meet or beat the Kyoto Protocol target suggested for the United States in the Kyoto Protocol – 7% reduction from 1990 levels by 2012 – in their own communities" (US mayors climate protection agreement, 2008). A new stadium with an ambitious green policy can make significant contributions to fulfill such targets.

Professional sports clubs are aware of this two-way dependency. When the Seattle Seahawks started their installation of 3750 solar panels in August 2011, their owner Paul Allen stated,

> I'm thrilled that with this new project we can now add green energy production to reduce the building's carbon footprint and contribute to Washington State's renewable energy goals. [By buying local solar panels, the Seattle Seahawks want to] … struggle against cheap solar panels from China while holding works in the U.S. (Farnsworth, 2011).

4.5. Public relations

Many of the experts that I have interviewed emphasized that the green programs of NFL franchises are good for their public image. Similarly, in a published newspaper article the NFL commissioner, Roger Goodell, explained, "green efforts underscore the position that we are all very visible and can make a significant effort in our communities" (Belson, 2010).

Due to various reasons, among which are high ticket prices and relocating the team out from the capital and to a stadium in Maryland, the owner of the Washington Redskins, Dan Snyder, is not very popular with the fans of the club. However, when the Redskins announced their plans to build a 2 MW solar plant, many fans praised the owner on the team's website.

The NFL franchises in Philadelphia and Massachusetts have received awards for their green programs. These awards attribute the clubs with a positive image and have enhanced both the clubs' and the owners' reputations, and such news never eludes the media. For instance, in 2010, in recognition of the innovative environmental practices in the Gillette stadium's design, the owners of the New England Patriots, the Kraft family, who privately financed the $325 million stadium, received the Environmental Award for Corporate Leadership from the Environment Business Council of New England. In 2002, the year the Gillette Stadium opened, the EPA presented the Kraft Group with New England's Environmental Merit Award for their achievement (The Kraft group green efforts, 2009).

Also, Christina Weiss Lurie and Jeffrey Lurie, owners of the Philadelphia Eagles, were recipients of the 2008 Ongoing Commitment Award from the Environmental Media Association for their Philadelphia Eagles' "Go Green" efforts. In 2009, the Philadelphia Eagles received a Sustainability Award from the Pennsylvania Environmental Council. The EPA have recognized the Eagles as a Green Power Partner as well as a Green Power Leadership Club member. The EPA stated, "The awards serve to recognize the leading actions of organizations, programs, and individuals that significantly advance the development of green power sources" (Green power partnership, 2011). According to *The Los Angeles Times*, in December 2010, a phone call took place between Obama and the Eagles owner Jeffrey Lurie in which "the president praised the team's ambitious plans to power its stadium with alternative energy" (Bennet and Memoli, 2010). When does a president praise an NFL team for its efforts, apart from when it wins the Super Bowl?

5. Actors involved in innovation and diffusion

When asked which NFL franchise is a pioneer in green operations, there was a unanimous agreement amongst the people I interviewed that, "It all started with the Eagles." The empirical analysis of this research revealed that both teams from New York, the Jets and the Giants, as well as the Seattle Seahawks and the New England Patriots have developed programs that are comparably ambitious. However, in terms of innovation the cases were different.

In the case of the Philadelphia Eagles, the Seattle Seahawks and the New England Patriots, an internal top-down process occurred: Hollywood producers Christina Weiss Lurie and Jeffrey Lurie of the Philadelphia Eagles, Microsoft co-founder Paul Allen of the Seattle Seahawks, and the Kraft family of the New England Patriots initiated their clubs' green programs. In the case of the teams from New York, the innovation process was externally driven. When the representative of the EPA that I interviewed heard of the plans to build a new football stadium in New York, he proposed building a stadium "that will provide a blueprint for future sport venues." However, Bellina emphasized, "we did not have to convince them to cooperate with us. They really want to reduce their carbon footprint" (Bellina, personal communication, July 12, 2011).

However, an internal top-down process does not mean that the innovations were carried out without external help: The representative of the Natural Resources Defense Council explained to me that, in 2004, Jeffrey Lurie (owner of the Philadelphia Eagles) called him and asked whether the NRDC would be willing to assist the Eagles in greening their operations. In the meantime, NRDC has counseled several professional sports teams from different sports leagues regarding the ways in which they can make their operations greener. In addition, the NRDC has formed the Green Sports Alliance (GSA) in cooperation with the EPA, the Bonneville Environmental Foundation, and Portland State University. "Since its launch in March 2011, more than 50 sports teams and venues from across North America have joined the Green Sports Alliance, representing nine professional sports leagues" (GSA, 2011). The GSA aims to contribute to the diffusion of green innovations in the professional sports sector. It seeks to "share best practices and discuss opportunities and challenges the teams face" and

> hope[s] to expand the alliance across North America. Members will submit quarterly reports sharing results on their greening initiatives. The GSA will aggregate results across teams and report annually on collective progress. The GSA will encourage all teams and venues to measure their environmental impacts and seek ways to reduce them. It urges organizations to reduce energy and carbon emissions, conserve water, increase recycling, and promote renewable energy and alternative transportation policies. Teams and venues are also encouraged to

promote their greening initiatives throughout their respective leagues and surrounding communities (GSA, 2011).

The green programs in the NFL were developed bottom-up on club levels and a horizontal diffusion is taking place with more and more clubs adopting (parts of) the green programs from pioneering NFL clubs. A vertical diffusion process could take place if the NFL headquarters in New York were to play a stronger role. When asked about the NFL headquarters' influence on greening the operations of its 32 franchises, the Director of Community Affairs responded, "We don't have mandatory requirements. We want to share information and provide the clubs with best practice" (Krichavsky, personal communication, July 8, 2011). Furthermore, he highlighted the NFL's own green program around the annual Super Bowl which was first launched in 1994 and includes measures such as carbon offsetting, tree planting, and recycling. However, when asked why there was hardly any information on green initiatives on the NFL website at the time this research was carried out, he said, "We do not publicize this information, it is an internal matter." However, the increasing significance of environmental issues in the NFL is palpable: within the NFL headquarters, a "green team" was formed. This team consists of 13 people from different NFL departments who meet on a regular basis to discuss environmental issues (Krichavsky, personal communication, July 8, 2011). Creating administrative responsibilities for the environment seems to be a new trend in the NFL. All the interviewed representatives of different franchises confirmed to me that they have formed green teams.

If NFL teams launch green programs, this is often correlated with their local environment (see previous section). Green consumers and ecologically proactive municipalities can influence clubs' administrative actions. On the other hand, NFL clubs can also influence their local environment. The founder of Pro-Green Sports explained, "professional sports teams compete for fans and advertising money on the local level"; furthermore, he gave the example of the MLB team Philadelphia Phillies, which was inspired by the neighboring Philadelphia Eagles to launch, with his cooperation, an ambitious green program (McSherry, personal communication, July 21, 2011). NFL teams can also influence local businesses. Being large consumers of certain goods, they can demand green goods (such as recycling paper, organic food … etc) from their suppliers. In the end, some of these businesses might alter their operations towards an environmentally friendly direction.

There are other actors that are involved in green energy programs of NFL franchises. The U.S. Green Building Council (USGBC) has developed an internationally recognized green building certification system, the Leadership in Energy and Environmental Design (LEED). At the time of this research, the Seattle Seahawks were considering to apply for LEED certification (Benge, personal communication, July 15, 2011). The Minnesota Vikings were promising "to create an environmentally-responsible venue by leveraging existing infrastructure and land, implementing green initiatives and becoming the first LEED-certified NFL stadium" (Minnesota Vikings, 2011). However, on 5 May 2010, a Minnesota State House panel shelved a new Vikings stadium proposal by a 10-9 vote (Cook, 2010). In Los Angeles, the first LEED certified American football stadium is being built. The purpose of the stadium is to attract an NFL team to the Los Angeles region. According to the city of Los Angeles, the venue will be the most environmentally progressive stadium in the U.S.; however, it is still unknown which NFL team will make its home there (Meinhold, 2010). In the future, LEED certification of NFL stadiums might gain more importance (Babiak, personal communication, July 27, 2011). The larger the number of environmentally friendly stadiums built, the greater the incentive to receive a recognized certificate that differentiates clubs from less ambitious ones that are not eligible for such a certificate. In professional baseball and basketball, the Washington Nationals (MLB) and Houston Rockets have already received LEED certification (NBA) (see Vanderweil 2008).

6. Conclusion

This research has revealed that at least some professional American football clubs have serious concern for the environment and have introduced ambitious programs to combat climate change. The empirical analysis of the 32 franchises of the NFL has structured the analysis of the team's green energy programs into seven categories (energy related objectives, average utilization of the stadium, renewable energies, energy efficiency, carbon offsetting, electric cars, and other measures). Whereas most NFL franchises have no green program at all, some clubs at least have activities in single categories (such as the Washington Redskins, who are building a solar plant, for example). Time will reveal whether these clubs seek to "green wash" their operations or whether these single actions are the starting point for coherent and developed programs.

The analysis has identified both teams from New York (Giants and Jets), the Seattle Seahawks, the Philadelphia Eagles and the New England Patriots as the five pioneering teams. In this research, a pioneer was identified as active in several categories. The five mentioned pioneers are active in five to six of the seven abovementioned categories. Another characteristic of a pioneer is that it has developed a consistent program with administrative and financial capacities to implement its planned measures.

The green actions of the identified pioneers are impressive. However, a comparison with other major sports leagues shows that there are also initiatives they have not undertaken. For example, a recent study by the author on the second most watched professional sports league in the world after the NFL, the German soccer league (Bundesliga), showed that 17 out of the 18 Bundesliga clubs promote environmentally-friendly transportation of their fans with combined tickets for stadium entrance and free use of public transport. Most NFL clubs do not even explain on their websites how to get to the stadium by public transport. Some NFL clubs started introducing charging stations for electric cars rather than questioning the individual motor car traffic and promoting alternatives such as public transport, car pools and bicycles (Reiche, 2013).

While environmental concern might have been the most important driver of pioneering action, in all cases a combination of factors led to the innovations. Besides environmental concern, the following other drivers for pioneering actions were identified: economic motives, political incentives, cognitive environment, and public relations.

An assumption at the beginning of this research was that pioneering action might be an answer to policy failure at the federal level. The representative of the Natural Resources Defense Council who advises professional sports teams such as the Philadelphia Eagles to develop green programs and who initiated the Green Sports Alliance said, "Congress will not lead on climate change. If the society does it, Congress will follow" (Hershkovitz, personal communication, July 25, 2011). However, this research indicated that some green energy measures implemented by the NFL were a result of political incentives. While measures such as planting trees to offset emissions from away-game travel or providing fans with charging stations for electric vehicles in stadium parking lots can be considered to be club-initiated corporate social responsibility (to satisfy environmental concern, improve public relations, and to meet the demand of the clubs'

cognitive environment), other initiatives such as the recently built solar plants on stadium roofs can be considered as government-initiated CSR. Without the stimulus package (ARRA) promotion, hardly any solar installation in the NFL would have been realized. This puts criticism of U.S. climate policy failure in perspective: in spite of all the obstacles in U.S. climate policy (that were described at the beginning of this article), the state still manages to play a role in the matter. Nevertheless, building a solar plant – even if it receives governmental support – is a voluntary activity and can therefore still be classified as CSR (Schrader, personal communication, August 22, 2011). Other actions, especially in the field of energy efficiency, were mainly implemented to cut future energy costs and were therefore driven by economic concerns.

It is clear when analyzing the actors that were involved in the pioneering processes that ecologically-minded owners have played a key role. However, they were often looking for external help and cooperation with state actors (Environmental Protection Agency) as well as non-state actors (Natural Resources Defense Council) to ensure that their ideas are made manifest. In some cases (such as in New York), the initial motivation came from a state actor (EPA).

A company's strategic decisions – such as developing a green profile – are influenced by the local environment of a business. Cities such as Boston, Seattle, and New York are well known for their green consumers and ecologically pro-active municipality administrations. It is difficult to measure to what extent the owners' decisions were influenced by the local environment, but this factor cannot be ignored.

The Green Sports Alliance and the NFL headquarters are actors that are working on sharing best environmental policies. By reporting pioneering action, the media also contributes to the diffusion of knowledge about innovations and triggers imitations.

NFL teams have set an example, and diffusion might take place nationally as well as globally. According to Forbes (2010), six NFL clubs are among the top 10 most valuable sports franchises in the world.[3] In the past, NFL teams were trendsetters in many issues, not only with regards to becoming successful businesses. Many sports clubs in the world carefully observe NFL developments and might be motivated by their recent green efforts.

However, not all green action taking place in the NFL might be feasible in other countries with less economically strong professional sports leagues. For example, paying for carbon offsetting the teams' greenhouse gases is a measure that might be a burden too heavy for smaller clubs with lower budgets than NFL teams. But then there are other measures to benefit the environment that are not only low-cost, but might also reduce the clubs' expenses and even contribute to their revenue. The German Football Association (DFB), the governing body of soccer in Germany and the single largest sports federation in the world, initiated a campaign in 2012 ("DFB Umweltcup") to motivate small clubs to take environmental action. Recommendations that are given include, among others, collection boxes for recycling old cell phones and ink cartridges, a service that would also generate additional income for the club; thermal insulation and, if feasible, roof greening of club homes to save on heating and cooling costs; saving on disposal fees with waste separation; use of reusable dishes in the club homes; and communication of club news via email and the internet (Umwelt-Ideenkatalog, 2013; Reiche, 2013).

[3] Dallas Cowboys are at number 2; Washington Redskins at 4; New England Patriots at 5; New York Giants at 7; New York Jets at 9; Houston Texans at 10 (Forbes 2010).

However, voluntary actions of societal actors cannot replace political regulation that covers everybody and that is not limited to ecologically-minded pioneers. Still, the NFL franchises' actions might contribute to giving political actors the legitimacy for stricter regulations.

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