GREEN CARD:
CREATING SUSTAINABLE STADIA SYSTEM IN THE UNITED ARAB EMIRATES

THESIS

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ABSTRACT

United Arab Emirates (UAE) is a country with almost year-round sunny weather. However, in summer the temperature can go to extremes (up to 50 °C / 122.0 °F). It largely prevents practicing outdoor sports in summer seasons. On the other hand, weather conditions can be turned into advantage to address sustainability and environmental challenges.

UAE nation in its modern history being considerably built on oil industry revenues, has been steadily implementing initiatives aimed at diversification of its economy, reducing dependence on oil sector, decreasing adverse effect to the environment and introducing innovative technologies. Sustainability Week Summit held annually in Abu Dhabi, as well as Masdar City in Abu Dhabi and Sustainable City in Dubai, fully reliant on solar and other renewable energy sources, are one of the few examples.

In sports realm, the UAE government promotes the initiative of sports clubs to become more sustainable, both financially and environmentally. Most of the UAE football clubs currently are not self-sustainable, relying predominantly on government funding. Having no sound commercial approach and venue management system in place, it is not uncommon for the UAE football clubs to have considerable debts (e.g. notoriously a number of professional clubs are unable to pay electricity and water bills for years).

"Green is the New Gold". Guided by this belief and based on research conducted within the framework of this Thesis, we propose to introduce the program aimed at turning all stadiums in the UAE into sustainable smart green venues. To ensure implementation of this initiative we propose to introduce ***"Green Card"*** certification system for all football stadiums, initially at the UAE Arabian Gulf League (the "UAE Pro League") Clubs level. The *"Green Card"* will be granted by the UAE Pro League Committee (the "UAE PLC") to the Clubs compliant and committed to sustainability standards.

"Green Card" Standards will comprise of a mix of basic eco-friendly requirements (e.g. segregated waste management, use of electric carts within the venues, etc.) and innovative solutions (use of solar energy, recycled pitch watering system, etc.). As green technologies are becoming more affordable, such solutions must be utilized more broadly, especially solar panels. Our research and the Case Study have revealed that in the long run using solar energy by the clubs is more cost-effective than being reliant on conventional energy only. Such innovations will not only address environmental concerns, but will also help the clubs to build robust financially sustainable system. More broadly, it will help to create additional jobs and generate energy for neighbouring communities, thus engaging all stakeholders.

"Green Card" Standards will be initially implemented through the soft "good practice" approach (spiritually similar to Italy's Serie B "Green Card" for sportsmanship, fair play behaviour), reflected in the proposed ***"Green Paper"*** – the document, that will set the objectives and values of the initiative. It will then gradually become the standard for certifications of stadiums and clubs to get licensed to host official matches of the UAE Pro League. The system can then be universally applied to other sport venues across the UAE. It can be also tested at FIFA and AFC events in the UAE, e.g. the FIFA Club World Cup to be held in Abu Dhabi in 2017, 2018 and the AFC Asian Cup to be held in Abu Dhabi in 2019.

INTRODUCTION

CONTEXT

Sustainable development has become increasingly important in the recent decades over concerns of climate change, massive use of energy resources and adverse impact of the human activities to the environment.

Sustainability is not just a buzz word, but a necessity to ensure that all processes are carried out in a responsible manner within the means of our environment.

Sports is not an exception to sustainability concerns. Although widely associated with healthy lifestyle, modern sports venues designed to provide breath-taking entertainment experience and thus requiring considerable amount of energy and water resources, are widely seen as "unhealthy" from sustainability perspective.

A lack of sustainability thinking is also the cause of many of the problems sports faces today. The clubs oftentimes spend massive funds on short-term gains, having no long-term strategy. At the same time, sport and football in particular, having such a great outreach and capacity to impact people's awareness, can be a key instrument in promoting sustainability values and enhancing the eco-friendly lifestyle both within the boundaries of sports and well beyond – socially, politically and culturally.

The UAE is already emerging as a global leader in sustainability, pioneering in development of numerous innovative renewable technologies and initiatives. The UAE is committed to advancing the technologies, commercialisation and deployment of renewable energy and clean technologies across all spheres of life.

However, in the UAE sports landscape most of the clubs and venues are currently not sustainable both from environmental and financial perspectives, heavily reliant on government funding and not running their operations in energy efficient and environmental friendly manner.

Although the goals of green development are broadly defined at the UAE national strategy level, sports being one of its components and an instrument is not specifically addressed. For instance, the UAE Football Association, the UAE Pro League and the UAE football Clubs currently do not have dedicated and clearly formulated sustainability programs and processes.

Given the importance of suitability values in development of sport clubs and the capacity of sport clubs to raise awareness among local communities we propose to implement the *"Green Card"* initiative aimed at turning all stadiums in the UAE into sustainable smart green venues. The initiative will broadly cover environmental, technological, financial, marketing and management aspects of operating the UAE clubs and venues, engaging local communities and generally all stakeholders.

The proposed *"Green Card"* initiative is conceptualised broadly rather than focusing on the environmental issues only. It encompasses environmental, financial and social sustainability as interdependent components of long-term development.

By implementing this 360˚ sustainability approach, UAE clubs will be able to establish complete self-sustainable system, benefiting from the mix of technological solutions (such as use of solar energy and recycling water football irrigation system) and integration of smart green venues into efficient commercial management and robust financial system.

SCOPE OF RESEARCH

To make the *"Green Card"* initiative more practical and implementable, we propose to limit its introduction initially at the UAE Pro League Clubs level. Respectively, we have narrowed our research to football, and more specifically the Pro League clubs and venues.

We nevertheless propose to apply the initiative broadly to other venues across different sports in the UAE with the aim of promoting the initiative at the national level.

We have defined our focus on specific dimensions to advocate the initiative. More specifically, we have addressed the following aspects:

- ***technological*** – although we do not have special expertise in engineering and technology analysis, we have tried to spot and evaluate the technologies which can be implemented, considering in the UAE conditions;
- ***financial & management*** – evaluating the costs related to introduction of green technologies and researching on competitive solutions currently available in the market, as well as implementing new management solutions;
- ***marketing & communication*** – developing marketing guidelines to assist UAE clubs to commercialize the initiative by attracting new sponsors and partners, as well as effectively broadcasting green initiatives to the public;

- ***legal & regulatory*** – examining existing standards and proposing to introduce *"Green License"* category to the UAE Pro League certification & licensing;
- ***social*** – projecting the effects of *"Green Card"* initiative to the local communities in the context of broader engagement (especially youth) into sports, eco-friendly and healthy lifestyle.

The above areas of research have been further distributed among the members of the team in the following manner:

- ***Abdulrazzaq Al-Mahmood*** mainly focused on liaising with and obtaining data from UAE Football Association, Pro League and the Clubs, as well as researching on administrative requirements and government policies in the UAE (thus, contributing to *Paragraphs 1.2 and 2.3*);
- ***Atanas Tarkalanov*** focused on search and analysis on technologies that can be used in the UAE conditions – liaising among others with Masdar and specialists in green technologies[1] – and conducting financial analysis (thus contributing to *Paragraphs 2.1 and 2.2)*;
- ***Damir Valeev*** mainly focused on researching of FIFA standards, international certifications and foreign practices; defining legal strategy and regulatory approach (thus, contributing to *Paragraphs 1.1 and 2.3*), as well as proof-reading and editing the text within academic parameters.

Overall *"Green Card"* concept and its implementation strategy (generally presented in *Paragraph 1.3, Introduction & Conclusion*) have been developed and presented collectively by the members of the team. Based on the combined efforts approach we have jointly drawn up the conclusions and recommendations.

We have attempted to cover all aspects and apply all modules taught during the Program implementing 360˚ approach to the topic to highlight all advantages and potential obstacles to implementation of the *"Green Card"* initiative.

[1] Specifically, a number of valuable interviews have been conducted with Mr. Sven Steinbach, UAE-based engineer, specializing in solar energy efficiency and holding patents for inventions in the related field.

LITERATURE REVIEW

Research papers and studies generally on sustainability subject and its various aspects are plentiful. Respectively, there are numerous of government, semi-government and non-government research centres (for instance, *Sustainability Research Centre*, *Masdar Institute*) and think tanks within international organizations (such as with the *UN Sustainability Development Goals (SDGs) Program*).

However, the number of publications related to sustainability issues within the realm of sports is limited. For instance, we can highlight *Sustainability and Sport*, 2011, edited by *Jill Savery* and *Keith Gilbert*; *Sport Management and the Natural Environment: Theory and Practice,* 2015 edited by *Jonathan M. Casper* and *Michael E. Pfahl; Football, Community and Sustainability (Sport in the Global Society – Contemporary Perspectives),* 2017, edited by *Chris Porter, Anthony May* and *Annabel Kiernan; Sustainability through Soccer: An Unexpected Approach to Saving Our World*, 2016 by *Leidy Klotz.*

Significant research activity is generally conducted under auspices of international sports governing bodies (e.g. FIFA, UEFA, IOC, International Federations) within the framework of reports, policy papers and action plans. FIFA, for instance, extensively publishes reports and action plans under its official environmental programme, "*Football for the Planet*", and also in relation to specific initiatives and programs implemented for the FIFA World Cups, which is proven to be an effective tool of international sports body and governmental approach.

Research papers related to specifics of sports development in the UAE are even further limited. Sustainability issues related to the sports in the UAE and more broadly in the Gulf region are not sufficiently examined. We can highlight a number of publications on various aspects of sports development in the UAE and the Middle East (e.g. *Sport Management in the Middle East: A Case Study Analysis*, 2013, edited by *Mohammed Ben Sulayem, Sean O'Connor*; *Soccer in the Middle East (Sport in the Global Society – Contemporary Perspectives)*, 2014, edited by *Alon Raab and Issam Khalidi*; and publications of *Steve Bainbridge* who extensively publishes on sports law aspects in the UAE and the Middle East).

We were unable, however, to spot a comprehensive research on sustainability issues in the UAE sports in particular. Therefore, we hope that this research will contribute to a broader academic approach to the topic and will lead to further publications in the field.

METHODOLOGY

We have applied inter-discipline approach, capitalizing on all modules taught during the Program (*Sport Finance, Sport Law, Sport Marketing, Sport Communication, Sport Management,* etc.). We have broadly examined the extensive international research data and practical solutions available on the topic. We have specifically approached the UAE Football Association, Masdar City and other relevant authorities, institutions and individuals in the UAE to present the initiative, obtain supporting data and get their feedback.

IMPLEMENTATION

To make the research more practical we have conducted the *Case Study (Annex 1)* on Introduction of Solar Technology to the UAE FA Sports Venue, which as most of the UAE football clubs consists of the football stadium, training field and office buildings as most of the football clubs in the UAE.

We have further proposed to develop and implement the following documents:

- ***"Green Paper"*** UAE FA policy paper on the *"Green Card"* concept;
- ***"Green Card" Implementation Guidelines*** for the UAE Pro League Clubs to obtain *"Green License"* Category;
- ***Marketing Plan Guidelines for UAE Pro League Clubs*** to promote commercially *"Green License"* Category.

The *"Green Card"* initiative will be presented to the UAE FA and implemented as a project. We will further seek its endorsement by the AFC and FIFA. The major beneficiaries of the initiate will be the UAE football clubs, the venues, local and international companies specializing in sustainability technologies and broadly local communities, as they will benefit from eco-friendly environment and will be able to get additional energy supply from smart venues. The initiative will also help create new qualified jobs in sports industry and technological sector, primarily among UAE youth.

CHAPTER I:
OVERVIEW OF SUSTAINABILITY INITIATIVES & INTRODUCTION OF THE "GREEN CARD" CONCEPT

1.1. SUSTAINABILITY AND GREEN TECHNOLOGIES IN FOOTBALL: INTERNATIONAL AND GOOD PRACTISES ANALYSIS

With expanding development and increase in consumption of natural resources, sustainability is becoming a vital issue. There is no unified definition of *"sustainability"*, but it can be generally described as *"living within the means of our environment, without harming or depleting such environment for future generations"*.

Sports and football in particular is a part of sustainable development goals. Modern stadiums and sports venues require considerable consumption of energy and water, having substantial impact on the environment.

However, it is widely recognized that sport has a capacity to impact people's attitude towards social development and therefore can be instrumental in promoting sustainability values broadly within the society.

These goals are implemented at different level by various sport governing bodies and sport organizations.

1.1.1. FIFA Initiatives

"*Football for the Planet*" is the official environmental programme of FIFA that aims to mitigate the negative impact of FIFA's and FIFA's tournaments activities on the environment and to use FIFA competitions to raise awareness of environmental issues[2]. It is the continuation of the environmental programmes that have been developed for FIFA competitions since the FIFA World Cup 2006 in Germany.

The focus areas of the FIFA Programme are waste, water, energy, transportation, procurement and climate change. These areas were developed for and successfully used in the Green Goal environmental programmes in 2006, 2010 and 2011.

For instance, as stated in the *Sustainability Summary of the 2014 FIFA World Cup Brazil on Carbon Footprint*, one of the cornerstones is to have a clear understanding of the volume of greenhouse gas (GHG) emissions caused by the FIFA World Cup preparation and staging.

[2] FIFA Football for the Planet Programme *See* http://www.fifa.com/sustainability/football-for-planet.html

At present, a general standardized methodology for calculating the carbon footprint associated with major sporting events does not exist. Prior events, such as the 2010 South Africa World Cup and the 2012 London Olympic Games have introduced different methodologies, which utilize parts of the *GHG Protocol Corporate Accounting Standard (GHG Protocol)* and *ISO 14064.1 (ISO, 2006).* The 2012 London Olympic Games also utilized *PAS 2050 (PAS 2050, 2011)* to incorporate the footprint metrics associated with the lifecycle of some products and structures. FIFA generally bases its research on the *GHG Protocol* as the primary foundation and incorporates further technical guidance from *ISO 14064.1*[3].

FIFA, being the right holder of the World Cup, one of the most prominent sporting mega-event, has a substantial institutional capacity and an efficient instrument to promote sustainability and other similar initiatives – not just at the sports or football level, but at the national level as well. Therefore, we are of the opinion, that such tools should be used by FIFA more widely on sustainability front, especially at the bidding stage, as it will help to engage not only the hosting nation, but also the bidding countries.

1.1.2. The 2014 Brazil World Cup Implementation

In Brazil, FIFA together with the 2014 FIFA World Cup Local Organising Committee (LOC) implemented projects to reduce the impact of the World Cup on the environment.

More specifically, the activities in Brazil included the following:

- ***Carbon offsetting.*** FIFA and LOC offset all emission under their operational control through selected carbon-reduction projects in Brazil. These emissions generally included travel (especially long-distance flights) and accommodation of all staff, teams, volunteers and guests, as well as emissions of venues, stadium and offices[4].

[3] FIFA Sustainability Summary of the 2014 FIFA World Cup Brazil on Carbon Footprint. *Available at:* http://resources.fifa.com/mm/document/fifaworldcup/generic/02/11/20/03/summaryofthe2014fwccarbonfootprint_neutral.pdf

[4] FIFA and the LOC estimated the total carbon footprint of the 2014 FIFA World Cup Brazil would be 2.7m tonnes CO2 (Carbon Dioxide) of which 251,000 tonnes were under operational control of FIFA and LOC. *See* http://www.fifa.com/sustainability/football-for-planet.html

- ***Sustainable stadiums.*** Most of the FIFA World Cup stadiums in Brazil were planned to achieve LEED certification[5] for green buildings and many installed solar panels on their roofs to generate renewable energy[6].
- ***Waste management in stadiums.*** FIFA promoted a new waste law in Brazil to enhance control over waste management. In collaboration with local waste companies, FIFA, the LOC and Coca-Cola developed a waste management system for the stadiums to ensure that waste was handled properly and recycled[7].

This initiative and the accomplishments illustrate the ability of football governing bodies to set the environment and sustainability agenda through soliciting the government to change the national regulations, involving the sponsors for good-cause marketing campaign and engaging local communities and NGOs.

Although, Brazil has faced difficulties with implementation of the legacy plan, from infrastructure and carbon emission perspective, it has achieved measurable success. More specifically, *Estádio Jornalista Mário Filho (Maracanã Stadium)* in Rio has obtained Gold Standard from eco-building certifier (LEED) and 3 stadiums (*Estadio Mané Garrincha de Brasilia, Arena de Pernambuco and the Mineirao stadium*) achieved LEED certification. Notably, *Estadio Mineirão* in Belo Horizonte was recognized as the first World Cup stadium powered entirely by solar power[8].

1.1.3. The 2018 Russia World Cup Implementation

FIFA and the 2018 Russia World Cup Local Organizing Committee (LOC) have developed *Sustainability Policy*[9] that provides both FIFA and the LOC with guidance on how

[5] *LEED certification for green buildings* is one of the recognized metrics used to evaluate sustainability of stadiums. LEED (Leadership in Energy and Environmental Design) currently is the most recognized green building rating system worldwide. LEED provides a framework to create sustainable, highly efficient, and cost-saving green buildings which use less water and energy and reduce greenhouse gas emissions. Operated by the U.S. Green Building Council (USGBC), LEED acts as a third-party verification system for projects pursuing LEED certification through earning points across several areas that address sustainability issues. Based on the number of points achieved, a project then receives one of four LEED rating levels: Certified, Silver, Gold and Platinum. For more information on LEED certification for green buildings. *See* https://www.usgbc.org/leed

[6] *See* http://www.fifa.com/sustainability/football-for-planet.html

[7] *Ibid.*

[8] Sustainability in Football: Greening the Game. – Ciudad del Fútbol 28 April 2015. *See* http://www.sefutbol.com/en/sustainability-football-greening-game

[9] Sustainability Policy of the FIFA World Cup Russia 2018. – FIFA, November 2015. *See* http://resources.fifa.com/mm/document/afsocial/general/02/84/69/60/2018fifaworldcupsustainabilitypolicy_neutral.pdf

to implement the objectives of the *2018 FIFA World Cup Sustainability Strategy* and contribute to a positive legacy in the hosting country.

The basis for the management of the FIFA World Cup Programme is *FIFA's Project Management & Knowledge Transfer Process (PM&KT)* with 3 objectives, 6 phases and 4 project management outputs.

On environmental front the following key objectives are defined:

- ***Green-building standards for stadiums:*** to ensure the compliance of the World Cup stadiums with green-building standards; develop the sustainable management capacities of stadium operators;
- ***Transport, carbon, energy and waste management:*** to ensure efficient World Cup-related energy and carbon management; ensure efficient and sustainable waste management; minimise the environmental impact of the event transport;
- ***Risk mitigation and biodiversity:*** to mitigate the risks of environmental incidents related to the World Cup operations; ensure compliance between the World Cup operations and local regulations governing protected sites; promote environmental protection and biodiversity in relation to the World Cup preparations and staging[10].

In accordance with the international standard for *"Event sustainability management systems"* (ISO20121:2012), FIFA and the LOC are implementing for *the 2018 Russia World Cup a Sustainability Management System (SMS)*, which provides guidance on day-to-day decision-making for FIFA and the LOC. SMS further translates commitments, requirements, obligations and sustainability performance objectives into effective actions.

The SMS has helped to integrate the basic principles of sustainable development into the functional operation plans of the 2018 Russia World Cup LOC. So far, 124 specific requirements have been developed, specific sustainability requirements have been included in the plans of all relevant functional areas (28 functional operation plans), and reference to the Sustainability Strategy and Sustainability Policy requirements have been incorporated in all 46 functional operation plans. Alongside the SMS, FIFA and the LOC have also developed a *Sustainability Action Plan for the 2018 Russia World Cup* with around 160 activities[11].

[10] *Ibid.*
[11] A More Sustainable FIFA World Cup: An Update on the Implementation of the Sustainability Strategy. – FIFA, 2017. *See:* http://resources.fifa.com/mm/document/afsocial/general/02/89/52/29/a_more_sustainable_fifa_world_cup_update_june2017_neutral.pdf

1.1.4. The 2022 Qatar World Cup Initiatives

Implementation of these objectives in Russia is yet to be seen. However, with a view of the *2022 Qatar World Cup* in line and endorsement of use of *Global Sustainability Assessment System (GSAS)*[12], we anticipate FIFA and Qatar Organizing Committee will develop the sustainability program that will address not only country, but regional specifics and will affect development of football in sustainable manner in the Gulf region and the Middle East broadly.

It has been declared by the 2022 Qatar World Cup Organizing Committee that the renewable and low energy solutions are being incorporated in the World Cup venues, helping stadiums to become energy self-sufficient and to power other facilities in some cases.

Although it has been announced that the 2022 World Cup in Qatar will be moved to November and December 2022 Qatar has already implemented revolutionary cooling technology at Qatar's *Khalifa Stadium*, 47,000 seats refurbished venue as the world's first air-conditioned open-air stadium[13].

The Organizing Committee claims that this technology will this change the way sport is hosted/played in the Middle East. At the same time there are critics to such initiative. For instance, architect John Barrow, who was designing the Sports City stadium in Doha, one of the proposed World Cup venues, insisted that the cooling technology plans should be dropped as not good from a long-term sustainability point of view[14].

According to Mr. Graeme Maidment, Professor of Air Conditioning and Refrigerating at London South Bank University, the cooling technology is *"doable, but very, very expensive"*. There is also a discussion that such technology would make it hard for the stadiums to meet FIFA's environmental requirements due to its carbon output[15].

Therefore, use of cooling system in the Gulf countries stadiums shall be further evaluated from carbon footprint and sustainability perspective. Use of solar energy for cooling can be an prudent solution in such debate.

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[12] FIFA has already officially endorsed the use of the Global Sustainability Assessment System (GSAS) for the 2022 FIFA World Cup Qatar. *See* Isabel Ovalle Dávalos. Building towards Green Stadiums at the 2022 FIFA World Cup – 7 November 2016, Qatar Supreme Committee for Delivery & Legacy.

[13] Rahul Bali. 2022 World Cup: Cooling Technology – 21 May 2017. *See* http://www.goal.com/en-gb/news/2022-world-cup-cooling-technology-all-you-need-to-know/feh3ywch67c4100bnh8w83jjt

[14] Jon Kelly. What happened to the Qatar World Cup's Cooling Technology? – 25 February 2015, BBC News Magazine. *See* http://www.bbc.com/news/magazine-31608062

[15] Kento Kato. Qatar World Cup Stadium Architect Advises Against Air Conditioning Technology – 25 February 2015, SportTechie. *See* https://www.sporttechie.com/qatar-world-cup-stadium-architect-advises-against-air-conditioning-technology/

1.1.5. England FA

England Football Association (England FA) is known for paying special attention to the environment and sustainability issues[16]. It is one of the few national football association having designated sustainability program and clearly formulated initiatives.

One of the key showcases of the FA was renovation of the ***Wembley Stadium*** which was re-opened in 2007. In 2008 Wembley's *"Green Team"* developed and implemented an *Environmental Management System (EMS)* to manage environment impact and run the venue in energy, waste, water, transport and procurement efficient way.

EMS implemented by Green Team has enabled Wembley Stadium to achieve ISO 20121 Certification. The "*Going Greener*" report has detailed Wembley Stadium and the FA commitments to improving environmental performance[17]. Among the highlights of Wembley Stadium, the following can be outlined:

- Wembley Stadium is powered by 100% renewable energy;
- Wembley Stadium is a "*zero waste to landfill venue*". The majority of the waste is diverted out of the general waste stream as mixed recycling and food waste. General waste is sent to a "waste-to-energy" facility where energy is generated and returned to the National Grid. In 2013 the Stadium was one of the first venues to achieve the Carbon Trust Waste Standard for reducing the carbon emissions associated with waste management;
- As a "public transport venue" Wembley Stadium benefits from 3 major stations and 5 train / underground lines. The Green Travel Plan encourages fans to take alternative means of travel to the Stadium which have less environmental impact[18].

Among FA Clubs, ***Manchester United*** promotes 2 environmental initiatives – "*United to Switch Off and Save*", aimed at energy efficiency and *"Reds Go Green"* focused on waste management and recycling. The club has implemented numerous eco-standards, including: *Carbon Reduction Commitment 2011, Carbon Trust Standard for Energy Efficiency* and *Carbon Reduction (ISO20121), Event Sustainability Management (ISO14001)* for establishing

[16] For more information on the England FA sustainability initiatives *see* http://www.thefa.com/about-football-association/what-we-do/sustainability
[17] "Going Greener 2013" Report. *See* http://www.wembleystadium.com/TheStadium/StadiumGuide/Sustainability#iKUEe6tKQrtAYJh2.99
[18] For more information on Wembley Stadium sustainability initiatives *see* http://www.wembleystadium.com/TheStadium/StadiumGuide/Sustainability

an environmental management system. Rainwater at Old Trafford is recycled and used to irrigate the pitch. The Club also utilises an extensive recycling scheme whereby all recyclable waste is sent to a "waste-to-energy" plant, as in case of Wembley.

Partnering with Apollo Tyres, the club recycled 2,200 tyres and turned them into an artificial pitch at the training ground[19]. Manchester United also participated in Nike "*ReUSE-A-Shoe*" initiative which recycled worn out trainers into premium sports surfaces.

England FA can be a good benchmark to the UAE FA on sustainability initiatives, especially considering strong ties between on the leading Premier League club, *Manchester City* and the UAE.

1.1.6. Selected Showcases

In certain instances, sustainability initiatives and eco-solutions are implemented at a level of certain clubs or venues.

Forest Green Rovers (FGR) based in Gloucestershire, England is one of the most vivid example of football clubs, *"religiously"* dedicated to the sustainable and green development. The FGR, has implemented the *Eco-Management and Audit Scheme (EMAS)* qualification for its 5,000 seat *New Lawn Stadium*. Specifically, the Club has introduced a number of initiatives to reduce the impacts of its activities on the environment, to name a few:

- installation of solar panels on the roof and ground-mounted solar powered car ports;
- pitch irrigation system partially based on a mixture of rain, drain and spring water;
- organic pitch through prohibiting the use of pesticides and manmade chemicals;
- lighting system based on low energy floodlights, as LED;
- use of Nisan electric vehicles with charge points at the Club's venues;
- promotion of healthier food for players, staff and fans, using increasing percentages of local and organic ingredients.

FGR has also made history in 2015 announcing the *New Lawn Stadium* a first all-vegan football stadium – only vegan foods are available to purchase[20].

[19] Sustainable Football: Which Team is Greenest? - Blue & Green Tomorrow, 27 January, 2017. *See* http://blueandgreentomorrow.com/features/sustainable-football-team-greenest/
[20] Forest Green Rovers: the World's Most Sustainable Football Club. – Climate Action Programme, 8 February 2017. *See* http://www.climateactionprogramme.org/news/forest_green_rovers_the_worlds_most_sustainable_football_club

Real Madrid in its turn in 2012 upgraded its 11 training pitches with a new generation turf produced by *Desso*, Dutch cradle-to-cradle pioneer. The pitch's main feature is the fact it never needs to be watered, mown or doused with pesticides[21].

In another example, the ***Allianz Riviera Stadium***, a multisport stadium in Nice, France, which is mostly used for football matches, has implemented most rigorous standards of environmental and social responsibility. More specifically, it relies on solar energy and eco-materials, and the management is committed both to recycling and to providing job opportunities and training in sustainable development to local workers.

Among other features, the *Allianz Riviera Stadium* has acknowledged the sustainable advantages of PVC and has made extensive use of this wonderful material in the roof of the stadium. While maintaining a financially-responsible and low-carbon approach to design, the architects were able to develop a complex undulating space-frame that combines optimal lightness with solidity. It is made up of a tri-dimensional wood-steel frame covered with a PVC and ETFE tensile fabric, and is equipped with photovoltaic panels[22].

Overall, most of the top European clubs are active on sustainability and environmental front, having dedicated sustainability programs and initiatives in place. Among a few the following can be highlighted:

- ***Juventus****:* open and inclusive approach, a *"glocal"*, economic and dynamic perspective are the main features of the sustainability strategy pursued by Juventus. The inclination, which has been confirmed by stakeholder engagement, has led to the identification of 3 key areas: Sport Management, Intangibles & Brand Management and Operational & Commercial Stadium Management[23];
- ***Arsenal****:* Club has developed *Environment & Regeneration System*, defining a comprehensive recycling and regeneration policy in all aspects of operation, engaging all stakeholders and local community in particular[24];
- ***FC Porto****:* the club been implementing a *Quality & Environmental Management System* in it its stadium, *Estádio do Dragão*, since 2006. The methodology is based

[21] Sustainability in Football: Greening the Game. – The Guardian, 2 October 2014. *See* https://www.theguardian.com/sustainable-business/2014/oct/02/sustainability-football-green-game-sport
[22] Marco Punzi, Sustainable vinyl at the Allianz Riviera Stadium. – Issue 13, September 2015. *See* http://wonderfulvinyl.pvc.org/upload/WonderfulVinyl_issue13_lowres.pdf
[23] For more information *see* http://www.juventus.com/en/club/sustainability/
[24] For more information *see* https://www.arsenal.com/the-club/community/environment-and-regeneration

on a set of rules and procedures designed in accordance with the directives of the *Club's Quality & Environmental Policy*, described in the *Guide for Proper Environmental Actions*[25];

- ***Tottenham Hotspur**:* The Club has developed an *Environmental Policy* to recycle waste and reduce carbon emission[26];
- ***Liverpool FC**:* The Club has developed the *Action for Health Programme* through utilising the expertise of local organisations who have offered wider support for community groups, specifically engaging the *University of Liverpool* and getting additional funding from *Liverpool City Council*[27].

These examples illustrate how sustainability initiatives can be integrated into club's values and processes through various instruments to serve a broader social goal. We believe the UAE Clubs will follow the trend to promote sustainability values at the national level, especially among youth.

Conclusion to Paragraph 1.1

There is a variety of sustainability initiatives in sports at international, national and club's levels. Their implementation can be driven by different factors. In certain cases, these initiatives are aligned with the government policy or promoted by the international sports governing bodies. In other instances, they are based on private initiatives and commercial approaches. Respectively, certain initiatives are undoubtedly efficient, whereas others are yet to be tested and provided, especially given the UAE and Gulf specifics.

We believe that sustainability projects shall embrace all stakeholders broadly as ultimate beneficiaries of such developments and the clubs running the initiative should benefit in commercial terms. On the other hand, international and national governing bodies in football and other sports should play a more active role in setting the framework for sustainable development goals in sports. Such measures, however, should be balanced, not becoming an excessive regulatory burden for clubs, but an incentive to benefit from eco-solutions commercially.

[25] For more information *see* http://www.fcporto.pt/en/clube/grupo-fc-porto/Pages/sustentabilidade-intro.aspx
[26] For more information *see* http://m.tottenhamhotspur.com/the-club/environmental-policy/
[27] For more information *see* http://www.liverpoolfc.com/community/healthy-stadia/anfield-initiatives

1.2. SUSTAINABILITY INITIATIVES IN THE UAE AND GOVERNMENT POLICIES IN THE FIELD OF FOOTBALL

The UAE Government is committed to ensure country's sustainable development with the objective to achieve a balance between economic development and preserving environment. Key sustainability drivers in the UAE and broadly in the Middle East region include energy efficiency; prudent sourcing and use of water; developing sustainable food supply chain; decreasing air, water and ground pollution and implementing efficient waste management system.

The UAE Government, both at a Federal and Emirates levels, is the key driver of sustainability initiatives in the UAE. There is an understanding and appreciation at the UAE government level that it is vital for the country to ensure sustainable use of its resources (such as water and limited agricultural land), to diversify its economy (moving away from reliance on oil energy and oil sector revenues) and to protect the quality of life and nature, balancing it with rapid development.

1.2.1. UAE Federal Initiatives

The *UAE Government Vision 2021 National Agenda*[28] has been developed with a focus on improving the quality of air, preserving water resources, increasing contribution of clean energy and implementing green growth plans. The *National Agenda* specifically highlights the importance of infrastructure and aims for the UAE to become among the best in the world in the quality of infrastructure.

The UAE has set *Key Performance Indicators (KPIs)* to measure its targets and has launched the initiatives to achieve its targets by 2021 and beyond. In line with Vision 2021 and National Agenda, the UAE projects to generate 27% of the energy from clean energy sources, reduce its per capita greenhouse gas emissions and achieve average oil consumption of 5 tonnes per capita by 2021.

At the institutional level, the UAE Ministry of Climate Change and Environment is the federal authority for environmental planning and action in UAE. In addition to Ministry, there is a respective authority of the environment protection in each Emirate. The Ministry, in

[28] UAE Vision 2021 National Agenda: National Key Performance Indicators *See* https://www.vision2021.ae/en/national-priority-areas/sustainable-environment-and-infrastructure

collaboration with the local authorities, works on developing environmental programmes and initiatives that aim to contribute to the sustainability of water use, enhance food security, raise the rates of bio-security and enhance environmental security.

The UAE Ministry of Energy is another federal institution that supervises use of energy in a sustainable manner to ensure reduction of greenhouse gas emissions.

Sustainability concept has been increasingly promoted in the UAE when Abu Dhabi and Dubai announced their objective of being among the most sustainable cities in the world.

1.2.2. Abu Dhabi Initiatives

Environment Vision 2030 of the Emirate of Abu Dhabi was developed to ensure integration among 3 pillars of sustainability: environmental, economic and social. The Program aims to preserve and enhance Abu Dhabi's natural heritage in the efficient use of resources and contributing to a better quality of life for all.

Environment Vision 2030 identifies the following 5 priority areas:

- ***Climate change*** – minimising the impact of climate change;
- ***Clean air and noise pollution*** – contributing to safe and healthy living conditions;
- ***Water resources*** – efficient management and conservation of water resources;
- ***Biodiversity, habitats and cultural heritage*** – conserved for future generations;
- ***Waste management*** – enhanced value creation through optimised material flows and waste management.

The priority areas are further divided into sub-priorities, which in turn are further divided into specifically defined environmental outcomes.

1.2.3. Dubai Initiatives

In 2014 the Emirate of Dubai launched a *National Innovation Strategy* with the aim of making the UAE one of the most innovative nations in the world within 7 years. The Strategy aims to stimulate innovations in 7 sectors where innovation is key drive. One of the sector is renewable energy. First phase of the Strategy includes 30 national initiatives to be completed within 3 years. These include new legislation, innovation incubators, investment in specialised skills, private sector incentives, international research partnerships and an innovation drive within the Government.

The *Dubai Clean Energy Strategy* aims to provide 7% of Dubai's energy from clean energy sources by 2020. It will increase this target to 25% by 2030 and 75% by 2050.

The effect of sustainability initiatives is already measurable. For instance, the Dubai's Chamber of Commerce and Industry's headquarters was the first building in the Middle East to achieve LEED existing building certification from the US Green Building Council and has been further was upgraded to Platinum certification following retrofitting[29].

Sustainability is also one of the core theme of the *EXPO 2020* to be held in Dubai, which is announced to be "greenest" EXPO.

1.2.4. UAE Showcases

The UAE actively implements sustainability projects. *Masdar City* in Abu Dhabi and *Dubai Sustainable City* in Dubai are one of the highlights of such developments.

Abu Dhabi Masdar City. *Masdar City* is a development reliant on solar energy and other renewable energy sources. *Masdar City* hosts the headquarters of the *International Renewable Energy Agency (IRENA).* The City is designed to be a hub for clean-tech companies.

Masdar uses clean energy generated on site from rooftop solar technology and one of the largest photovoltaic installations in the Middle East. Masdar is powered by a 22-hectare (54-acre) field of 87,777 solar panels with additional panels on roofs. There are no light switches or water taps in the city. Movement sensors control lighting and water to cut electricity and water consumption by 51% and 55% respectively[30].

Dubai Sustainable City. *Dubai Sustainable City* is the first operational net zero energy city in Dubai, modelled to become a showcase for sustainable living, work, education and recreation. *The Sustainable City* provides shaded car parks throughout the City cover with solar panels. The solar shaded car parks supply the electricity needed to power street lighting, electric vehicle charging stations, and the urban farm, helping the City achieve net zero service charge. Apart from periphery roads and car parking areas, the development is designed as a car-free site. Transportation system within the City is operated through communal electric buggies[31].

[29] 10 Things to know about sustainability in the UAE. – Norton Rose Fulbright, March 2017. *See* http://www.nortonrosefulbright.com/knowledge/publications/125011/10-things-to-know-about-sustainability-in-the-uae
[30] For more information *see* http://www.masdar.ae/
[31] For more information *see* http://www.thesustainablecity.ae/

Expansion of Solar Power. While being a major oil producing country, the UAE has taken steps to introduce solar power on a large scale. Although solar power still accounts for a small portion of energy production, but the country is planning to generate the vast majority of its electrical energy from solar and nuclear sources.

The UAE continues to dominate the market in terms of large projects in solar power, with the implementation of two mega solar photovoltaic (PV) projects awarded and one concentrated solar power (CSP) project up for tender in the first half of 2017 in Dubai.

Abu Dhabi in its turn has announced the *Sweihan Solar Power Project*, which is expected to be the world's largest on a single site, with the capacity of almost 1,2 gigawatts. The plant is expected to be completed by 2019 with total projected cost of USD 1,2 bln[32].

1.2.5. UAE Government Policies in the Field of Sports

The UAE Government gives special attention to the growth of sport sector, seeing it as a significant drive in development of the nation. Establishing and maintaining sports clubs is under the scope of social development services. Achieving a cohesive society is one of 6 pillars of *National Agenda* in line with *Vision 2021*. More practically one of the KPIs to measure such achievement is the number of medals won in the Olympics & Paralympics, as well as World Cups and championships in various sports.

The UAE General Authority of Youth and Sports Welfare is a federal authority responsible for the welfare of youth and the development of sports in the UAE. The Authority's role is widely defined as spreading the culture of sports as a way of life to promote fitness, taking tangible measures to facilitate participation of women and people with special needs in sports events and supporting local talents at regional and international sports events.

The UAE hosts numerous international prime events across various sports, to name a few: Formula 1 Etihad Airways Abu Dhabi Grand Prix; Abu Dhabi HSBC PGA Golf Championship; Abu Dhabi Cycling Tour; Dubai Tennis ATP and WTA Championships (Dubai Open); DP World Tour Golf Championship and Omega Dubai Desert Classic; Dubai Horse-Racing World Cup; Dubai Marathon; Emirates Airline Dubai Rugby Sevens; Dubai Cycling Tour and many others.

[32] Sami Zaatari. Abu Dhabi to Build World's Largest Solar Power Plant. – Gulf News, 24 May 2017.

In sports of football specifically, Abu Dhabi will host the *FIFA Club World Cup* in 2017 & 2018 and the *AFC Asian Cup* in 2019.

Such variety of international sports events on one hand helps to promote the UAE as the tourism destination and increases interest of the UAE nationals and residents in sports. On the other hand, hosting international events requires extensive financing, which can be allocated to development of grass-root sports programs. At the same time, the UAE government recognizes the importance of developing youth and mass sports, trying to balance commercial events with long-term sports development.

1.2.6. Government Policies in the Field of Football

Football remains the most popular sport in the UAE. The UAE government plays a key role in defining and shaping football development in the country. UAE Clubs are mainly financed by the government through Sports Councils and preeminent family businesses.

Most of the professional football clubs currently are not sustainable – both from environmental and financial standpoints. Lack of business-oriented approach and inadequate management & marketing systems prevent commercializing sports club and are one of the reasons of poor attendance of the UAE Pro League matches.

To change this paradigm the *Pro League Committee (PLC)* currently strives to develop a mechanism which will help UAE football clubs to control financial expenditure. The PLC has set a target to implement a mechanism for the UAE football clubs to achieve financial sustainability, based on prudent approach to spending, decreasing reliance on government support, assisting clubs in increasing their revenues and balancing revenues with expenditure.

The PLC has specifically engaged the international financial services company, *Deloitte*, to develop a mechanism that can help the clubs control expenditure and link that mechanism with the UAE club licensing system.

In 2017 UAE Pro League has undergone a substantial shake-up to ensure a significant change in how UAE Clubs are operated. Namely, 3 football clubs in Dubai (*Al Shabab, Al Ahli and Dubai Club*) have been merged into a single club – *Shabab Al Ahli Dubai Club*. According to the decision, all assets and investments of these 3 clubs shall be managed by a specialized asset management and investment company. On the same day in the Emirate of Sharjah, 2

Clubs (*Sharjah* and *Al Shaab*) were merged into *Sharjah Cultural Club*. These mergers are aimed at creating a more sustainable economic future for football clubs in the UAE[33].

In our opinion, such initiatives send a right signal to the UAE professional football clubs. Their implementation will be conducted through enhanced certification & licensing system. However, we believe that true efficiency can be only achieved through combining regulatory requirements with facilitating business incentives. On this front government policy should be oriented at incentivizing the Clubs to operate sustainably in economic and environmental sense.

1.2.7. Application of Sustainability Principles in the UAE Sports

Application of sustainability principles in the UAE sports is currently limited to specific venues and events and does not yet have a systematic approach.

The Green Sports Hub is one of the announced sustainability-oriented project in the area of sports in the UAE. It is planned to be a sustainable sports hub to be developed at Jumeirah Golf Estates, Dubai. The *Green Sports Hub* is aimed at promoting sports tourism in Dubai and encouraging local engagement into sport. The *Green Sports Hub* has been conceptualised and designed by former international Danish football player, *Ebbe Sand*.

Expected to open in 2018, 500,000 sq.ft. facility will include sports academy, climate lab, indoor & outdoor sports facilities, sports research centre and sports medical facilities. The eco-friendly Hub is modelled on sustainability principles and to be equipped with solar power, waste management and water perseveration and reuse systems[34].

Certain environmental initiatives are implemented by the UAE football Clubs on a micro level. For instance, the ***Al Ain Hazza Bin Zayed Stadium*** has undertaken the following steps:

- conducting *Natural Systems Environmental Assessments* prior to construction;
- developing *Construction Waste Management Plan*.

Notably, ***Hazza Bin Zayed Stadium*** has achieved an *Estidama 2 Pearl Construction Certification* from *Abu Dhabi Urban Planning Council (UPC)*. The stadium is first-of-its-kind in the Gulf region to receive green certification.

In terms of environmental quality, all adhesives, sealants, paints and coatings used for *Hazza Bin Zayed Stadium* interior had low VOC content, contributing to a more convenient

[33] The right move for football. – The National, 17 May 2017.
[34] World's First Sustainable Sports Hub by Ebbe Sand to be developed at Jumeirah Golf Estates – Press Release, 1 November 2016. *See* http://www.jumeirahgolfestates.com/en/LatestNewsGreenSportsHub.aspx

indoor air environment. The stadium has achieved 74% waste recycling during construction phase and the annual electricity and water savings of 22% and 28%, respectively[35].

Although the goals of green development are broadly defined at the national strategy level, sports being one of its components and an important instrument, UAE Football Association and UAE Pro League currently do not have dedicated and sufficiently formalized sustainability programs. Based on our review, the UAE Clubs do not run formulated sustainability or environmental programs either

Conclusion to Paragraph 1.2

The UAE is leading county in the region in diversification of the economy and pursuing ground-breaking renewable energy programmes. Sustainability and diversification for UAE is not a trendy move but rather a recognized necessity. It is the right moment for the countries in the region to move from predominant reliance on oil revenues and to reduce impact of oil price on their economies. Such measures have both economic and environmental impact in prolonging the longevity of wealth from oil, steadily moving to eco-friendly energy resources.

Although 100% renewable targets are becoming increasingly popular, we advocate the prudent commercially viable sustainability approach, which is based on diversifying the energy supply mix rather than extreme shift to renewable energy only.

The UAE leaders, having long-term and innovative vision, are the key catalyst of reforms in the country, both in economic, social and sports development. Based on our analysis and observations, most of the initiatives are initially produced by the UAE leaders and then are widely embraced by business and society.

From this perspective, we believe that sustainability initiatives in football at the initial stage should be introduced, promoted and largely funded or subsidised by the UAE Government. With the clear streamlined framework, coupled with the financial incentives offered by the UAE Government, such measures will be further embraced by the UAE football clubs and will become a standard of managing the teams and sports venues sustainably.

[35] Paromita Dey. BAM Receives Estidama Rating for Al Ain Stadium. – 26 October 2016. *See* http://www.constructionweekonline.com/article-41406-bam-receives-estidama-rating-for-al-ain-stadium/

1.3. CONCEPT OF THE "GREEN CARD" IN THE CONTEXT OF CREATING SUSTAINABLE STADIA SYSTEM IN THE UAE

As sustainability issues are becoming a prominent part of the UAE strategy for development of football we propose to introduce *"Green Card" Certification System* aimed at incorporating environmental concerns into processes of the UAE football clubs.

This initiative will help the UAE Clubs to implement best practice in the context of sport management in an efficient and sustainable manner with an impact on local communities. It should broadly affect such issues related to sport and the environment as: venue and sports facilities; finance and accounting; marketing and communication; social responsibility; strategic planning and managing stakeholders relations.

1.3.1. "Green Card" Concept

In view of the above, we propose to introduce the *"Green Card"* standard for the UAE Pro League Clubs and venues – the certification for environmental & sustainability performance, aimed at decreasing carbon footprint, improving use of energy and enhancing waste management.

To define the values and set the objectives of the *"Green Card"* initiative we propose to broadly discuss and adopt the *UAE Football Sustainability Strategy* (*"Green Paper"*) that will set the framework of the environmental and sustainability values and objectives based on the UAE specifics, international standards and engagement of all stakeholders.

From a broader perspective, the *"Green Card"* concept is aimed at:

- establishing eco-standards for all activities relating to the operations of UAE clubs;
- developing and introduction of environmental management system in football clubs;
- engaging with governing bodies and local communities;
- sharing technology, information and learning to promote sustainability in the UAE;
- creating local expertise and additional jobs in sustainability and sports sectors.

A lack of sustainability thinking is the primary cause of many of the problems the UAE football clubs faces today. The clubs spend huge funds on oftentimes short-term gains.

The proposed *"Green Card"* initiative is more broadly conceptualised and projected to all processes rather than focusing on environmental issues only. It encompasses environmental, financial and social sustainability as interdependent components of long term development.

1.3.2. "Green Paper" Framework

The proposed *"Green Paper"* will be the first sports-specific sustainability documented strategy in the UAE, aligned to the *UAE Vision 2021*, *Abu Dhabi Vision 2030* and *Dubai Plan 2021*.

The *"Green Paper"* should be the foundation and the roadmap for further implementation of the *"Green Card"* initiative and should broadly define the following goals:

- introduction of *"Green Licence" Category* into the UAE FA certification and licensing system;
- introduction of *Sustainability Management System (SMS)* to improve environmental practices of the UAE football stadiums and achieve sustainability goals:
- creation of a sustainability team within the UAE Pro League Committee to manage and supervise the implementation of the *"Green Card"* initiative;
- conducting training and awareness-raising programmes on sustainability issues for the UAE Clubs, local communities and other stakeholders;
- developing a robust system to integrate, manage and control operations of the clubs based on sustainability and corporate social responsibility values;
- implementing responsible investments mechanism by the UAE football clubs, which integrates long-term environmental and social factors;
- identifying financial, legal and commercial implications, risks and opportunities of Club's and venues management based on sustainable commercial strategies.

We specifically propose to develop and adopt review and assessment system related to of implementation of the *"Greed Card"*, which shall include ongoing monitoring and publication of an *Annual Sustainability Report* with UAE Clubs & Stadiums Rankings on different aspect of sustainability performance.

1.3.3. "Green Card" Implementation Guidelines for the UAE Clubs

In order to help the UAE clubs to implement the initiative, we propose to develop *"Green Card" Regulations and Implementation Guidelines* which will act as a toolkit on implementing sustainability standards with the checklist of minimum requirements to be introduced to achieve sustainability *"Green Card"* certification.

Basic requirements of the *"Green Card"* concept shall include a mix of sustainability technologies. Below is a brief outline of the proposed sustainability measures and eco-solutions:

- installation of solar panels at the stadium or outside the venue;
- use of LED floodlight with reduced energy consumption and installation of lighting linked to motion detectors to enable lighting to be switched off when not in use;
- enhancement of football pitch irrigation system based on use of the recycled water;
- use of electric vehicles at the venues of the clubs, including installation of power stations for the visitors and club officials.

Besides technology solutions, the Guidelines will defined define key areas to consider when planning the long-term sustainability programs, such as:

- developing the mechanism of defining long and short-term sustainability programs, based on strategic priorities;
- implementing management & evaluation systems to measure the progress;
- creating a framework on investment's sustainability strategy aligned with financial performance and social values;
- implementing financial reporting standards and engaging third-party independent auditors to measure financial performance and sustainability initiatives;
- implementing "True" Profit & Loss assessment mechanism to evaluate true value of business by quantifying environmental and social factors;
- developing a Corporate Social Responsibility strategy, monitoring and evaluation framework;
- developing a roadmap to manage non-financial performance and create corporate and social value;
- engaging all stakeholders into sustainability initiatives and increasing awareness of fans, local communities and society broadly on sustainability;
- training staff and community on sustainability practices and standards.

The UAE clubs should also commit to the health and safety standards towards its employees, customers, contractors and the public at large, based on effective performance and monitoring systems.

1.3.4. "Green Card" Implementation Phases & Timelines

Spiritually similar to Italy's Serie B *"Green Card"* issued by a referee during the match for sportsmanship and fair play behaviour, the *"Green Card"* Certification Standards shall be initially implemented through the soft *"good practice"* approach.

"Green Card" certification will then gradually become the standard for certification of stadiums and clubs to get licensed to host official matches of the AFC and UAE Pro League Competitions. The system can be partially tested in a soft version at FIFA and AFC events in the UAE, e.g. the *FIFA Club World Cup* to be held in Abu Dhabi in 2017, 2018 and the *AFC Asian Cup* to be held in Abu Dhabi in 2019.

We propose the *"Green Card"* concept to be implemented in 3 stages:

Phase 1: the "Green Card" certification to be implemented through non-mandatory "best practice" criteria, in line with *UAE FA Club Licensing Regulations*. Non-fulfilment of the defined criteria will not lead to refusal of the licence.

At this stage the requirements can comprise of introduction of basic sustainability solutions, such as development of sustainability program and implementation of waste management system at the stadium and other venues. ***Timeline for this sub-stage can be defined as 2 Pro League seasons.***

Further on within this phase implementation of the *"Green Card"* concept can be focused on introduction of more complex technological solutions, such as installation of solar panels, smart football pitch watering system and energy-saving LED floodlights. *A timeframe of 5 Pro League seasons can be allocated for this sub-stage.*

Phase 2: the "Green Card" certification will become mandatory for entering the UAE Clubs into the PLC Club Competitions and / or the AFC Club Competitions. This respectively will take place in 5 Pro League seasons since adoption of the "Green Card" certification by the UAE FA and its inclusion in UAE FA Club Licensing Regulations. While the requirements introduced at the Phase 1 will remain, the UAE Government and the UAE FA should incentivize the Clubs to introduce more sophisticated green solutions.

Phase 3: the "Green Card" requirements to be implemented in relation to certification of all sports venues and sports related infrastructure in the UAE. This stage can take place within 5 to 7 years and may have various substages within this phase for different sports, venues and implementation of specific sustainability criteria.

An action plan with concrete measures should be developed in order to implement the *"Green Card"* initiative, both at the UAE FA and Clubs level. For each issue in the key areas, responsibilities, deadlines and indicators have to be assigned. Such action plan should be reviewed permanently and can be adapted when the circumstances require.

To verify the feasibility analysis and getting feedback, the strategy should be presented to different stakeholders and specialist in various fields (technological, financial, legal, etc.). Consulting stakeholders, NGOs and engaging specialist to critically review the strategy will add to the concept's credibility and quality.

Reporting on sustainability performance is a vital element of the implementation process. The UAE FA sustainability report shall be based on the goas defined in the *"Green Paper"*. The report should take into account the KPIs and provide further guidance on implementation of specific aspects. It is important to have the sustainability report externally assured by an independent and reputable third-party auditor.

1.3.5. "Green Card" Projected Effects

The UAE football clubs should recognise that the business of sport has negative environmental impacts that must be addressed. Football clubs typically face a number of challenges when trying to implement environmental sustainability programs, such as: financial resources constraints; waste management issues (lack of flexibility when dealing with municipal waste management companies); lack of support and guidance; conflicts between commercial objectives and the efforts to protect the environment.

One of the biggest obstacles to introducing the initiatives are the lack of local expertise and the need of additional financial contribution. However, as the *Case Study* proves green technologies are financially beneficial in the long-term perspective.

More importantly, beyond financial and technical aspects of the initiative, football clubs have strong role in local communities and creating values among youth, and a part of that role should be promoting environmental protection. However, club managers not always know how they can transmit these initiatives to supporters and influence their environmental behaviour.

The *"Green Card"* project will help the UAE clubs not only optimize their operations, but broadly to raise public awareness of local communities on a number of environmental

important messages and to popularize the concept of environmental sustainability, promoting for instance recycling, waste minimization, and alternative modes of transportation.

At the national level the *"Green Card"* concept will help to build a framework for action across sports industry in the UAE, enhancing urban planning, environmental management systems; bringing improvements in energy, water and waste management and developing more efficient energy use and infrastructure.

The initiative will also help to create local, Emirati expertise in sustainability and sports managements areas, contributing to job creation and qualification among UAE nationals and residents. It will further create additional incentives for local manufacturers and suppliers of green technologies.

Beyond the projected impacts directly influenced by the club's sustainability practices, it is important to note indirect psychological effect, which will inspire the culture of sustainability among UAE nation and, most importantly, youth.

Conclusion to Paragraph 1.3

The *"Green Card"* concept will help the UAE develop a sustainability strategy to enable the clubs and sports venues to integrate and implement sustainability measures that broadly encompass economic, social and environmental spheres in all stages of their operations through establishing best practices for the integration of sustainability throughout the organization.

The proposed gradual implementation of the *"Green Card"* concept will help the UAE Clubs to adapt their practises in a rational manner and align the required investments to their budgeting and business lifecycle.

Broadly, *"Green Card"* initiative will help the UAE nation to build the strategy of sustainable development of sports, based on responsible and reasonable investments, promotion of environmental approach and cultivating these values among the UAE youth. It will further create additional qualified jobs and local expertise in the area of innovative green technologies and sports management.

CHAPTER II:

IMPLEMENTATION OF THE "GREEN CARD" INITIATIVE IN THE UAE: TECHNOLOGY, FINANCIAL AND LEGAL ANALYSIS

2.1. INTRODUCTION OF GREEN TECHNOLOGIES AND SUSTAINABILITY SOLUTIONS IN THE UAE STADIA SYSTEM: INFRASTRUCTURE & TECHNOLOGY ANALYSIS

Sports arenas for ages have been serving as an emotionally captivating space, inspiring life-long memories of great sporting moments. With the development of technologies, the stadium experience is evolving, offering fans additional features. Sports venues respectively require more energy and water supply. At the same time, new technologies offer innovative solutions not only to ensure entertainment experience but also to serve it in a sustainable manner. Such technology solutions among others include on-site solar power generation, energy- and water-efficient building design, pitch watering system, zero-waste practices, recycling and composting programs, and much more. Within the framework of this research we will focus on the selected technologies currently available, bearing in mind that the new solutions spring almost on a daily basis.

2.1.1. Use of Solar Panels

In our opinion, broad use of solar power in the UAE climate conditions is a must. Sun is identified as the only infinitely renewable and completely pollution-free source of electricity. In simple words, solar panels have the ability to convert sunlight directly into electricity with no harmful emissions.

Because the electricity generated by all solar cells currently is direct it is then sent to an inverter that transforms the power into the same conventional electricity distribution gird currently used in our household and for commercial premises.

Compatibility with the national grid therefore is very important, because for many reasons most solar-based facilities only use solar energy to provide a portion of their electricity needs, relying on local conventional electricity supplies for backup when there is no sun and extra power is needed. The electricity produced by these panels is integrated into the existing electricity service, so the venues can go solar without having to worry about the lights dimming in a cloudy weather.

Currently, the most common type of solar panels is called *Photovoltaic Solar (PV) Panels*. They use a photoelectric effect that was first discovered in 1839 by the French physicist *Mr. Edmund Bequerel*. He noticed that certain materials would produce a small electric current when exposed to light. This is the principle still used by PV solar panels[36].

Since solar installations can work within the existing electricity grid, not just by replacing it, we have better understanding their economic value and effectiveness. By using the natural power of sun this solution can be essential part of all future urban infrastructures, including sports venues – especially in the UAE, considering year-round sunny weather.

In the field of sport, use of green energy will contribute to a significant decrease in utility costs of football stadiums which will also help sports entities to handle their economic situation. For many UAE football clubs electricity payments are among substantial operational expenses.

To ensure effective introduction of solar panels, the administration of the club needs to focus on evaluation of productivity versus capacity. While exploring feasibility and cost-effectiveness of the solar system in the stadium, it is essential to measure energy consumption at the venue first and then project energy efficiency by solar panels. Having a clear understanding of the estimated energy produced after considering all factors is essential. By doing that the club will be able to set energy goals, design back-up plans and failure scenarios.

One of the main technological obstacles for solar panels effectiveness in the UAE is dust and sand that can significantly prevent panels from collecting properly solar lights[37]. Therefore, constant cleaning procedures need to be implemented in order to preserve their effectiveness. This kind of maintenance can be done either by innovative cleaning devices available on the market or cleaning personnel, based on the labour cost currently available on the market.

On this front Masdar City, for instance, has been working with other companies to engineer surfaces with pores smaller than sand particles to stop them from sticking on the panels. Scientists at the Masdar Institute are also working on coatings that repel sand and bacteria for use on solar panels and in other applications[38].

Another challenge for the green sector is to be cost-effective in terms of materials and installations in a country where relatively cheap oil supply is predicted to remain stable in

[36] How Solar Panels Work. – 20 August 2012, Go Greena Team http://gogreena.co.uk/how-solar-panels-work/
[37] Andrew Korn. Challenges to UAE Solar Power Remain, but it Still Makes Sense. – The National, 5 May 2016.
[38] Jared Anderson. Masdar City: New Urban Energy Future and Climate Change Solution? – Breaking Energy, 20 March 2013.

future. Solar modules use expensive semiconductor material to generate electricity directly from sunlight. Semiconductors factories needs clean manufacturing environments and can be expensive to build and maintain.

For the concept of "*Green Card*" we propose to use UAE national manufacturer of solar installation (*DUSOL*, for instance, or any other local producer). This will indirectly retain the whole investment cycle inside the UAE economy. We consider this step as essential in order to justify initial capital investment and related expenses.

Reliability is another major problem with solar energy. In the best case a solar panel currently can produce electricity for 12 hours a day and will only reach peak output for short period around mid-day. The most efficient panels currently available on the market are able to use around 20% of the sunlight captured. However, this factor becomes an obstacle only when limited space is provided and efficiency of modules is crucial. The desert landscape of the UAE provides abundance of space with strong solar lights.

Size of the solar panels fields and location are among other key issues. Considering the specifics and infrastructure of the venue (especially the existing ones) it is important to determine whether the solar panels should be located at the venue (for instance, on the roof of the stadium or on the site of the venue next to the stadium itself) or outside the venue, as optimum solution for energy generation and community engagement.

It is also important to determine if solar panels can be integrated into the existing electrical infrastructure and whether significant infrastructure updates will be required.

As it is shown in our *Case Study (Annex 1)* findings, from economic and infrastructure point of view, building and maintaining one big green facility is more cost-efficient than having separate solar plants for each stadium. Gradual shift to use of the mixed energy sources has also proven to be cost-effective over long term.

For this purpose, we propose to consider at the specialists' level creation of a system where a single solar energy facility is built for a number of stadiums (e.g. within the same Emirate, and in case of Abu Dhabi, as the biggest Emirate, within the neighbouring communities). Where it is necessary, for remoted stadiums or new facilities, which will not require substantial renovation or adaptation, solar energy panels can be installed on a stand-alone basis. The energy generated by such solar plats can be also supplied to the neighbouring communities.

2.1.2. Implementing Waste Management System & Recycling Bins

Another important element of "*Green Card*" concept is mandatory implementation of waste management system, integrating recycling bins around the sports facilities. Such containers facilitate the recycling process of trash by separating it in different types: paper, aluminium, glass, plastic, metal, etc. Once collected from the bins, the waste materials shall be transported to a recycling centre where they are sorted out and processed into new materials for manufacturing. Common products created this way includes paper towels, newspapers, steel cans, soft drinks containers, plastic laundry detergents and others.

Recycling helps to reduce energy usage, reduce consumption of raw materials, reduce air and water pollution as well the greenhouse gases emissions. Minimizing global warming and sustainable use of resources are another important benefit that come with appropriate waste management process. With all the soda cans and other soft drinks consumed within a stadium facility there is no doubt an opportunity for a successful recycling program. Recycling bins and other related technologies are becoming more efficient and more affordable. Furthermore, there are no significant difficulties in installation and maintenance of recycling bins.

2.1.3. Use of Low Energy Lighting in the UAE Stadiums

Consumption of electricity is one of the main expenses of football clubs. Low energy lighting provides an energy efficient method to lighting a venue by using less wattage per fitting. An LED lighting is based on use of light-emitting diode (LED) that is assembled into a lamp for use in lighting fixtures. LED lamps have a lifespan and electrical efficiency which are several times greater than incandescent lamps, and are significantly more efficient than most fluorescent lamps, with some chips able to emit more than 300 lumens per watt[39]. In addition, the quality of light is much higher. LEDs are widely endorsed for use at international sports events under the FIFA World Cup and Olympic Games requirements.

As a noteworthy showcase, *FC Bayern Munich* at its *Allianz Arena* has installed an LED façade, controlled digitally with *Philips ActiveSite*, and capable of reproducing 16 million colours, while at the same time realising 60% energy savings. This energy efficient system saves approximately 60% on electricity and 362 tons of CO2 per year. With 300,000 LED

[39] *See* Peter Kelly-Detwiler. LEDs Will Get Even More Efficient: Cree Passes 300 Lumens Per Watt. – Forbes, 27 May 2014.

façade wrapped around the entire outside of the 71,137-capacity *Allianz Arena*, covering an area of 26,000 sq. m., the stadium has become Europe's largest stadium to feature dynamic colourful lights on the entirety of its exterior[40].

FC Bayern Munich Allianz Arena LED façade

The example of wide use of LED technologies in the UAE is *Al Ain FC Hazza bin Zayed Stadium* opened in 2014 with 22,717 capacity. The stadium's external façade, which consists of fabric elements resembling the trunk of a palm tree, is lighted by LED lights. On the top of the stadium roof, 200 floodlights are fixed to provide the illumination of after-dark matches.

Al Ain FC Hazza bin Zayed façade

The *Hazza bin Zayed Stadium* was built with use of complex geometry of its cantilevered steel trusses, which was achieved by using robotic cutting and welding technology.

[40] Stu Robarts. Bayern Munich Stadium Completely Wrapped in LED Lighting Façade – 14 August 2015. *See* http://newatlas.com/bayern-munich-allianz-arena-philips-led-facade/38936/

In addition, the stadium is the first stadium in the world to featuring a unique parasol roof designed specifically to fully shade all fans. The palm bowl façade acts as a passive external shading device for the stadium in order to reflect the solar radiation and reduces the external heat gain of the building. Due to extreme temperatures during summer months, the palm bowl shape of the roof provides pleasant conditions for both players and fans. The use of a palm bowl facade concept contributed to reduction in the overall energy needed for cooling the stadium[41].

2.1.4. Football Pitch Irrigation System

Another high-cost component of football stadium maintenance and operation is football pitch irrigation system, especially considering the UAE hot climate. Water consumption obviously cannot be substantially reduced. However, it can be mitigated through advanced recycling system. One of the element of such system is use of recycled water from infrastructure bathroom facilities for irrigation of the pitch.

As in an example with electricity responsible consumption, installation of water metres and appliances and smart water efficient fittings (such as intelligent faucets and ecological flushing systems) can help to reduce and regulate water consumption.

Certain technologies, however, are less applicable in the UAE conditions. For instance, in countries with high amount of rain the stadiums can be equipped with rainwater capture system whereby specifically designed roof collects rainwater, which can be used to water the pitch and in the restrooms, equipped with intelligent faucets and ecological flushing systems. Low-water use landscaping is also less acute in the UAE, unless installed in the regions within available ground water resources (e.g. in Al Ain region).

Efficient smart irrigation systems along with improved water consumption processes can help UAE Clubs reduce water consumption and respective expenses. Choice of technology, however, should be balanced against the cost to make sure the expenses for installation and maintenance do not significantly exceed current expenses.

In addition, there are specific types of grass which requires less water consumption, which can effectively contribute to the smart irrigation system in the UAE and regional climate conditions.

[41] Paromita Dey. BAM Receives Estidama Rating for Al Ain Stadium. – 26 October 2016. *See* http://www.constructionweekonline.com/article-41406-bam-receives-estidama-rating-for-al-ain-stadium/

2.1.5. Electric Vehicles

An important step in addressing climate change in the UAE is reducing consumption of petrol, of which road transport is currently heavily reliant. The UAE, as one of the fastest growing vehicle markets in the world, actively introduces electric vehicles, such as *Tesla*, *Renault Zoe* and *Volkswagen Retrofitted Electric Cars*.

Increasing transportation efficiency is the best way to start reducing emissions of carbon dioxide which is the main cause for global warming. Introducing electric carts and buggies in all stadiums and clubs facilities around UAE is next step of our project that will bring the UAE sport to another dimension.

With proven and overwhelming advantages of electric cars over the gasoline vehicles we are getting closer to our mission of establishing "green stadia". Eco-friendly vehicles may use electricity stored in a battery pack to power electric vehicles. When depleted the batteries are recharged using grid electricity from a dedicated charging unit. For example, a 240-volt outlet can fully-charge a vehicle overnight and have a driving range of between 115 to 160km.

One of the main challenges in "green cars" efficiency has been identified as cold weather which can affect battery performance. In the UAE this obstacle is obviously irrelevant due to the constantly high temperatures even in winter season.

Since introduction of electric vehicles or carts does not require substantial infrastructure changes, we propose to implement it across UAE football clubs venues.

Another major factor contributing to substantial carbon emissions in the UAE is lack or diversified and extensive public transportation system. UAE population therefore, especially in summer months, predominantly uses cars to commute to work and home, as well as to sporting facilities. Most of the football clubs in Europe encourage fans and spectators to use public transport to reach stadiums at the match day.

Apparently, this issue is more complex and cannot be solved solely by the Clubs or UAE Pro League. We note that the UAE government, especially in the Emirates of Abu Dhabi and Dubai, actively promote public transportation projects. It would be prudent to locate new stadiums, where possible, next to such public transport stations when designing urban planning projects. One of the good example in this regard, is *"The Stadium"* metro station in Dubai next to the stadium of *Al Ahli Club*.

2.1.6. Other Advanced Sustainability Technologies

Certain green technologies are very sophisticated. Although, their nature is aimed at decreasing consumption of non-recyclable energy, feasibility of such technological solutions, in our opinion, can be questionable from cost perspective.

For instance, certain stadiums use special power-storing tiles placed under the football pitch used as "kinetic-harvesting" tiles to generate and store the energy from the footsteps. Pavegen, the London-based tech firm has installed 200 of "kinetic-harvesting" tiles into a football pitch in the Rio's *Morro da Mineira Stadium*. The 56mm tiles sit under the pitch's Astroturf surface and flex fractionally every time a player takes a step. Each footstep generates around 5W per second[42].

Another high-tech solution is use of solar-powered MowBot, which runs on green sources of energy and uses GPS technology to automatically mow the pitch without involving manpower. It also produces organic mulch that fertilises the pitch as it mows. Such technology basically helps to save on personnel engaged for mowing the pitch.

Conclusion to Paragraph 2.1

Based on analysis of sustainability technologies and smart green solutions currently available, we propose to implement a balanced approach of introducing tested and costs-efficient technologies, along with adapting current processes aimed at rational use of conventional resources. We believe that introduction of green technologies does not have to aim "being trendy" target, but help the clubs to build the robust responsible operations system.

With reference to the findings of our *Case Study (Annex 1)*, we specifically advocate the initiative of wide use of solar energy. Such move can be implemented through a mix of technological solutions, based on specifics of each venue – either through installing stand-alone solar panels units or integration into the solar panels plant generating solar energy. Other technological solutions (such as electricity saving LED systems and recycling bins) should be also widely adopted by the UAE clubs.

[42] Sustainability in Football: Greening the Game. – The Guardian, 2 October 2014. *See* https://www.theguardian.com/sustainable-business/2014/oct/02/sustainability-football-green-game-sport

2.2. Financial Analysis, Marketing and Communication Strategies of Implementing the "Green Card" Initiative

In football, as in any business, identifying, understanding and calculating total costs of any activity is essential when managing budgets and planning effectively for longer term sustainable growth. Income generation by the UAE Football Clubs is a key part of the proposed *"Green Card"* sustainability initiative plan, with a focus on how funding can be generated to sustain *"Green Card"* initiatives and the clubs can benefit beyond the existing income stream.

2.2.1. Financial Planning & Budgeting of Sustainability Programs

Operating a club and a stadium requires significant resources both financial and in terms of energy supply. While there are a lot of innovative technologies available to minimize the environmental impact, their implementation may be costly for clubs.

At the same time, there is a significant potential to commercialize such innovation through associated financial and brand association benefits. With a mix of creative funding models, government incentive programs and marketing approach more and more clubs and stadium owners recognize commercial value and benefits of introduction of green technologies.

For the initiative to be successful, the project should incorporate funding strategies that leverage a combination of options designed to reduce overall capital cost and minimize the project's payback period. These strategies shall be considered beyond tax incentives, government loans and grants in the financing model – to estimate true value of the investments. Hence, the administration of the UAE clubs when implementing *"Green Card"* project should consider financial models that create win-win partnerships with corporate sponsors interested in reaching fans.

Before a club decides to install energy-efficient generation system, it should first implement measures to reduce energy consumption. An energy audit will give a clear picture of how the venue is currently operated and consuming energy. It can then provide basis for designing rational steps to reduce energy waste through conservation and technology improvements. The audit therefore is an important starting point for scoping a potential on-site project in relation to the sustainability goals defined in proposed *"Green Card"* initiative.

On-site energy generation is a significant investment, therefore, reducing the energy consumption through more efficient light fixtures or better monitoring systems would help in

shortening the financial payback period. Where viable, power purchase agreements with utilities providers should stipulate locked-in power rates.

An effective business plan will help the Clubs to set targets, plan accordingly, assess and verify that your projections of the initiative are realistic and feasible. It is also an essential tool to support seeking for external grants and other funding.

Since the cost of a solar panels installation can vary greatly depending on the installation site and location, the best approach is to conduct site-specific estimate first. Project costs will be affected by such factors as the local solar market costs and the structural installation and renovation the site may require.

When tackling such project, the club should partner with a local utilities provider as the system owner (e.g. *Abu Dhabi Water and Electricity Company (ADWEC)* in Abu Dhabi, *Dubai Electricity and Water Authority (DEWA)* in Dubai, *Sharjah Electricity and Water Authority (SEWA)* in Sharjah). The Club or a venue can host the solar panels station while the utility operator becomes the official owner and operator of the solar station. In such partnership, the administration of the Club can also engage local communities with renewable energy education programs while the utility meets their renewable energy portfolio requirements.

Another strategy is to partner with local solar panels manufacturers or service providers (which in Abu Dhabi, for instance, can be the leading provider of solar power technologies – Masdar) to engage their services for showcase projects, which football stadiums are usually considered to be.

Broadly, UAE Clubs financial policy should be robust and streamlined to be able of achieving financial sustainability, demonstrating the ability to plan rationally and ensure financial growth. All key financial implications associated with implementation of the business plan should be detailed. It is vital for such forecasting to include details with regard to key assumptions as part of the financial plans as well as projections for the income generated. Cash flow forecasts are also vital. It is essential to plan the expenses related to implementation of the *"Green Card"* initiatives to cover cash flow deficiency and to address it promptly.

While there are all the normal risks of business, there is no exposure of the *"Green Card"* initiative to financial risks. The trends of technology and wide support by the UAE Government make the future of sustainable technologies more profitable not less.

2.2.2. Financial Incentives & Government Support of Sustainability Projects

As a commercial incentive by the UAE Government we propose to exempt clubs, green technologies suppliers and service providers committed to and implementing the *"Green Card"* initiative from Value Added Tax (VAT) in the UAE, especially considering the VAT to be introduced in the UAE starting from 2018. This proposition can be also applied to green technologies industries in the UAE broadly and not in sports industry only.

Our *Case Study (Annex 1)* has revealed that over long-term period use of solar panels is more cost-efficient than being reliant on conventional energy sources only. The pay-back period also shortens if the Club is exempted from the payments for the rent of the land. Since installation solar panels may require additional spaces we advocate the initiative of the UAE football clubs being exempted from the payments for the land.

The role of government incentives in the UAE football is very important, but, in our opinion, it should not dominate over the benefits green technologies offer. Such support should not be offered by the UAE Government in the in form of donations and should be limited to initial stages of penetrating of green technologies in the UAE football. Instead, the UAE Government and football ruling bodies should incentivize the UAE Clubs to commercialize the *"Green Card"* initiative through broad engagement of commercial sponsors and partners to support financially the project.

2.2.3. Attracting Sponsors and Partners to Invest into Sustainability Incentives

In the UAE currently there are many commercial and construction companies working within the solar energy generation industry. Furthermore, because of the unique and powerful position that sports clubs hold, it might be beneficial for solar providers to create an educational or promotional opportunity within the sports facility in exchange for the reduced costs for the services or donated materials to the Club. Such partnership would allow the manufacturers to support the local solar market, while also providing renewable energy education to the surrounding community.

Car manufacturers are another potential target sponsors of sustainability initiatives, especially since most of the largest car producers currently promote electric or hybrid vehicles. For instance, *Forest Green Rovers (FGR)* has a partnership deal with *Nisan* for use of electric vehicles with charge points at the Club's venue. In another example, *Manchester United* has

partnered with *Apollo Tyres*. The Club recycled 2,200 tyres and turned them into an artificial pitch at the training ground.

In our opinion, football clubs and their venues are attractive platform for promoting green cars, especially in the UAE as one of the most growing car market (e.g. for *Tesla*, which is rapidly expanding in the UAE market). The UAE Pro League and the Clubs already partner with car manufacturers. The UAE Pro League, for instance, currently partners with *Audi*; *Al Ahli Clubs* partners with *Mercedes Benz*; *Al Jazira Club* partners with *Jaguar* and *Land Rover*. These existing sponsors and new other potential sponsors in the industry can be approached to pitch their hybrid, electric or other green products.

Promoting such segment of the cars requires creative and efficient marketing approach. One of the example where the marketing campaign, in our opinion, could have been structured more creatively is the campaign by *Al Ahli* and *Gargash Enterprises* to raffle 2 *Mercedes Benz* cars at the conclusion of each of their 12 remaining 2015/16 league fixtures at the *Rashid Stadium*. Other clubs have introduced standalone campaigns in the past, with *Al Jazira* raffling a *Ferrari* at half time during their final league match in 2011, as part of a season-long strategy to increases attendance.

These campaigns are aimed at bringing the spectators to the matches, which represents a major issue for the Pro League Clubs[43]. In our opinion, such prize give-away practice does not represent a sustainable approach by the UAE Clubs and the funding by sponsors should be streamlined more efficiently.

2.2.4. Marketing and Communication Strategies in Promoting Sustainability Initiatives

Commercializing sustainability initiatives should be broadly based on effective communication, good publicity and creative marketing campaigns to engage key stakeholders and keep the fans and local neighbourhoods highly enthusiastic about the initiative.

Effective communication and marketing on green front will help the UAE clubs to align their incentives more closely with existing sponsors and attract new partners, which in its turn will help to strengthen clubs' financial position. Social media and creative PR campaigns are obviously perfect tools to promote the initiatives and engage wider audience.

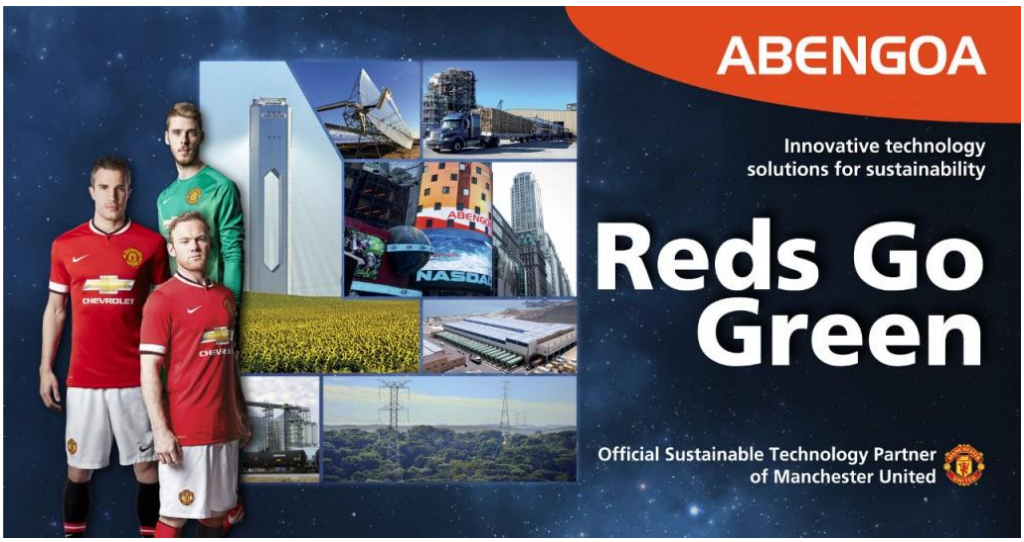
[43] John McAuley. Al Ahli Hope to Boost Arabian Gulf League Attendances with Car Give-Away. – 10 September 2015, The National.

Everyone at the club level should be aware of sustainability program. The communication officer within the club should active on this front with local media.

There are quite a few creative marketing campaigns and communication strategies various clubs and teams have implemented to make green initiatives more appealing to fans and corporate sponsors.

For instance, ***Manchester United*** launched ***"Reds Go Green"*** marketing campaign featuring its sponsor, ***Abengoa***, *as* the Club's first global sustainable technology partner. *Manchester United* and *Abengoa* have announced a global partnership which will is aimed at enhancing and developing the Club's sustainable business practices.

Abengoa, a company developing technological sustainable solutions, will identify, advise and implement sustainable practices which will help *Manchester United* to save resources and reduce waste. *Abengoa* is renowned for being innovative and having expertise in solar energy, renewable fuels and desalinated water make technologies.



Manchester United "Reds Go Green" Marketing Campaign

Below is an illustration of strong and efficient communication campaign by an American football club, *Philadelphia Eagles*, in a call for support of environmental initiatives.

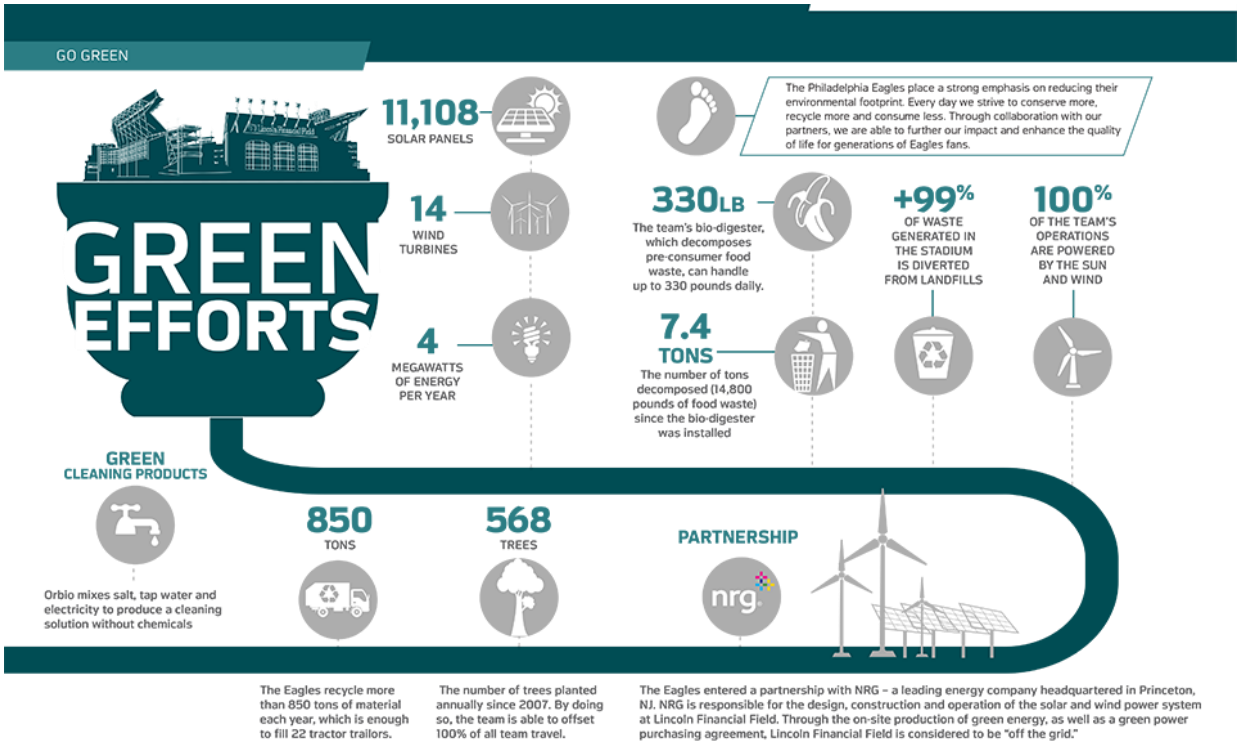
NFL Philadelphia Eagles "Go Green" Communication Campaign

The NFL *Philadelphia Eagles* Stadium located in Philadelphia, is one of the greenest in the world due to its commitment to renewable energy and robust recycling and waste management systems. The arena uses 100% green energy and is fitted with over 11,000 solar panels and 14 wind turbines to supply more than 4MW of generating capacity. The majority of power comes from the solar parking panels and the panelling on the south side of the stadium[44].

This green business model benefits local community and environment but also significantly lowers operational costs. The stadium has been recognized internationally as a leading example in the field, receiving LEED Silver certified from the US Green Building Council. The *"Go Green" Initiative* has also won the Sports for the Environment Award from the Beyond Sport Award, an international award that recognizes achievements off the field.

[44] Mollie Simon. Philadelphia Eagles Go Green with Renewable Energy. – 29 June 2016, Kleinman Centre for Energy Policy.

As a brief showcase, below is the chart illustrating *Philadelphia Eagles* green efforts.



NFL Philadelphia Eagles "Go Green" Campaign Outcomes
(http://www.philadelphiaeagles.com/community/gogreen.html)

In addition, many teams and venues worldwide are building interactive spaces into the stadium experience to engage fans in what it takes to minimize a stadium's environmental footprint, while inspiring fans to do the same at home. Certain teams take this commitment a step further by reaching out to the local communities and promoting in-school educational programs to inspire the next generation to treat use nature resources more wisely.

Successful green project in this context leverage the system as an engagement and educational tool for local communities. These tools can be implemented through in-stadium tours, on-site educational programs and partnerships with programs provided by UAE environmental organizations (for instance, *Masdar City* and *Masdar Institute*). Taking this step early will help the UAE clubs to attract potential corporate sponsors and will ensure that the project has sufficient funding.

To succeed a Club needs a thorough understanding of the market at which the initiative is targeted. With clear understanding of the target market in terms of size, location, potential sponsors and customers, competitors, trends and other influencing, based on SWOT analysis, the UAE Clubs will be able to define overall marketing strategy clearly.

In order to commercialize the *"Green Card"* initiative we propose to develop *Marketing Plan Guidelines*, based on the SWOT analysis and other marketing strategy tools, to assist the UAE clubs to demonstrate the market "niche" for potential sponsors and investors.

Conclusion to Paragraph 2.2

Introduction of sophisticated technologies can be expensive for the UAE clubs. However, our *Case Study (Annex 1)* has revealed that in the long-term perspective, for instance, use of solar panels is more cost-efficient than being reliant on conventional energy sources only.

A mix of proposed government financial incentives and efficient marketing & communication campaigns should be implemented to make the *"Green Card"* initiative commercially profitable, technically feasible and attractive for investors, sponsors, fans and the community at large.

We believe that the UAE Clubs should plan their budgets in a more efficiently and responsible manner. Obvious opportunity of additional profit generation, along with the ability to reduce the costs should be the main drive of the *"Green Card"* Project.

2.3. REGULATORY AND GOVERNMENT POLICY APPROACH TO IMPLEMENTATION OF THE "GREEN CARD" INITIATIVE

Regulatory framework in the field of football comprise of multiple layers – UAE Federal laws, regulations at the Emirate level, along with international (FIFA), regional (AFC) and national association (UAE FA) and club regulations. Regulations of the football governing bodies and clubs respectively are applied in compliance with the UAE national laws.

2.3.1. UAE Sports Regulations Framework

UAE law requires that sporting activity should be pursued under the governance of the *UAE General Authority of Youth and Sports Welfare*, which is the supreme governmental authority responsible for the welfare of the youth and sport in the UAE in accordance with the *UAE Federal Law No. (25) of 1999* (as amended).

The Authority is responsible for ensuring that there is a national governing body (a federation or an association) to organize events and carry out any required governmental procedures in relation to a specific sport.

The UAE FA as a governing association in the field of football was established pursuant to the *UAE Ministerial Resolution No. (17) of 1972 on the Establishment of UAE FA* (as amended). In accordance to Article 1 of the Resolution: "*The Association is the only permanent sport organization in the Country [UAE] which is in charge of football game…*"

Article 6 of the Resolution among other objectives of the Association refers to: "*5- Raising awareness, sport responsibility, and its relations with the environmental issues*".

In order to achieve its objectives, the Association may implement regulations, resolutions and decisions related to the sport of football in a way to ensure the achievement of its objectives. Financially most of the clubs in the UAE are supported by Sports Councils.

Once the *UAE General Authority of Youth and Sports Welfare* has ensured that there is an appropriate national governing body under which activities of a sport can proceed and develop, a framework within which other entities that typically operate (clubs, teams, academies and other sports entities, etc.) can be established in accordance with the requirements of the *UAE Federal Law No. (12) of 1972 concerning the Organisation of Clubs and Societies in the Field of Youth Care and Development* (as amended).

Among recent UAE sports law developments, the *UAE Federal Law No. (8) of 2014 concerning Sports Facilities and Events Security* can be highlighted, which is aimed at:

1. Keeping security at the sports facilities and events, particularly in respect of establishing the rules of protecting the sports audience inside the sports facilities and during the sports events; and
2. regulating sports audience actions and elevating their behaviour

In 2015 a *Cabinet Resolution No. (31) of 2015* has been additionally issued in respect to implementation the *UAE Federal Law No. (8) of 2014*, which provides guidance around the scope of new legal obligations affecting those involved in organisation and hosting of sports events. The bulk of the law relates to this area, with organisers and venue managers subject to specific new compliance requirements and oversight, aimed at ensuring the UAE is aligned with or setting global best practice[45].

The UAE is a relatively young jurisdiction where the regulatory and institutional bases are constantly developing in order to address changes in the field of sports and related aspects. One of such aspects is preserving environment and introduction of green technologies in sports. Although this aspect is not specifically addressed in the sports regulations, it is generally regulated by the respective UAE Federal and Emirates acts.

2.3.2. UAE Federal & Emirates Environmental Regulations

UAE Federal Law No. (24) on the Protection and Development of the Environment of 1999 sets out current legal framework for environmental protection in the UAE. This law requires those carrying out development and other activities in the UAE to consider the environmental implications of their activities. The key concept of this Law can be described as is "the polluter pays" – i.e. the person who pollutes should be liable for clean-up costs and is subject to other penalties prescribed by law (which can range from fines, to jail and even the death penalty in relation to breach of nuclear obligations, for instance).

Estidama (*"sustainability"* in Arabic), introduced by Abu Dhabi in 2009, is one of the first sustainability policy in the Middle East. It seeks to ensure that all new development in Abu Dhabi is undertaken in a sustainable manner. This includes imposing requirements on the

[45] Steve Bainbridge. An Analysis of the UAE's New Sports Law: the Impact on Event Organisers, Fans and Corruption. – LawInSport, 13 April 2016.

planning process and the implementation of a green building code under the "*pearl*" rating system. The new developments must first be subject to a Development Review Process where the applicant must set an *Estidama* vision for the project. Once planning permission is received, the development must be constructed in accordance with the "*pearl*" rating system, depending on the type of construction[46].

Dubai Municipality has also introduced its ***"Green Buildings Specifications"*** in 2011 which made it mandatory to be "green" when constructing new buildings. While there is no rating system in place, the regulations require the developers to enhance consumption of resources at the construction. In practice, it means for instance inclusion of bike storage in new buildings, use of solar reflective materials, planting of indigenous / adapted species of plants and provision of shaded areas external to buildings.

The above-referenced programs however do not specifically set the requirements for stadiums and sports venues certification. Certification of the clubs and venues is conducted by the respective sports federations or associations.

2.3.3. UAE Football Licensing & Certification Framework

UAE football licensing and certification requirements are defined in *UAE Club Licensing Regulations 2017/2018* and *UAE Club Licensing Manual 2017/2018*. While the former document prescribes criteria for licensing football clubs in the UAE, the Manual elaborates mainly on financial criteria and guides on book-keeping and auditing of football clubs. From this perspective, the Manual comprehensively addresses financial sustainability issues. It does not, however, specifically address assessment of environmental initiatives from "true value" effect of green solutions – by quantifying environmental and social factors.

UAE Club Licensing Regulations 2017/2018 sets a combination of criteria for the UAE football clubs: sporting criteria; infrastructure criteria; personnel and administrative criteria; legal criteria; financial criteria; business, commercial & promotions.

UAE Club Licensing Regulations incorporate the AFC minimum requirements as well as minimum requirements to be qualified as an *"excellent"* football company in the UAE Professional League.

[46] 10 Things to Know about Sustainability in the UAE. – Norton Rose Fulbright, March 2017. *See* http://www.nortonrosefulbright.com/knowledge/publications/125011/10-things-to-know-about-sustainability-in-the-uae

From the 2016/2017 season onwards, the *UAE Club Licensing Regulations* classifies clubs into 2 categories:

- ***Silver*:** a club must meet all the "A" criteria under the 'AFC' category in order to receive *"Silver" UAE Club Licence*;
- ***Gold*:** a club must meet all the "A" criteria under the Silver Category, as well as all criteria under the *"Gold"* Category in order to qualify for *"Gold" UAE Club Licence*.

A club that applies for a *"Gold" Licence* automatically agrees and commits itself to apply for and meet all the criteria under the *"Silver" Category*. Criteria under the "*Gold" Category* contain additional criteria incorporated in the Regulations for the purposes of professionalizing UAE football companies. For purposes of entering into the *AFC Champions League* (in addition to qualifying to the competition on sporting merit), at least a Silver Licence is required.

The Licence Applicants are obliged to:

- adapt their own structure and relevant organization according to the minimum requirements regarding the Core Process and further procedures;
- set-up a working plan for the application of the License for the UAE season and the season to be Licensed taking into account the PLC and AFC deadlines for exceptions and accreditation as well as the decision-making process.

The UAE FA, with the approval of the *AFC Executive Committee*, has delegated the club licensing system to the *UAE Professional League Committee (PLC)*. The PLC therefore has jurisdiction to govern the licensing system by virtue of the UAE FA Statutes.

All clubs wishing to participate in PLC Competitions must apply for either *"Gold"* or *"Silver"* license. All clubs who have qualified for AFC Club Competitions on sporting merit, must obtain at least at least a *"Silver"* licence in order to participate in the AFC Club Competitions.

The above-mentioned criteria (sporting criteria, infrastructure criteria, personnel and administrative criteria, legal criteria and financial criteria, business, commercial and promotion criteria) are divided into 3 different grades ("A", "B" and "C"):

- ***"A" criteria – "mandatory"***. If the Licence Applicant does not fulfil any A-criteria, it cannot be granted with a licence to enter the PLC Club Competitions and / or the AFC Club Competitions;

- ***"B" criteria – "mandatory"***. If the Licence Applicant does not fulfil any B-criteria, it is sanctioned as specified by the PLC, but may still receive a licence to enter the PLC Club Competitions and / or the AFC Club Competitions;
- ***"C" criteria – "best practice"***. C-criteria are best practice recommendations. Non-fulfilment of any C-criteria does not lead to any sanction or to the refusal of the licence. Certain C-criteria may become "mandatory" criteria at a later stage.

Section 7 of the *UAE Club Licensing Regulations* provides for Infrastructure Criteria. However, it does not stipulate any infrastructure requirements as such, apart from the requirements for documentation and availability of training and youth facilities. Instead, *UAE Club Licensing Regulations* refer to guidelines and directives related to the stadiums, safety and security – for instance, *Laws of the Game, AFC Competition Regulations, AFC Stadia Regulations, FIFA Book for Football Stadiums, Technical Recommendations* and *Requirements.*

UAE Club Licensing Regulations further refer to the national law which also needs to be taken into consideration when establishing the stadium and security requirements.

2.3.4. AFC Stadia Regulation

To streamline the infrastructure approach for AFC competitions AFC has developed *"AFC Stadia Regulation"*, which includes minimum standards as "must-requirements" in a single document. Since infrastructure criteria is seen as long-term investments, AFC has introduced a number of recommendations for a stadium to be built or renovated.

AFC Stadia Regulations define and govern, for all host associations and host clubs, the minimum requirements for a stadium to host matches in any AFC competition.

Section 2 of *AFC Stadia Regulations* provides that *"each stadium must be certified according to the relevant national or local law. Such certification must include provisions related to safety and an evacuation plan. A certificate must be issued by the appropriate competent governmental body and must not be older than two (2) years from the first match of the [AFC] Competition for which it has been approved to host a match"*.

AFC Stadia Regulations stipulate structural criteria for field of play, facilities for officials, media, first aid, doping control, spectators. However, the *AFC Regulations* do not specifically address environmental requirements.

2.3.5. Regulatory & Government Policy Approach to Implement "Green Card" Initiative

Based on the analysis of the AFC and UAE FA documents, neither *AFC Stadia Regulations* nor *UAE Club Licensing Regulations* specifically provide for environmental requirements for stadiums.

Therefore, we propose to introduce *"Sustainability Criteria"* Chapter to the *UAE Club Licensing Regulations* to set environmental requirements for stadiums and venues, as well as sustainability criteria for club's operations.

We further propose to create *"Green Category"* for the clubs, to be granted in addition to *Silver* and *Gold Categories.* The clubs respectively will strive to qualify for the *"Green Club Licence"* and will receive *"Green Card"* from PLC as a confirmation of *"Green License"* certification.

Respectively, regulatory and legal approach to implementation of *"Green Card"* initiative should be aligned with the phases and timelines outlined in our vision for bringing the concept into life.

At the first stage, the "Green License" will be implemented through "C" – "best practice" criteria. Non-fulfilment of C-criteria in obtaining *"Green Category"* at the initial stage of implementation will not lead to refusal of the licence. Within this stage *"Green Category"* will be further implemented through "B" – *"mandatory"* criteria. If the club does not fulfil any B-criteria related to the *"Green License"*, it will be sanctioned as specified by the PLC, but will still be able receive a licence to enter the PLC Club Competitions and / or the AFC Club Competitions.

At the second stage, the "Green License" will become mandatory for entering into the PLC Club Competitions and / or the AFC Club Competitions (in addition to qualifying to the competition on sporting merit), along with at least obtaining the *"Silver Licence"*.

The *"Green Category"* will be implemented at this stage through combination of "A" and "B" – *"mandatory"* criteria. If the club does not fulfil any A-criteria related to *"Green License"*, it will not be granted with a licence to enter the PLC Club Competitions and / or the AFC Club Competitions and if the club does not fulfil any B-criteria related to the *"Green License"*, it will be sanctioned as specified by the PLC, but will still be able receive a licence to enter the PLC Club Competitions and / or the AFC Club Competitions.

The proposed *"Green Card"* Regulations and Implementation Guidelines on implementing sustainability standards in the UAE football stadiums with the check-list of requirements can be utilized by the clubs along with *UAE Club Licensing Manual 2017/2018,* which currently focuses on book-keeping, financial reporting and auditing.

At the third stage, to ensure broader implementation of the "Green Card" concept across all sports venues in the UAE, we propose to introduce "Green Card" requirements into government regulations related to certification of sports related infrastructure through entering amendments to sports regulations and the laws relating to construction in the UAE.

To ensure effective commercial implementation of *"Green Card"* initiative, as an incentive, we propose to exempt sports organization and sustainable technologies suppliers and service providers from the Value Added Tax (VAT) introduced from 2018 in accordance with the *UAE Federal Law No. (7) of 2007 on Tax Procedures*. The UAE Government can also allocate sports venues the land for free for sustainability projects, e.g. for installation of solar panels. These initiatives will help to boost investments both in sports and green sports venues of mixed use.

It is also necessary to ensure integration of sustainability requirements and recommendations into contractual arrangements of the UAE Pro League, Clubs, venue management and maintenance teams with suppliers, service providers, sponsors and other counter-parties to ensure inclusion of sustainability standards in their practices and processes, obviously in line with the requirements of the UAE laws.

Conclusion to Paragraph 2.3

Based on the legal analysis of the UAE legal framework in the field of environmental and sustainability requirements in sports, we note that, in our opinion, these aspects currently are not sufficiently addressed. At the same time, there is an obvious UAE government support of such practices.

To ensure effective implementation of the *"Green Card"* initiative we propose to adopt a soft implementation regulatory approach based on promoting and incentivizing non-mandatory best practices. Gradually, such practices will become mandatory for football clubs and will be applied to other sports. We hope this initiative can be then expanded into green standard to all sports clubs, venues and operations in the UAE.

CONCLUSION

Based on the extensive research of sustainability aspects and analysis of the UAE football clubs and venues operations we have drawn up the following conclusions and recommendations.

We propose to introduce the *"Green Card"* concept aimed at turning all stadiums in the UAE into sustainable smart green venues. This initiative will be initially implemented at the UAE Pro League Clubs level.

The *"Green Card"* will be granted by the UAE Pro League Committee to the Clubs compliant and committed to sustainability standards.

To assess feasibility of the initiative we have conducted the Case Study (Annex 1) on Introduction of Solar Technology to the UAE FA Sports Venue. Based on the key findings and a complex of technological, financial, marketing and legal analysis we have proposed to develop and implement the following documents:

- ***"Green Paper"* UAE FA policy paper** on the values and objectives of the *"Green Card"* concept;
- ***"Green Card" Implementation Guidelines for the UAE Pro League Clubs*** as a checklist of requirements and practical tools to obtain *"Green License"* category;
- ***Marketing Plan Guidelines for UAE Pro League Clubs*** to promote commercially the *"Green License"* initiative.

Introduction of green technologies can be expensive for the UAE clubs at the initial stage. However, our *Case Study (Annex 1)* illustrates that in the long-term perspective use of solar panels is more cost-efficient than being reliant on conventional energy sources only.

We further advocate that commercializing of the *"Green Card"* concept should be broadly based on creative marketing campaigns, good publicity and communication to engage all stakeholders and to make the project attractive to investors and sponsors.

As a financial incentive by the UAE Government we propose to exempt clubs committed to implementing the *"Green Card"* initiative, green technologies suppliers and service providers from Value Added Tax (VAT) in the UAE, considering VAT introduced in the UAE starting from 2018. This proposition can be further applied to green technologies industries in the UAE broadly.

We propose sensible and gradual implementation of the *"Green Card*" concept in the following 3 stages:

- ***Phase 1: the "Green Card" initiative to be implemented through non-mandatory "best practice" criteria***, in line with UAE FA Club Licensing Regulations. At this stage the requirements can comprise of introduction of basic sustainability solutions, such as development of sustainability program and implementation of waste management system at the stadium and other venues. Timeline for this sub-stage is defined as 2 Pro League seasons. Further on within this phase implementation of the *"Green Card"* concept can be focused on introduction of more complex technological solutions, such as installation of solar panels, smart football pitch watering system and energy-saving LED floodlights. A timeframe of 5 Pro League seasons can be allocated for this sub-stage.
- ***Phase 2: the "Green Card" certification will become mandatory for entering the UAE Clubs into the PLC Club Competitions and / or the AFC Club Competitions.*** We project this stage to take place in 5 Pro League seasons since adoption of the *"Green Card"* certification by the UAE FA and its inclusion in *UAE FA Club Licensing Regulations*. While the requirements introduced at the Phase 1 will remain, the UAE Government and the UAE FA should keep incentivizing the Clubs to introduce more sophisticated green solutions.
- ***Phase 3: the "Green Card" requirements to be implemented in relation to certification of all sports venues and sports related infrastructure in the UAE.*** This stage can take place within 5 to 7 years and may have various substages, programs and action plans for different sports, venues and implementation of specific sustainability criteria.

The defined gradual implementation of the *"Green Card"* initiative will help the UAE nation to build the strategy of sustainable development of sports, based on responsible and reasonable investments, adapt processes and practises to a rational use of energy resources, promote environmental approach and cultivate sustainability values among the UAE youth. It will further create additional qualified jobs and local expertise in the area of innovative green technologies and sports management for the nationals and residents of the UAE.

We specifically propose to develop and adopt review and assessment system related to of implementation of the *"Greed Card"*, which shall include ongoing monitoring and publication of an ***Annual Sustainability Report*** with ***UAE Clubs & Stadiums Rankings*** on different aspect of sustainability performance.

In developing and implementing the proposed *"Green Card"* concept, it is to define a clear, ambitious and yet realistic set of objectives, monitor their implementation and enhance practices along the process. We believe that balanced and prudent approach towards efficient implementation of the *"Green Card"* initiative will help to solve a complex of challenges the UAE football currently faces and will bring this beautiful game to the next level in the county.

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ANNEX 1
INTRODUCTION OF SOLAR TECHNOLOGY TO THE UAE FA SPORTS VENUE: CASE STUDY

Technical & financial analysis:

Sports venue of the UAE Football Association (UAE FA) includes 1 stadium, 1 indoor sports hall, 1 beach soccer field, 1 artificial training field and 3 offices buildings.

We are taking this example as an average UAE football club, as most of the UAE based clubs have similar stadiums and training facilities.

The chart below represents the electricity bill of the UAE FA for the period between 18th of February to 18th of March 2017.

As we can see from the numbers the total monthly expense is AED 33,442.00. Therefore, annual electricity bill will be equal to approximately AED 408.000.

We also noticed the monthly kWh consumption is 76.003 kWh. Therefore, we have calculated total consumption of 912.036 kWh annually.

Electricity

Kilowatt Hours(kWh)
76,003

Meter number: 44487693
Multiplication factor(MF): 487.20
Current reading: 10404
Previous reading: 10248

Carbon Footprint

Kg CO2e
33,442

The Carbon Footprint indicator measures how your energy usage impacts the environment. Help us fight global warming by reducing your monthly consumption.

Carbon emissions in Kg CO2e
- above 2,000
- upto 2,000
- upto 1,250
- upto 500

Learn how to conserve and save the environment.

View Conservation Tips

Electricity	Consumption	Rate	AED
	2,000 kWh	0.230 AED	460.00
	2,000 kWh	0.280 AED	560.00
	2,000 kWh	0.320 AED	640.00
	70,003 kWh	0.380 AED	26,601.22

Fuel Surcharge	Consumption	Rate	AED
	76,003 kWh	0.065 AED	4,940.21

Meter service charge	60.00

NOTE
Consumption = (Current reading - Previous reading) x MF

Electricity total	33,261.43

UAE FA Sports Venues Electricity Bill

We will now take a closer look at the technical and financial requirements for the UAE FA to implement solar panels and become fully sustainable from solar energy[47].

1. ***Technology Analysis:***

A. Calculations for space and solar modules power needed

Our target is to identify the required nominal solar panel power in (P) in kWp (kilo watts peak) as well as the installation area (A) in m2.

Required Information:

- *Annual Electrical Consumption (C in kWh):* ***912.036 kWh***
- *Solar Panel Electrical Harvest Efficiency (Φ):* ***0,000625 kWp/kWh***

This is a fixed factor based on typical solar panel efficiency that describes the annual electrical kWh (kilo watts hours) output at the moment it is required to install 1000wp solar panel to harvest 1600 kWh per Year. It is possible that in the next years this will factor change, as development of more efficient solar panels is in permanent process.

Solar Installation Area factor (Δ): 8 m^2/kWp

This factor is also fixed and based on typical solar energy projects. The required Area includes mounting structure, cabling, maintenance and installation area.

Required Solar Panel Power:

$$P = C \times \Phi$$

P = 912.036 kWh x 0,625 kWp/kWh = **570 kWp**

Required Area:

$$A = P \times \Delta$$

A = 570 kWp x 8 m^2/kWp = **4560 m^2**

Numbers of solar modules needed:

The typical used power output per solar panel in the market for solar field application is around 315 Wp per solar panel.

570 000 / 315 = **1810 modules**

[47] The analysis of technology requirements has been conducted with support of Mr. Sven Steinbach, UAE-based engineer, specializing in solar energy efficiency and holding patents for inventions in the related field.

B. Calculations with Solar Pathfinder

The calculations with solar pathfinder are done in order to identify the amount of possible solar energy collection as well the suitable inclination degree for solar panels installation in the specific area. For example, in Masdar City all solar modules have been set up with degree of inclination 20°.

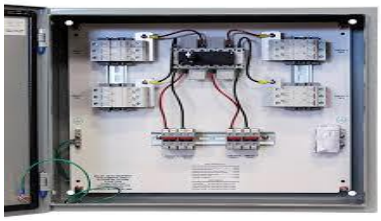
C. Additional Technical Equipment Required

1) Solar Inverter

Transforms the current from direct current to alternating current

2) String Combiners

Collect the cables from solar panels



3) Weather Station

Gives general ambient information for statistics and analysis

4) Solar Cables

General cabling in the solar field

5) AC collection board

Handover point between solar field and distribution company

2. ***Financial Analysis:***

A. Land rent

the required land space we have previously calculated is **4560 m2**. as this is a government project the land could be provided for free. however, to respect the feasibility of the project will calculate the land cost by taking as example the typical price in industrial area of Abu Dhabi – ICAD or Dubai – DIP.

The UAE industrial authority currently estimates each square meter at **AED 20.00** per year. as per the UAE Laws, the maximum usable surface in the industrial areas is 70% of the total land. therefore? it will be required to rent a space of at least 6500 m^2.

6500m^2 x AED 20.00 = AED 130,000.00 per year

B. Solar panels cost and installation

The UAE national manufacturer sets up a price for product and installation of **AED 3500 per 1 kWp.**

570 x 3500 = AED 1,600,000.00 (total cost)

The cost for solar modules and installation of AED 1,600,000.00 will be depreciated over a period of 25 years (average live cycle of solar panels). Therefore, yearly cost of the assets in our business plan will be:

1.600.000 / 25 = AED 64.000,00 per year

C. Maintenance cost

Labor cost for cleaning and maintenance estimated at **AED 160,000.00 per year**.

D. Total yearly cost estimated at:

130.000 + 64.000 + 160.000 = AED 354,000.00

Return on Investment (ROI) Basic Analysis *(Including Cost of Land Rent)*

Year	Expenses *(with solar panels)*	Expenses *(without solar panels)*	Savings
1	AED 354,000.00	AED 408,000.00	AED 54,000.00
2	AED 354,000.00	AED 408,000.00	AED 54,000.00
3	AED 354,000.00	AED 408,000.00	AED 54,000.00
4	AED 354,000.00	AED 408,000.00	AED 54,000.00
5	AED 354,000.00	AED 408,000.00	AED 54,000.00
6	AED 354,000.00	AED 408,000.00	AED 54,000.00
7	AED 354,000.00	AED 408,000.00	AED 54,000.00
8	AED 354,000.00	AED 408,000.00	AED 54,000.00
9	AED 354,000.00	AED 408,000.00	AED 54,000.00
10	AED 354,000.00	AED 408,000.00	AED 54,000.00
			AED 540,000.00

Within 10 years use of solar panels we notice a net savings of AED 540,000.00. After 20 years we cross AED1 million. It is also very important to bear in mind the 8 % increase in electricity rate each year up to 2018 announced by the UAE government that will additionally increase our ROI power. Another crucial moment previously mentioned is the land rent which logically could be free of charge due to governmental interest in the project. In that case our green concept will have double ROI power and will look as fallow:

Basic Return on Investment (ROI) Basic Analysis *(Excluding Cost of Land Rent)*

Year	Expenses *(with solar panels)*	Expenses *(without solar panels)*	Savings
1	AED 290,000.00	AED 408,000.00	AED 118,000.00
2	AED 290,000.00	AED 408,000.00	AED 118,000.00
3	AED 290,000.00	AED 408,000.00	AED 118,000.00
4	AED 290,000.00	AED 408,000.00	AED 118,000.00
5	AED 290,000.00	AED 408,000.00	AED 118,000.00
6	AED 290,000.00	AED 408,000.00	AED 118,000.00
7	AED 290,000.00	AED 408,000.00	AED 118,000.00
8	AED 290,000.00	AED 408,000.00	AED 118,000.00
9	AED 290,000.00	AED 408,000.00	AED 118,000.00
10	AED 290,000.00	AED 408,000.00	AED 118,000.00
11	AED 290,000.00	AED 408,000.00	AED 118,000.00
12	AED 290,000.00	AED 408,000.00	AED 118,000.00
13	AED 290,000.00	AED 408,000.00	AED 118,000.00
14	AED 290,000.00	AED 408,000.00	AED 118,000.00
			AED 1,652,000.00

Key Findings:

Based on preliminary calculations, gradual shift to use of the mixed energy sources has proven to be cost-effective over long term.

As we can notice in the table above, after completing 10 years of solar panels work we cross AED 1 million of savings and after 14 years we have back the full amount of initial investment.

Cost of renting land is another substantial element to calculation. Provided the UAE government allocates the land for solar panels and sports venues on a free of charge basis the pay-back period shortens to 10 years.

All rates for materials and maintenance can be significantly reduced if multiple stadiums are connected to one bigger solar plant, at least within the same Emirate.

It is totally understandable from economical point of view that building and maintaining one big green facility is more cost efficient than having separate solar plants for each stadium.

For that purpose, an agreement between all clubs participating in the *UAE Pro League* would bring higher savings rates and respectively more benefits for the sports entities. Where viable, power purchase agreements with utilities providers should stipulate locked-in power rates to be able to predicts expenses.

Since the cost of a solar panels installation can vary greatly depending on the installation site and location, the best approach is to conduct site-specific estimate first. Project costs will be affected by such factors as the local solar panels market and the structural installation and renovation the site may require.

For the initiative to be successful, the project should incorporate funding strategies that leverage a combination of options designed to reduce overall capital cost and minimize the project's payback period. These strategies shall be considered beyond tax incentives, government loans and grants in the financing model.

The administration of the UAE clubs when implementing *"Green Card"* project should consider financial models that create win-win partnerships with corporate sponsors interested in reaching fans.