



ACCESS

Achieving Circularity in Cities through
Environmental Sustainability of Sports

COMPENDIUM OF BEST PRACTICES IN CIRCULAR ECONOMY FOR SPORTS AND CITIES

Inspirations for enhanced cooperation
between sports and cities

ACHIEVING CIRCULARITY IN CITIES THROUGH ENVIRONMENTAL SUSTAINABILITY OF SPORTS

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Abstract

This compendium is a collection of best practices in responsible environmental management, circular economy and nature conservation and serves as a source of inspiration not only for the ACCESS project and its efforts in improving the processes mentioned above but also for sport organisations and local and regional authorities across Europe. The objective of this publication is to showcase the best practices in various fields such as waste management, mobility, energy efficiency, biodiversity protection, sustainable resource management and more, while highlighting the cross-sectoral cooperation in those fields. The stories and testimonies that were collected and selected reflect the best practices coming from both ACCESS partners, as well as other European initiatives. They were drafted after a thorough desk research, follow up interviews and validations with the author or owner of the good practice. The practices are divided into several groups with each being presented through the same template.

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ABOUT THE COMPENDIUM

The “Compendium of best practices in circular economy for sports and cities” is a result of the efforts the ACCESS project partners put in finding and highlighting the most recent, yet impactful practices in implementing circular economy and sound environmental management in sports.

Therefore, this Compendium can be considered as a collection of best practices in responsible environmental management, circular economy and nature conservation and serves as a source of inspiration not only for the ACCESS project and its efforts in improving the processes mentioned above but also for sport organisations and local and regional authorities across Europe. The objective of this publication is to showcase the best practices in various fields such as waste management, mobility, energy efficiency, biodiversity protection, sustainable resource management and more, while highlighting the cross-sectoral cooperation in those fields.

The stories and testimonies that were collected and selected reflect the best practices coming

from both ACCESS partners, as well as other European initiatives. They were drafted after a thorough desk research, follow up interviews and validations with the author or owner of the good practice.

Many sport organisations and relevant entities have been publishing numerous guidelines, collections of best practices and similar, each covering relevant processes and occurrences specific to the objectives and the nature of those organisations and entities. Some of the most general, comprehensive and relevant to consider could surely be those of the UN and Sports for Climate Action Framework, the International Olympic Committee, the International Union for Conservation of Nature and others, as well as many other sport-specific ones. However, the focus and the field of interest of this Compendium, as well as the whole project was rather emphasizing the collaboration between sport organisations, local and regional authorities, as well as relevant stakeholders along the sports value chain.



THE ACCESS PROJECT

Standing for Achieving Circularity in Cities through Environmental Sustainability of Sports, the ACCESS project is one of the latest advanced European projects which explore the world of environmental sustainability and environmental management in sports. Funded by the European Union's Erasmus+ programme, ACCESS is looking at narrowing the gap between the current environmental performances of sport clubs and associations, their strategies, and practices on one side and on the other side – strategies and targets of the respective cities or regions they are in and where their activities are taking place.

While many cities and regions in Europe are following the European wide pattern of adopting required strategies that would enhance and deploy various European policies and frameworks locally regarding waste, water, energy, mobility and other fields, their successful implementation or uptake among sports organisations is often limited and requires additional efforts to be achieved. This project addresses these key challenges and turns them into enabling actions which will drive the application of circular economy solutions to sports forward. The project wants to promote innovative and replicable circular economy solutions among sports organisations as well as their cooperation and synergies with local and regional authorities which would contribute to achieving circular cities.

This is why this project aims at bringing together those responsible for organising sport events and local and regional authorities who are on the frontline of implementing European and national policies as the most competent bodies. The project wants to enable and support a transfer of knowledge, skills and competences in the field of environmental management, circular economy and sustainable development onto sports organisations and allow them to develop their own knowledge base and ultimately – strategies, initiatives, road maps and action plans aligned and contributing to their respective local and regional authorities' efforts.



WHAT IS A GOOD PRACTICE?

The last few decades have been seeing an ever-increasing number of initiatives, strategies, targets, and roadmaps for improving the overall state of environment in the world ever since this became an urge rather than a simple ambition in the early 90's. A set of negative consequences that the planet is already witnessing and are expected only to accelerate in case of non-compliance were identified and observed – climate change and increasing temperatures followed by unprecedented natural disasters, biodiversity loss, resource depletion, water and energy scarcity and more. A lot of the work that has been done already and much more that is yet to come falls on international and national organisations and authorities who are drafting numerous strategies, defining targets, suggesting roadmaps and enabling actions all in order to shape and define the transition to sustainable environmental management. All of the above nevertheless falls onto hundreds of thousand local and regional authorities across Europe who need to translate those strategies and targets into the local and regional context adapted to their circumstances, capacities and specificities.

On the other hand, many sport organisations have been exemplary when it comes to football and corporate social responsibility. By tackling various social issues and injustice – from countering and opposing racism, promoting inclusion of marginalised, disadvantaged social groups, implementing child safe-guarding policies, developing, and enabling people with disabilities to do sports and more, these organisations significantly contribute to the development and well-being of their local communities, too.

Some decades later, sustainable environmental management in sports started receiving more and more attention as more and more umbrella organisations, like the IOC or different sport associations started including it among their strategic objectives on the long run. Since then, we saw creations of new job descriptions, national programmes, projects and initiatives, peer to peer cooperation and learning

opportunities and many other individual, ad-hoc or coordinated practices.

However, from the ACCESS project's point of view, one of the key aspects or features of a good practice, which reflects the objectives of the project itself is surely the cooperation between public authorities and sport organisation. The power of sports and the outreach it has is nearly inestimable, considering the various social groups they include, age groups, social and social backgrounds, levels of education and much more. While every practice which contributes to better and more sustainable environmental management and circular economy implementation counts, there are some features that a practice should consider for bringing various added values. We are highlighting four which the ACCESS project thinks are important for consideration.

1 Being a role model in the community by contributing to a greater cause

As mentioned before, the ACCESS project is built around cross-sectoral cooperation. Having sport organisations, public authorities and agencies, as well as other stakeholders, completing and complementing each other in their efforts can lead to better environmental management on the bigger scale. Such cooperations can unlock a variety of advantages and bring numerous added values, too.

After all, many sport organisations, whether professional or amateur, have a significant role in their local communities by providing opportunities to its members to train, play or enjoy sports. Many members of local communities identify themselves with a club, too. Therefore, sport organisations should feel themselves as members of the local community.

When it comes to environment, local and regional authorities are trying to implement various strategies in their local communities in order to contribute to their countries' national plans and reaching relevant targets. These strategies can be overarching – targeting several environmental processes or issues at once, or issue specific – targeting one process or issue which needs to receive more attention than others (mobility, energy, water, biodiversity, waste and resource management etc.).

This is where well thought, defined and aligned practices in sport can contribute to a greater cause. Apart from achieving certain environmental benefits which would remain with the club or association, practices which are inspired by, built around and arise from those strategies of their public authorities can considerably contribute to a cause which the entire community is trying to contribute to.

2 Cross-sectoral cooperation – inclusiveness and participatory approach

When building a practice, one must be aware of its capacities and limitations. Many practices, to be considered advanced, groundbreaking, exemplary or sustainable require a cross-sectoral collaboration in order to ensure that they are built on latest skills, impact estimations, science-based approaches and methodologies.

Such a setup does not only secure multidisciplinary approach where knowledge is drawn from different disciplines but stays within their boundaries but if that knowledge and available capacities are mastered and curated properly the approach can easily assume an interdisciplinary character which would allow analyses, syntheses and harmonised links between disciplines into a coordinated and coherent whole. The objectives of multiple disciplinary approaches are to resolve real world or complex problems, and to provide different perspectives on problems.

The knowledge and capacities can be coming from an array of different stakeholders and can

be reflected in various resources or skills – financial, communication, human, technological or technical among others.

Finally, allowing other stakeholders from different sectors – public and private, as well as individuals to participate in the development of the practice and if the practice itself is built around shared objective and reflecting everyone interest it would allow a wider ownership and attentiveness which would result in an ideal implementation.

3 Social acceptance, behaviour analysis, inclusion, and gender mainstreaming

The ACCESS project, as well as some previous ones understood the importance of social consensus and acceptance and put it high among the success factors for a successful implementation of a practice.

Why are we talking about social acceptance and behaviour analysis? While certain processes and operation in sports do not necessarily concern supporters and spectators or staff members (such as pitch maintenance or similar), the success of a lot of other practices and their uptake significantly depends on the acceptance and embracement among various target groups concerned by the practice. These practices could include reusable cups for drinks, biodegradable cutlery, favourising public transport over private vehicles, organic merchandise and many others which carry a certain change with them reflected in the price of the product, change in behaviour and habits or something else. If a practice is not thought through well and eventually tested or if certain target groups weren't consulted prior to the practice, the practice itself could do more harm than good.

Therefore, to avoid such scenarios, a behaviour analysis should be an important step towards building a practice from the beginning or finetuning it in the end. Any simple survey, focus

group, interview, or similar counts – these approaches provide valuable insight in behaviour and consumption patterns, as well as habits. They also allow the sport organisation and other stakeholders involved to understand the needs, expectations, and the way they perceive and interpret sustainable environmental management and circular economy. Finally, such approaches help validating those target groups' willingness to partake, contribute and play a role in the practice.

Finally, inclusion and gender mainstreaming contribute a lot to the success of a practice as they would increase the participation of all and not only able-bodied men, who are considered as majority in sports. After all, environmental and social sustainability and responsibility often go hands in hands and thus this needs to be applied throughout the process. For instance, when planning - through a diversity of women and men in groups making decisions, or by ensuring that the timing of any meetings, and the places where they are held, are equally accessible for all women, as well as men. The same applies for implementing and monitoring –ensuring that all initiatives are “gender proofed”. That is, assess the likely impact of all projects/initiatives on different women and men. And evaluating the project multiple genders.

4 Replicability and knowledge transfer

A practice can easily require a tailor-made approach which reflects in detail the specificities, circumstances, and occurrences of a certain territory – whether cultural, social, climate, topography or other. Although such a practice could be easily considered as a best for the given boundaries and limitation, the replicability would be rather low and would allow its application elsewhere.

A much larger share of practices target processes and operations happening in every stadium, training centre, event etc. By highlighting this particular feature, the author surely doesn't want to contradict or oppose the previously highlighted features of a good

practice which revolved around participatory approach, analysis of the local context and tailor-made solutions in favour of everyone involved in it. Each practice indeed needs to reflect the local context, needs and expectations therein. Nevertheless, being able to collect, compare and evaluate qualitative and quantitative data on the implementation of a practice is what puts one ahead of the other.

As improving environmental management and implementing circular economy solutions are to be more and more present in sports, sport organisations should monitor their environmental performances, understand their faults and opportunities at the same time and share them with their peers through national platforms, leagues, associations, or international projects or events. Such a knowledge transfer and peer to peer education would continuously improve practices through benchmarking processes, study visits and similar.

Furthermore, increasing the replicability potential of a practice can be looked at from two points of view.

During the development phase, documenting the process, the eventual test phase and subsequent modifications help recording the evolution of the practice while highlighting the advantages, disadvantages, understanding the opportunities and the challenges the sport organisation faced throughout the process. If this is turned into a guideline or a manual, it would significantly increase the replicability potential of the practice. Adding the financial construction and the human resources needed for a practice (even though it can be confidential sometimes) can only help the potential replication.

Communication and dissemination of the results and the achievements can attract significant attention and provoke other organisations to replicate and follow suit.

Finally, the transferability also depends to some extent on the availability of the aforementioned information in other languages for international replication.

One last remark, which often increases not only the transferability of the practice but also its impact is if it can be applied to other events taking place at the same venue – concerts, conferences, other sports.

INSPIRING GOOD PRACTICES

This publication will showcase the collection of good practices collected by the ACCESS partners coming from the partner countries, as well as beyond. Divided in four chapters, the reader will have the opportunity to understand why those processes and operations attracted more interest than others and at the same time get inspired by the selected best practices.

**Resource and
waste management**

**Food and beverage
management**

**Infrastructure
management**

**Mobility and
accommodation**

**Cross-sectoral
cooperation
for climate and
environment**



RESOURCE AND WASTE MANAGEMENT

Sport organisations require a lot of resources in order to be able to practice sports, organise events and be competitive in their championships and tournaments. Various sports require different equipment made of specific materials – metals, textiles, leather, synthetic material or other which are often not a part of conventional waste streams (paper, glass or other dry recyclables). This leads to certain challenges in waste management when it comes to this specific waste.

Various research report that as of 2016, the global sports equipment market had an estimated valuation of \$66.3 billion and is expected to reach \$89.22 billion by 2025. Already decades ago, it was obvious that the disposal of sporting goods was becoming one of the most critical issues for the sporting goods industry; yet there have been very few attempts to measure the end-of-use carbon footprint of sports equipment.

The French Environment and Energy Management Agency (ADEME) recalls that of the 186.000 tonnes of sports equipment put on the market per year in France, 104.000 tonnes are still thrown away as waste.

Depending on whether it's a professional or amateur sport organisation and the level of competition, the consumption and disposal of this equipment can go both ways - from short living (one tournament or one season at its best) to long living in cases where the equipment gets passed down generations and seasons (from the A team to relevant youth and children's groups).

When it comes to organising events, much more resource consumption arises. Sport events, especially stadium sports, like it is the case with partners involved in the ACCESS project, attract as much as half a dozen thousand or more supporters, spectators, journalists, sponsors, and others. Translated into daily life, it can easily equal to a living mid-sized city for a day and the resources it consumes – food, packaging material, paper, and finally, the amount of waste it produces.

The usual suspects and popular topics are certainly plastic waste coming from food packaging and single used cups, plates and cutlery, as well as food. Sport events usually require instant services which require as little time as possible for the spectators to enjoy the sport and leave with a satisfying experience. However, solutions exist, and many venues are implementing them already. Finetuning and awareness raising is nearly always required and therefore advanced communication activities and some kind of briefing for smoother operations.

This set of good practices reflects various efforts across Europe in terms of either minimising waste production and reusing certain items and equipment or securing a sound and responsible waste management during sport events.



A PLATFORM FOR COLLECTION, REPAIR AND REUSE OF SPORTING EQUIPMENT

The major objective of this practice and approach is to turn discarded sport items, including equipment and implements, clothes and similar into a resource and give them a second life. By doing so, sports would be more accessible to all social groups and would be more environmentally friendly, too.

CHALLENGE

Whether you play or organise sporting events recreationally or professionally, you may have noticed that some sports result in far more waste than others. Things like balls, tennis racket strings, sneakers, uniforms, bats, and helmets are necessities for athletes, but unfortunately, they are not usually built to last forever.

On the other side of the spectrum, there are countless amateur sport organisations, youth teams or individuals who don't have access to the latest generation or simply, quality material and equipment. Amateur sports who rely on volunteers and individual enthusiasts don't attract major sponsors and thus obtaining the material and equipment needed for the organisation can be limited due to finances.

DEVELOPMENT OF THE PRACTICE

The first Recyclerie Sportive opened in 2015. Originally, the practice was an initiative and an idea of a couple, Marc Bultez and Bérénice Dinet, respectively from the world of sport and the world of waste management. In the early days, Marc Bultez transported second-hand sports equipment to developing countries to allow access to sport in the most disadvantaged areas. The very first boutique-workshop opened its doors in Massy, on the outskirts of Paris, in 2016. Since then, the couple has spread their concept and awareness-raising operations for zero-waste sport across France.

The principle of collecting reusable second-hand equipment and its facilitation obviously requires donors – sport organisations. These donors supply the network of Recycleries across France. To facilitate the collect, the platform provides interested donors with the necessary material for successful and regular collect and pick-up. This kit includes an “Eco-box”, a container made of recycled materials which allows the donor to set up a permanent collection point for the sporting equipment, a manual which would allow the collect to take place in line with the way the Recyclerie works, communication material presenting the Recyclerie and customised communication material which would be tailored made for each donor, highlighting what kind of equipment is collected and other information specific to that particular donor.



Once collected, the sporting equipment and other items arrive to a sorting station where professionals contributing to the Recyclerie platform go through the arrival and sort the items according to their functionality and usability, thus at this stage different items get either repaired and sold, either transformed and merged into other useful items, or dismantled. Once sorted and their destiny defined, the items get redistributed across the country, depending on the needs of the different shops.

When it comes to securing spaces for all these operations and sales, public local and regional authorities play an important role in providing available spaces for setting up such shops.

RESULTS

Apart from the obvious reduction of sporting equipment going to waste and thus waste prevention in general, the platform is proud of many other achievements, such as:

- ☀ employing 65 people, as well as more than 40 volunteers, interns and similar contracts (from 5-9 months). With its social responsibility, some of the employees are gaining their first working experience or undergoing re-insertion in the labour market.
- ☀ The Recyclerie in Massy, the first one that was opened in 2016 collected 5.8 tonnes of sporting equipment in 2022 only. The equipment that was collected was a mix of used, damaged but repairable and unsold items.
- ☀ Overall speaking, compared to the five tonnes of material recovered in 2015, the Recyclerie Sportive recycled more than 100 tonnes in 2020.
- ☀ The Recyclerie in Massy, on the outskirts of Paris has 1740 members.

Prestigious awards came as a fruit of this work, such as the City of Paris' "Trophée de l'économie sociale et solidaire 2022", P'INS platform's laureate 2020, Recognised actor for sustainable Paris, 2017, "Changed by Sport" by Adidas, 2017, and 2nd place Social Innovation Prize by CD91, 2015

Finally, when looking at the partnerships and cooperation the Recyclerie has with public authorities, it can be indeed considered as a good enabler for sports to become a part of a circular city.

LESSONS LEARNT

Distances can be challenging, so a good cooperation between similar platforms is essential. As the Recyclerie said, when it comes to cities where they are not established yet, the Recyclerie encourages people to donate to local actors such as the Emmaüs network (a French national association) or similar organisations that specialise in sports,

REPLICABILITY POTENTIAL

The fact that Recyclerie Sportif today counts nine shops in all major French cities combined, including Paris (4), Lille, Lyon, Grenoble, Marseille and Bordeaux, shows that the replicability is rather high, and the idea is easy to be multiplied in other cities and countries. With the guidance and training, new locations can considerably contribute to circular economy in those locations by allowing sport organisations to donate used equipment closer to their facilities and also allow a new local community to have access to quality sport equipment.

"It's always complicated to find the right climbing shoes, right from the start. So, I advise my climbers to come here where they can find very inexpensive ones and when they are convinced to continue this sport they can, if they wish, invest a little more for new equipment."

Jean Philippe, indoor wall climbing trainer

CROSS-SECTORAL COOPERATION FOR BETTER WASTE MANAGEMENT

As the stadium did not have any infrastructure for separate waste collection and relied on single bins for all kind of waste, various stakeholders with different statuses and roles gathered to tackle the challenge.

This practice was initiated by the Royal Belgian Football Association (RBFA). As they were only the tenants, an extensive cooperation with the City of Brussels was needed to address this challenge.

CHALLENGE

The stadium didn't have any separate collection scheme and all waste generated in the stadium was ending in general waste. Most of this waste was assumed to be plastic waste (single use plastic cups) and litter from the stands and around the stadium (a lot of broken plastic cups).

GENERAL DESCRIPTION OF THE PRACTICE

The initiative brought together a set of stakeholders around a table, to develop a solution. These included the City of Brussels, ProSport (the public agency responsible for organising non-sportive events at the stadium, RBFA, Fostplus, Bruxelles Propreté, Brussels Environment, Coca-Cola (non-alcoholic drinks), AB InBev (alcoholic and non-alcoholic drinks), Bevers & Bevers (food providers).

Brussels Propreté (Brussels' Urban Cleanliness Company), SUEZ (private waste management company) and Fostplus (Belgian platform for PMC collection and recycling, as an Extended Producer Responsibility scheme) were identified for the introduction of adequate containers for separate collection. It was necessary to run a waste composition analysis in order to understand the needs and the way separate collection would be introduced. Furthermore, both pilot tests related to waste management would also require a sensibilisation campaign in order to reach an efficient deployment of the new system.

A waste composition analysis was needed to understand the potentials of a separate collection scheme by SUEZ and Bruxelles Proprete (Brussels Public Cleanliness Company) ran a sampling of the waste generated inside the stadium's premises, waste bins outside the stadium's premises, and litter.



Based on the results of this analysis the pilot test was further defined and it was decided to set up temporary selective collection infrastructure for the first time. It was decided to introduce only one additional bin for packaging and packaging material (PMC). Further activities related to this pilot were the installation of permanent selective collection infrastructure, as this pilot test only saw temporary bins for selective collection (green for residual waste and blue for PMD).

RESULTS

The new sampling and analysis of this pilot test were satisfactory, as the new collection scheme managed to redirect 120 kg of PMC from the residual waste. This basically meant that the capture rate of PMC was 83.2%, since 120 kg out of 144.21 kg of PMC was captured. It also reflected in the total amount of residual waste inside the stadium's premises dropped to 1120 kg from 1375.17 kg. The result of the sensibilisation and PMD collection pilot test outside the stadium's perimeter were 10550 cans collected which amounted up to 2.85 tonnes of empty beer cans which were redirected for recycling.

These results triggered a larger scale project of installing permanent bins within the stadium's perimeter, requested by RBFA and approved by the city of Brussels. The city would cover all the costs which would result in an immense added value of the new separate collection scheme as it would cover not only football games, but also concerts and different athletic competitions held at the stadium.

LESSONS LEARNT

A survey was conducted over the period of 4 weeks which wanted to assess and understand the visitors' behaviour when it comes to waste management, their subjective reflection on the current waste management practices and willingness to adhere to new practices. The survey found that the behaviour and daily habits in the private life (at home and at work) are rather coherent and they all scored very well in terms of separation of waste at home and at work. From the survey's results it can be concluded that certain lacking at the stadium, such as the absence of separate collection and reusable cups prevent the visitors from maintaining their good daily habits.

It was also observed that the large number of PMC bins allowed the visitors to locate them in their near vicinity quickly without needing to look for one for too long.

Few suggestions which need to be taken into consideration are targeting mainly the quality and purity of the collected PMC waste – PMC bins should be moved further away food trucks and other stalls serving greasy food (e.g. fries, burgers) and prevent impurities and decreased quality of the collected PMC, as many greasy food containers, wraps, food leftovers end up in PMC bags, as they are located conveniently close to the consumers.

REPLICABILITY POTENTIAL

This pilot test showed remarkable achievements and further potential benefits in terms of environmental management could be achieved through its replication. The temporary selective collection pilot test already showed certain improvements in selective collection and collected amounts in general.

The replicability potential increases even more if baseline data is known in advance, which avoids the need of a waste composition analysis. The replicability potential can also be marked as high in case of high environmental awareness among the visitors. In case of cities and regions where the environmental awareness is high, it wouldn't take much for the visitors to get used to selective collection in stadiums and would adhere to the new practice quickly. However, introduction of separate collection needs to be accompanied by communication campaigns, activities, and visuals.

DONATION OF SPORT EQUIPMENT, FURNITURE, VILLAGE ITEMS, VEHICLES, UNIFORMS AND SIGNAGE

The environmental impact of sport equipment and materials is growing as the sport sector is expanding. Whatever sport we talk about, it requires the use of different equipment. Most sporting equipment is durable and can be reused; however strict standards for high-level games require continuous replacements. In this context, donation of sporting equipment allows lower-level clubs or junior clubs to benefit from functional equipment that otherwise would be too expensive.

In addition, there is an important added environmental value linked to this practice: it prevents the equipment from becoming waste. Once these products end up in the landfill, they can take decades or even 1,000 years to decompose, producing toxic GHG. Donation prevents sporting materials and equipment from going to the landfills or incineration, allowing their life cycle to be extended through reuse.

To implement this practice, the sporting industry is partnering with charities, NGOs, and other event organisers to donate used materials that are still in good condition.

CHALLENGE

This practice addressed the environmental impacts linked to the use of materials and equipment.

Global consumption of materials has increased dramatically in a world of finite resources: during the 20th century, global materials use increased 8-fold, at about twice the rate of population growth.

This increasing consumption comes at a cost to the environment, including biodiversity loss, habitat destruction, overly stressed fisheries, desertification and climate change.

To reduce the environmental impact of materials and equipment, it is important to increase resource efficiency, recycling and reuse, as well as reducing the overall material consumption. To do so, we should look at the entire life cycle: from materials extraction to end-of-life management.

Reuse of materials is the absolute preferable option, right before recycling and composting. This practice addresses this challenge.



GENERAL DESCRIPTION OF THE PRACTICE

A successful example of sport equipment donation is the work of the non-profit organization Levelling the Playing Field. Levelling Playing Fiel has been distributing sporting equipment to poorer communities for a value of \$12 million through donation centres located in Maryland, Pennsylvania and Virginia, positively impacting over 100.000 children and youth athletes. The donations are housed at special distribution centres where families, coaches, athletic directors, program directors, and representatives can pick up whatever their kids need. The Philadelphia Eagles are one of the clubs that support LPF in their mission: Eagles players donated their sport equipment and helped to organize and take inventory of these items.

RESULTS

Donation prevents certain materials that are still in good condition from being thrown away thus reducing the amount of waste generated; at the same time, it allows to reduce the use of new raw materials to build new equipment because it simply extends the lifespan of the old equipment.

It is important to mention that in most cases the positive results of this practice are twofold: together with a reduction of the environmental impact, this operational practice has also a clear positive social return on local communities, as it helps other sport facilities that do not have the financial capacity to invest in new equipment and allows poorer communities to access sporting equipment, which is often too expensive, getting young people off the sidelines and onto the playing field.

REPLICABILITY POTENTIAL

The replicability potential of this practice is high once the event organisers establish relationships with specific stakeholders that put in place donation initiatives (charities, NGOs, organisers of future events, sport organisations). A proper awareness raising campaign to promote this practice would further boost its replicability.

No specific financial resources are needed apart from human resources (which are mainly in the form of volunteering) and the resources to transport the equipment and materials and redistribute them.

“LFP’s generous donation of baseball equipment enabled CEBF to reach impact 100s of youth in communities in need throughout the Caribbean region, from a Jamaican kid receiving a baseball for the first time to a Puerto Rican kid receiving a much-needed replacement for a worn-out glove”

– Caribbean Educational and Baseball Foundation.



ENGAGING VISITORS IN WASTE COLLECTION OPERATIONS

In parallel to the measures aimed at minimising the production of waste (e.g. less materials used, reuse of materials, etc.), event organisers should ensure the correct disposal of waste for recycling during events. Proper separate waste collection bins should be placed in stadia and at event locations. Since every personal act count, it is important to directly involve spectators in waste collection, conveying specific informative and educational messages on this topic and promoting mechanisms to increase separate waste collection during sporting events.

CHALLENGE

Waste management is key to reduce environmental pollution and climate change. The waste sector is the fourth largest GHG emitting sector in the EU-28, after energy, agriculture, and industrial processes, contributing 3% to total GHG emissions in 2017.

Stadiums are contributing to these trends since they are among the biggest and most crowded places: tens of thousands of people gather to watch games, concerts, and other events, and some are designed to host 100,000 people (the size of an entire town).

The EPA reports that each year, the Super Bowl (the US annual final play-off game of the National Football League) generates nearly 40 tons of trash. Spectators of sporting event alone generate around 39 million pounds of trash per year in the U.S.

Implementing separate waste collection operations and a sound recycling program in stadiums is therefore key to address this challenge. In this perspective, collaboration with contractors is key, but the engagement of participants is also important to increase the efficacy of separate waste collection during events.

GENERAL DESCRIPTION OF THE PRACTICE

Many sport venues are establishing programs or expanding current recycling efforts. In addition, factors such as laws or ordinances requiring waste reduction and recycling are driving the implementation of recycling programs. Finally, many fans expect recycling containers to be available, and are willing to put extra effort into placing recyclables in their proper place.

Below we present two case studies where fans have been involved in recycling programs.

The Brazilian Football Confederation (CBF) in collaboration with the Ministry of the Environment, established the Copa Verde (“Green Cup”), an annual football competition played by 24 teams from the North and Midwest regions of Brazil. Since its creation in 2014, Copa Verde has been committed to sustainable practices and the preservation of the environment, turning football into an educational tool for sustainability: the competition is based on the complement of a set of actions that foster environmental awareness of fans through activities such as recycling materials.

As part of the Copa Verde initiatives, fans can exchange PET bottles for tickets before and after match events, through an innovative exchange machine. In 2016 a total of 1,951 kg (about 14,000 lb) of plastic bottles were exchanged for 13,000 tickets. The waste was sent to four recycling cooperatives affiliated to the National Recyclable Waste Pickers Movement.

The Chicago White Sox baseball team launched the “Hit for the Cycle” recycle program using fans to assist in collecting as many plastic cups as possible at its stadium Guaranteed Rate Field (capacity of 47,098 seats). In addition to the collection of cups during a bowl sweep by a crew of stadium workers, fans are challenged to collect plastic cups from the seating area. Cups are brought to a designated area where they are exchanged for tickets which can be redeemed for prizes. The program uses public announcements to advertise to fans over the big screen, and players encourage supporters to “Pitch in” while explaining the program. The stadium estimates over 50% recovery rate of plastic cups and bottles.

RESULTS

The environmental benefits of adopting this practice are linked to a reduction of the amount of solid waste and an increase in the amount of waste separation for recycling.

This practice also contributes to increase of supporters’ environmental awareness: by engaging fans and educating them on the importance of separating waste and recycling, we create change within the community.

The indirect economic benefits for the sport venues that adopt this practice are linked to the increased rates of recycling: depending on local waste disposal and recycling market conditions, recycling can lead to a reduction in solid waste management and disposal costs.

REPLICABILITY POTENTIAL

In order to be successful, recycling programs should be accompanied by communication and awareness raising campaigns in stadia targeting supporters. Communicating and educating fans on the environmental impact of waste and on the availability of recycling containers as well as what items should or should not be placed in them is key for an effective sustainability and waste management program and for increasing the replicability potential of this practice.

Campaigns could be carried out through the use of digital in-stadium billboards and giant screens, also by incorporating athletes as testimonials into the stadium’s environmental campaign and tying giveaways to participation.

FOOD AND BEVERAGE MANAGEMENT

A sport event of whatever size is difficult to be imagined without catering services for different actors which make up the event itself – officials, athletes, supporters, visitors, sponsors and more. The number of people to be fed can amount to a size of a middle-sized town. Once drinks are added into the equation, the choices made for food and beverage selection and service patterns can have a considerable impact on the environment.

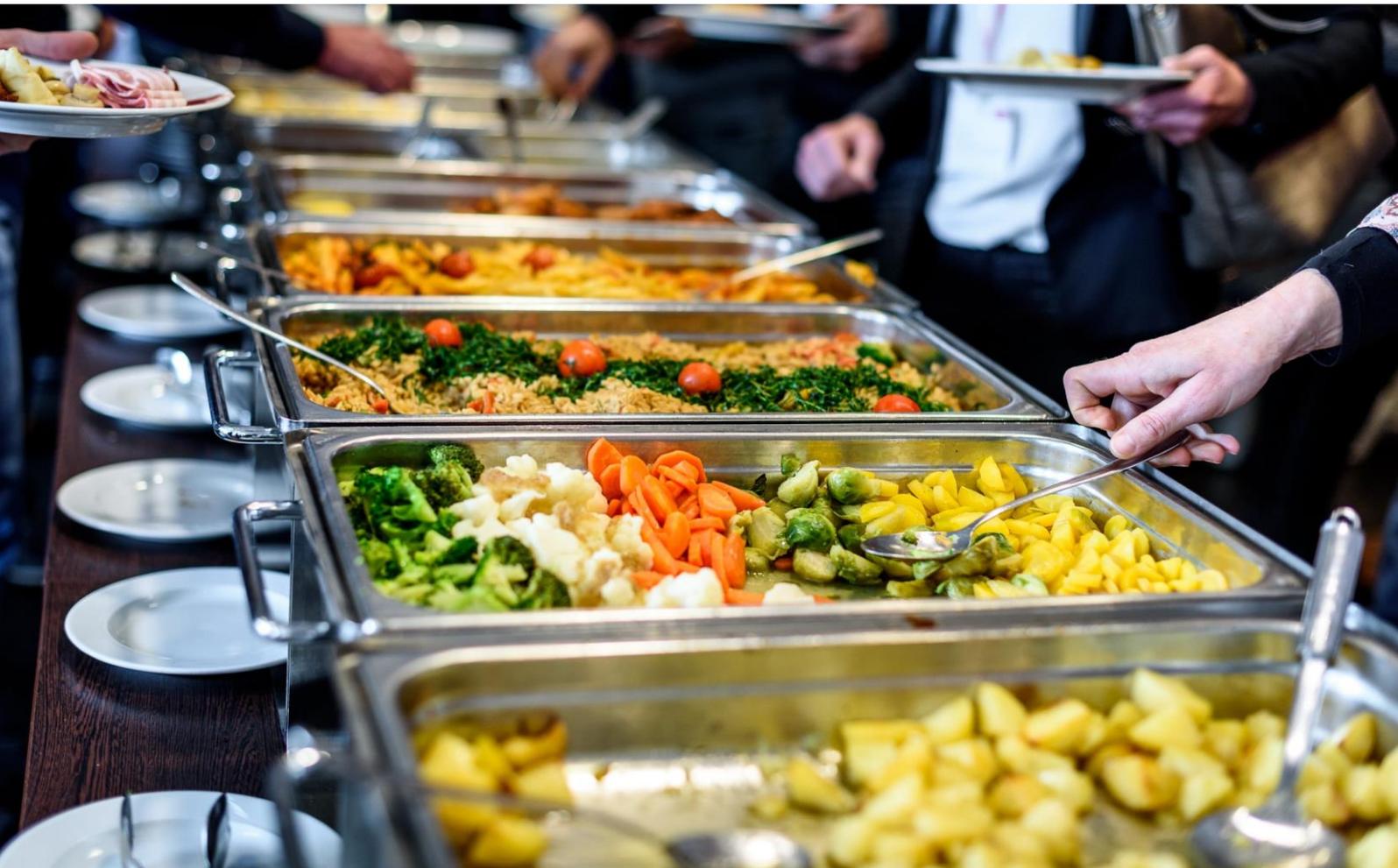
Many of those actors see food and beverage as a part of the sport event's overall experience. Caterers, architects, nutritionists, and other experts are often involved in order to enhance the offer, the layout, the accessibility and other features of food and beverage areas in fan zones, concourses, and outdoor areas, all in order to enhance and secure a positive matchday experience to its visitors. For the same reasons, many research and studies were done across Europe addressing consumption patterns, prices, quantities of food and satisfaction analysis to further amplify this experience.

At the same time, other researchers, practitioners, as well as professionals in the

catering industry recently started addressing the environmental impacts of the food and beverage services and their management. Several various aspects and sources of negative environmental impacts arise, namely the food and beverage supply and its carbon and water footprint, packaging material used for transport, storage and service, portion sizes and finally food waste prevention.

A perfect proof showing the importance of sustainable food and beverage management in sports is UEFA's recent Healthy and Sustainable Catering Guidelines. These UEFA guidelines are intended for use by caterers and event organisers such as national associations, leagues, and clubs. They provide actionable recommendations to enhance operations and meet the growing demand for healthier, sustainable, and culturally diverse catering provisions at sports venues.

The good practices identified in this chapter address some of the aforementioned aspects and provide inspiration and solutions for limiting the negative impact of this important economical and marketing part of sport events.





50 MILES MENU

The GAA games, as well as other events at Croke Park will never be the same, at least what concerns food and beverage and its environmental and carbon footprint!

CHALLENGE

As part of their ongoing sustainability efforts, Croke Park has launched innovative new menus to champion seasonally inspired and locally acquired food at meetings, conferences and corporate events hosted in the stadium.

Most events now have a commitment to being as sustainable as possible, so event organisers will be eager to hear that every dish on these new menus have been given an innovative carbon 'foodprint' score, such is the level of detail and traceability put in place by the Meetings & Events team.

GENERAL DESCRIPTION OF THE PRACTICE

Croke Park is also the first events venue in Ireland to launch a 50 Mile Menu, featuring ingredients sourced only within a 50-mile radius of Croke Park. Businesses can choose to build their entire meeting or event around the 50-mile offering.

Croke Park Meetings & Events source 85% of all produce from within the island of Ireland, with 70% grown or produced from within a 50-mile radius of the stadium, including Croke Park's very own farm. This statistic inspired the multi-award-winning events team to develop the new menus, which serves to showcase local suppliers and give clients more choice and control when it comes to deciding how strong a sustainability focus they want their event to have.

The Croke Farm in North County Dublin is well known for providing locally grown turf to keep the pitch in top condition, but what people may not know is that the farm is also used to grow a selection of herbs and fresh fruit and vegetables for use in the stadium's menus. Croke Park has also partnered with Fingal Beekeepers' Association to have beehives to support bee and pollinator activity and produce a unique Croke Park honey. It's small scale for now, but the ambition is to grow this activity.

RESULTS

Not only will these new measures reduce food miles and lower the carbon footprint of an event, but it ensures those hosting meetings, conferences, trade shows and galas at Croke Park are serving the freshest and most seasonal produce available.

REPLICABILITY POTENTIAL

This practice is certainly replicable under certain conditions, one of them certainly being the availability of ingredients grown near enough. What is specific for this particular practice are the facilities, not only to cultivate certain ingredients but also to prepare them without needing to ship the prepared food from a central kitchen to the customers.



CHOOSING LOCAL FOOD SUPPLIERS

Professional sports have a prominent cultural position in societies across the globe and commercial organisations such as big food corporations have been making use of this to promote their products. In 2006, the Fédération Internationale de Football Association (FIFA) World Cup had official partners of Budweiser beer, McDonald's, and Coca-Cola. In 2012, the London 2012 Olympic and Paralympic Games were again sponsored by Coca-Cola and McDonald's, with confectionery brand Cadbury also involved as a 'tier two' sponsor, the sole supplier of chocolate and ice cream at the Games.

This link between big food corporations (promoting sugar and unhealthy food products) and the Olympics have received international criticism from public health advocates.

This is why recently some sport organisations have decided to turn to local food suppliers for their bars and canteens. Choosing local suppliers and involving procurement managers to source them could improve the environmental footprint of the event by reducing food mileage and introducing sustainably grown and healthier products. In addition, vegetarian alternatives and fair-trade products are often included in the menus.

CHALLENGE

This practice addresses both environmental and health-related challenges.

Regarding the environment, the European Commission states that global transport generates nearly 20% of total CO₂ emissions from food. The transport of fruit and vegetables contributes 36% of food miles emissions – around twice the amount of greenhouse gases (GHG) released during their production. In addition, global foods often need more preservatives or additives to extend their shelf life.

Health-wise, big food corporations often offer unhealthy food and beverages full of sugars and additives. Concerns arise in particular when these companies selling unhealthy products sponsor children's sport. In a review of the evidence presented to the WHO in 2006, it was shown that food and drink companies systematically target children, marketing chocolate, sweets, soft drinks, and other foods high in fat, sugar and salt. This kind of food promotion has been shown to influence children's consumption and other diet-related behaviours and outcomes. Regular junk food intake leads to long-term health problems such as obesity and chronic illnesses in later life. A single fast-food meal could add 160 and 310 extra kilocalories to the daily caloric intake for teenagers and younger children. Lack of vitamins such as A and C, and minerals such as magnesium and calcium, encourage the development of deficiency diseases. The presence of hazardous food colouring agents and/or unhealthy trans fats in many fast-food items, and issues with food preparation safety, often complicate the issue further.

GENERAL DESCRIPTION OF THE PRACTICE

Manchester City FC realised that the food and beverage provided on match days across its Etihad Stadium (in the fan areas and concessions and in the restaurants and suites) is a major part of the experience of fans and visitors.

The Club works with the catering partner F3 (Fabulous Fan Fayre for the management of food at the Etihad Stadium.

F3 has launched a “Local Eats” scheme partnering with street food vendors who are contracted to operate in several mobile and fixed-point catering units. F3 works with talented artisan food traders using on site facilities and supported by the Club’s infrastructure. In this way, F3 is committed to providing employment to the local communities while at the same time offering locally and sustainably produced food.

F3 has also developed a Food Charter for Manchester City FC to ensure all partners comply with its principles - i.e. no MSG, additives and/or preservatives etc., contribute to thriving local economies and sustain the livelihoods of people working in the food sector, protect the diversity of both plants and animals and avoid damaging natural resources and contributing to climate change, provide social benefits, such as good quality food, safe and healthy products and educational opportunities.

The catering contractor works closely with local suppliers, finding partners who care about their produce and livestock, sourcing fresh local ingredients to reduce food mileage and serving its customers sustainable products with ethical welfare standards for livestock.

RESULTS

Choosing local suppliers for food and beverages in sports events has positive environmental and health implications, as well as cultural implications for the local community.

First, choosing local suppliers reduces the carbon footprint associated with transportation and logistics. By sourcing food and beverages locally, the need for long-distance transportation is minimized, resulting in lower greenhouse gas emissions. Additionally, supporting local farmers and producers promotes sustainable agricultural practices, such as organic farming and reduced pesticide use.

Second, local suppliers often provide healthier, fresher and higher-quality food and beverages compared to processed industrial foods full of sugars and additives provided by big food corporations. Locally produced ingredients are typically harvested or prepared closer to the event, ensuring that spectators and participants enjoy fresh and flavourful meals. This emphasis on quality raises awareness of the importance of a healthy nutrition among athletes, spectators and volunteers.

Third, by promoting local food suppliers, sports events can bring benefits to the territory by contributing to the growth and sustainability of local economies, helping to generate revenues and job opportunities within the community. Supporting local businesses leads to increased economic activity, tax revenue, and overall development.

Sporting events are often an opportunity to showcase the local culture and traditions. By partnering with local suppliers, event organizers can incorporate regional cuisine and specialty dishes, enhancing the overall experience of the attendees. This helps celebrate the local culinary heritage and adds a sense of identity to the event.

REPLICABILITY POTENTIAL

Replicating this practice depends a lot on various factors such as the availability of local products and suppliers for large events. As sports are taking place in all parts of Europe, with dates usually adapted to different seasons and type of sports (winter/summer), certain periods of the year can easily imply a lack of certain ingredients or merely provide seasonal ingredients. At the same time, certain aspects of food preparation need to be taken into account, too – nutritious and balanced and sometimes tailor-made meals for the athletes, large quantities of portions for corporate areas and at the same time a variety of food options for the visitors - affordable, quickly prepared and diverse. All these might limit the extent of locally sourced ingredients. Nevertheless, sport organisations should investigate the increasing number of farm to fork initiatives and at the same time adapt their menus to the various seasons. Finally, many labels and certificate exist, too, which could secure at least an environmentally friendlier value chain of the sourced food.

DONATION OF LEFTOVER PROCESSED AND PREPARED FOOD

The food & beverage sector of sport venues moves large quantities of food resources during each sporting event. This operational practice aims to reduce the environmental impact linked to food waste. By donating unused prepared food from the event canteens, sporting events can help people in need while at the same time preventing good food from ending up in landfills at the end of the event.

CHALLENGE

According to the WWF, today one-third of all the food produced in the world goes to waste. That's equal to about 1.3 billion tons of fruits, vegetables, meat, dairy, seafood, and grains that either never leave the farm, get lost or spoiled during distribution, or are thrown away in hotels, grocery stores, restaurants, schools, or home kitchens. It could be enough calories to feed every undernourished person on the planet.

The fact that substantial amounts of food are produced but not eaten by humans has huge environmental, social, and economic negative impacts. Estimates suggest that 8-10% of global greenhouse gas emissions are associated with food that is not consumed.

Food donation is one of the practices that should be implemented to fight food waste while also generating positive social benefits.

GENERAL DESCRIPTION OF THE PRACTICE

Sport organisations are increasingly sensitive to this issue and are adopting practices of food donation to prevent surplus food from their match-days from going to waste and support people in need.

Below we describe three good initiatives of food donation implemented in the sport sector:

During the last FIFA World Cup held in Qatar in November 2022, the tournament organizing committee has devised an auspicious solution, partnering with local charity Hifz Alnaema to ensure that unused and surplus food was donated for redistribution to workers and other beneficiaries as part of the wider Food Waste Minimisation effort.

The Food Waste Minimisation programme was established in the wake of learnings from the FIFA Arab Cup 2021 where it was observed that organics, including food, comprised a significant portion of total waste. To prevent the disposal of otherwise safe, consumable food, it was agreed to work with the local experts at Hifz Alnaema—the first and oldest food bank and food recovery program in Qatar—who were responsible for recovering surplus food from 12 venues, including stadiums and fan zones, to be redistributed to recipients in need.



In addition to food donation, the Food Waste Minimisation programme also encompasses meal planning and order adaptation to minimise unconsumed meals. Moreover, food from the tournament that was no longer safe for consumption was composted at stadiums and other venues. This compost was processed together with pitch grass and other organic materials to create fertilizer that was used across farms in Qatar.

Starting from the 2010–2011 season, the National Hockey League (NHL) established a league-wide initiative to work with “Rock and Wrap It Up!” to donate unused prepared food. All 30 NHL teams committed to pack up all such concession food on game nights for redistribution to local shelters and other places that serve people in need. Over the course of the first full season, through this initiative NHL clubs provided 163,000 meals to people in need and diverted 105 tons of food from landfill and incinerators across north America. Since 2010, the league-wide food recovery program has diverted more than 300 tons of waste from landfills and incinerators and provided local shelters with more than 400,000 meals. For example, since October 2010, the Edmonton Oilers have provided over 20,600 pounds of food to the Edmonton foodbank program, generating almost 16,000 meals for their various agency programs.

The Food Recovery Network (FRN) movement is coordinating volunteers to collect and donate a portion of the estimated 140,000 pounds of food and beverages fit for donation that are expected to become available at various Super Bowl events.

Using refrigerated trucks equipped with lift gates, FRN and other groups help move some of the surplus food; it is the third time that this grassroots group has taken such action to address food waste at the football championship.

The food rescue effort began in 2020, when FRN organized its first food collection drive following the Super Bowl game in southern Florida. The project was partly born out of increasing levels of food insecurity across the country, only exacerbated by the Covid-19 pandemic.

Last year, the group collected almost 2,000 pounds of food from the game at California’s SoFi stadium, reported the Los Angeles Times.

RESULTS

Donating prepared and unused food after sporting events helps combat the pressing global issue of food waste: by redirecting surplus food, sports organisations can minimize waste and contribute to a more sustainable future.

Donating food also addressed food insecurity in local communities. By sharing nourishing meals with those in need, sports organisations can foster social responsibility and compassion.

According to the Environmental Protection Agency, the NHL reduced greenhouse gas emissions by the equivalent of 79 metric tons of carbon dioxide through this initiative.

An interesting example comes from France, where from 2014 to 2016, after each event at the Stade de France, the redistribution to charity associations of unsold products from the refreshment areas of the event venue made it possible to redistribute 23,000 products to associations contributing to 7,522 meals and avoiding 3.6 tonnes.

REPLICABILITY POTENTIAL

The replicability potential of this practice depends on the foresight of the event organiser to collaborate with local communities and charities to redistribute unused food to people in need. Some of these setups require various logistical solutions and financing models in order to cover the pickup and distribution costs, storage etc. In some cases that could also require additional staff and/or working hours for the event organiser.

Apart from that, the laws need to be consulted prior to setting up such a practice. Certain countries do not allow redistributing food or certain types of food (prepared, processed, cooked or other).



REUSABLE CUPS FOR DRINKS

This general practice has the overall objective of contributing to less plastic waste produced at sport events and thus easing the pressure of sporting event on the environment. Not only less waste is produced (what decreases the time of cleaning the stadium, collecting waste and treating it) but it also decreases single use plastic production and thus the use of raw materials, and also encourages visitors to adopt eco-friendly behaviours.

CHALLENGE

Reusable cups are turning into a more and more common practice across Europe. While certain events, especially cultural ones pioneered this practice some years ago, the world of sports are picking it up at a fast pace. Afterall, an average stadium that hosts 300 events annually uses 5.4 million single-use cups – creating a whopping 64 tonnes of plastic waste. If these were replaced with reusable polypropylene (PP) cups used 300 times and then discarded, that would generate less than one tonne of waste.¹

Nevertheless, implementing a reusable cup system carries certain challenges, adaptation and finetuning – all revolving around communication, logistics, finances, infrastructure, behaviour and more. This practice thus brings you an agglomerated overview of good practices and key lessons learnt from different implementations.

Cities and regions are already taking actions for banning single-use cups in cultural and sport events – the regions of Brussels and Flanders in Belgium, the Netherlands only being among the latest one to see this ban in 2023 and 2024.

GENERAL DESCRIPTION OF THE PRACTICE

The principle sounds simple – with a purchase of a drink, the buyer leaves the bar with the drink and a reusable cup which should be returned upon finishing the drink or before getting a new one. However, for implementing a practice, we need to look at 3 key aspects: design, financial construction, and logistics – all of them define the success of the practice and determine some key monitoring requirements such as the return rate - how many cups were returned to the venue vs how many were taken home or damaged.

When it comes to design, it encompasses the choice of the material, the design of the cup and the visual identity. The final evaluation of how environmentally friendly or successful the practice was starts from the choice of material. At this step doing more harm than good is something to avoid, simply because different material has different environmental, and CO₂ impact.

The reusable PP cup has the least environmental impact, but the material cannot be recycled from cup to cup (circular).

¹ [UpstreamSolutions](#)

Even though the production process doesn't use raw fossil materials, PLA still has the greatest environmental impact. Currently, rPET is the only material that can be processed in a circular way, which is the preferred option. But a prerequisite for circular recycling is that the cups must be collected in a clean mono-stream (no waste or other types of plastic), and they must be ink free.²

The ink-free remark brings us to another aspect of the reusable cups – the branding and visual identity. The example from Ireland, where a stadium is shared between more users. While the stadium wanted to introduce reusable cups much earlier, the caterer presented the design they developed that met their requirements and the new reusable cups were used during the Ireland – Wales rugby game. The cups were branded with the Irish Rugby Football Union (IRFU) logo. To maximise the use and the resources a discussion was necessary between several different stakeholders involved in this pilot test, namely FAI (Football Association of Ireland), IRFU, the stadium, the caterers and beverage providers. Both FAI and IRFU were happy with the solution before the full implementation which was planned for November 2019 was pushed back to February 2020 and the Rugby 6 Nations Cup. However, studies show that blank unbranded cups have a higher return rate than those branded or decorated because they become souvenirs that visitors take home with them.

The Irish example of the reusable cups was interesting because of another design aspect – of the cup itself. Certain countries have a specific drinking culture which includes certain type of beverages which are served in specific glasses. A sport organisation needs to consult the subcontractors (caterers and other providers) on the shape and the size of the cup – not only to please the sponsors, meet the requirements of certain beverages but also to increase the visitor experience.

The financial side of reusable cups is another dealbreaker – setting it up properly can guarantee a high return rate and thus securing environmental benefits and satisfaction among visitors. If this setup isn't convenient to meet aforementioned objectives, this practice can create more environmental harm than good, as the visitors wouldn't be incentivised to return their used cups and generate waste instead. The math which justifies this statement is that one pint of single use plastic cup requires 20g of raw material and a reusable cup requires 48g of raw material. The same difference is reflected in the carbon footprint, where a single use plastic cup equals 70 g/CO₂ equivalent compared to 168 g/CO₂ equivalent³. This obviously implies that if no incentives or encouragement are present for recuperating the used reusable cups the system can have significant negative environmental impacts compared to deploying single use cups. Deciding what the price would need to be in order to make the return of the cups happen is another deal breaker. The pilot test in Ireland allowed an interesting observation. While a drink, in this case a pint of beer, could cost somewhere between €2 to €4 in southern or central Europe, a pint in Ireland is between €6 and €7. The usual deposit price for a cup, on the other hand, is €1 in both cases. This led to a conclusion that the deposit elsewhere could be a half or a third of a price of a new drink, while in Dublin it's way less. Therefore, a lot of cups were left in the stands (a large share still collected by some visitors, not necessarily the original owners of those cups).

Finally, logistics around the reusable cups is another aspect which determines whether the practice would bring any environmental benefits. They revolve around two actions – collection and storage. Linked to the previous discussion on the economics and the return rate, having a convenient and fast collection system would encourage the visitors to participate and return their cups, and this includes the financial transaction. Separating the serving area from the collection area is a good rule of thumb, as it would minimise the crowds and also take the pressure off the bar staff. The closer to the exit doors and gates, the more convenient it is for the visitors to return their cups. Additionally, the use of signage or additional staff to direct the visitors would contribute to higher return rate. Many solutions exist for the financial transactions apart from manual ones – QR codes, reverse charge on the visitors' bank cards or for recurring events – a personal account with a balance.

The storage is another aspect which can have at least two scenarios – washing and storing cups on site or transporting the cups to a washing and storage facility elsewhere. Washing and storing the cups at the venue certainly eliminates the negative environmental (and financial) impact caused by road transport.

² [Plastic Promise](#)

³ [Hope Solutions](#)

RESULTS

One of the cases that we can highlight in this publication come from Dublin. At the end of the Ireland – Scotland rugby game in February 2020, 52360 reusable cups were returned to the washing facility. If these 52360 were replaced with single-use plastic pint cups, they would amount up to 418.88 kg.

In terms of CO₂ savings, a saving of above 2 tonnes of CO₂eq. This includes savings by avoiding incineration and manufacturing new single use cups, losses by not incinerating them and the emissions coming from washing. Furthermore, the waste composition drastically changed too with the introduction of reusable cups. Only during the month of February 2020, when the stadium hosted two matches with reusable cups the amount of mixed packaging waste going to incinerators decreased to 3.1 tonne from 4.54 t, 3.02 t and 3.96 t in March, September, and November 2019 respectively. At the same time, the dry mixed recycling rate increased to 17% from 14%, 10% and 14% during those same months in 2019.

Many other benefits were observed in other cases which are available for reading on the ACCESS website. We would also like to suggest to the readers the comprehensive study titled “A study of the waste free cup systems at events as commissioned by Rijkswaterstaat in cooperation with Plastic Promise” from 2020, which covers the entire lifetime of cups through a comprehensive LCA analysis.

LESSONS LEARNT

The system must make the visitor fully responsible for the cup return, with the event host acting as an enabler for that to happen by setting the system up properly.

Enough access to reverse vending or return counters needs to be secured throughout the event but especially at the end. In the case that the cups were to contain a RFID chip or other active track and trace devices, this could act to set off an alarm when the person leaves the event with the cup. Large warning signs could communicate this fact and bins could be made available at the exit. This could be operated with or without a deposit return system.

Providing unprinted cups that do not encourage keeping the cup as a souvenir or not keeping the cup because it has an attractive generic design.

Printing the cup with the clearly explained deposit return system rules. At the same time, the venue should have sufficient signage and some pre-event communication made to visitors could be helpful.

Worth mentioning is also the users’ willingness to use cups. People visiting music events or other cultural events, or some sport events have already experienced reusable cups and got used to them. However, the optimal solution for the system needs to be set up in order to guarantee visitors’ experience.

REPLICABILITY POTENTIAL

The replicability potential of reusable cups is obviously rather high as they are being deployed in more and more venues. As the ACCESS project deals with stadium sports, the fact that the event is taking place in an enclosed space rather than in the countryside or the great outdoors, allows the system to have well-defined barriers. The issue certainly lies in the size of the venue and the available financial and human resources as reusable cups require attention in terms of distribution, collection and reverse charge, providing guidance and signage among others.

In terms of the environmental impact, what could determine the overall environmental impact and expected benefits are three key aspects – material the cup was made from, the number of uses, the use of water for washing, whether the venue can wash and store cups on site, and financially speaking what is the charge for unreturned cups.

INFRASTRUCTURE MANAGEMENT

The necessity for sustainable infrastructure has become glaringly apparent as the planet grapples with escalating environmental challenges. According to the World Green Building Council, buildings and construction are responsible for 39% of global carbon emissions. As urbanization accelerates and energy demands surge, the impact of traditional infrastructure on ecosystems, resource consumption, and climate change has become an urgent concern. In this landscape, the sports industry's unique opportunity to drive innovation, promote eco-consciousness, and model sustainable infrastructure practices takes centre stage.

The environmental footprint of the sports world is more substantial than one might assume. A comprehensive study by the Natural Resources Defence Council found that a single National Football League (NFL) game could generate as much as 35 tons of CO₂ emissions due to energy consumption, travel, and waste. Similarly, large-scale sporting events like the Olympics can result in significant resource consumption, pollution, and habitat disruption. These statistics highlight the need for the sports industry to recognize its environmental impact and transition to sustainable infrastructure management.

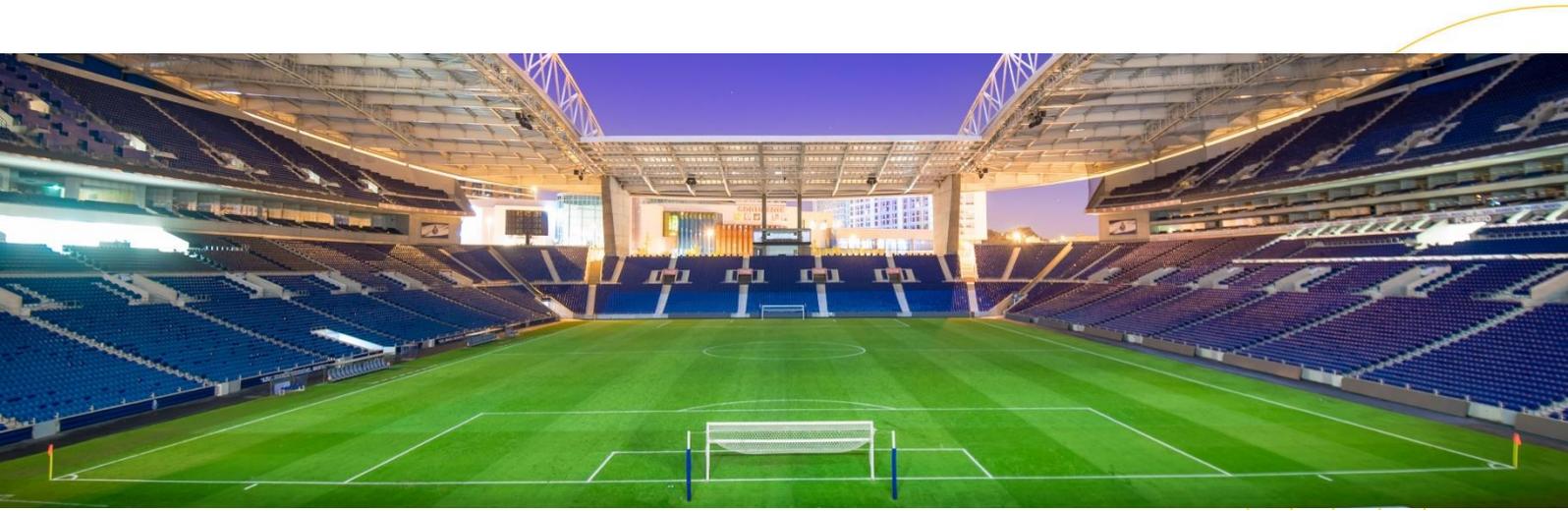
Renowned as the first stadium in the world to install a fully integrated energy storage system, the Amsterdam ArenA utilizes a network of batteries to store and distribute energy generated by its rooftop solar panels. This system not only powers the stadium during events but also feeds surplus energy back to the grid during non-event hours, effectively

transforming the venue into a self-sustaining power hub.

The Tokyo Olympics set a new precedent for sustainable infrastructure in mega sporting events. Temporary venues were built using reusable and recyclable materials, ensuring minimal environmental impact. The Olympic Village apartments were designed with energy-efficient systems, and the Olympic Stadium's timber-based architecture showcased the potential of sustainable construction materials.

Often heralded as the world's greenest football club, Forest Green Rovers' stadium is a testament to their commitment to sustainability. The stadium's wooden construction, solar panels, rainwater harvesting, and vegan-only food offerings reflect the club's holistic approach to environmental responsibility.

As the urgency of sustainable development intensifies, the sports industry stands at a pivotal juncture, poised to influence global perceptions and behaviours. By embracing sustainable infrastructure management, sports organizations can transform their facilities into beacons of environmental consciousness, setting a precedent for innovation and responsible consumption. The data outlining the industry's environmental impact serves as a stark reminder of the need for change, while the showcased examples of sustainable practices provide a tangible blueprint for action. Through the integration of sustainable technologies, materials, and design principles, the sports world has the potential to not only inspire fans and athletes but also contribute substantially to a greener, more sustainable future.



USING EXISTING VENUES AND TEMPORARY INFRASTRUCTURE

CHALLENGE

Mega sporting events such as the World Cup or the Olympics require short term, extremely costly infrastructure projects. Some of these have been described as “white elephants” – that is, structures like stadiums that are built with no future planning apart from the single big event, that put financial strain on a city and become largely unused and empty after the event, with the maintenance costs dumped on the government. Statistics from the European Commission indicate that the building industry accounts for about 50% of all extracted materials in Europe and that the construction sector is responsible for over 35% of the EU's total waste generation. The main problem is the saturation of production density, consumer goods and building mass of today's society.

In addition, often sporting events use temporary structures, such as tents, containers, barriers, stands, and other installations that are built within and aside venues for operational needs. These are increasingly prominent within Olympic bids. Temporary stands can be positioned in places where permanent facilities would not be possible, including city centres and heritage sites.

To avoid white elephants and reduce the environmental impact of the sporting infrastructure, sporting venues and structures should be designed and planned beyond the event (“design with the future in mind”), so that they are repurposed for different needs or reused for future events.

Repurposing and reusing existing sport structures would greatly reduce the environmental impact linked to the use of resources, GHG emissions and waste generation.



GENERAL DESCRIPTION OF THE PRACTICE

Since the last two decades, there has been an increase in efforts to build environmental-friendly sports arenas around the world, which are designed with the future in mind.

The Beijing 2022 Games maximized the use of existing sports facilities and infrastructures: the headquarters was located in the renovated facilities of Shougang Park in the northwest of the megacity. Through the rehabilitation of an old industrial site, the impact on resources and the environment was reduced, creating a sports leisure place with a post-industrial atmosphere and style on the edge of the city of Beijing.

In the Beijing area, the legacy of Beijing 2008 was fully reused, in the Zhangjiakou competition area, the pre-existing ski slopes of Genting Snow Park were used as one of the competition venues, and the pre-existing Zhangjiakou Genting Hotel was transformed into the Zhangjiakou Mountain Press Centre during the Games.

During the World Athletics 2022 Diamond League final, the most important athletics competition, the structure of the grandstands, pallets and containers were reusable and reused from previous events. The figure below shows the views of the grandstands in Sechselautenplatz square.

The Tokyo 2020 summer Olympic Games strategy for climate action entailed the use of pre-existing buildings: instead of building all new facilities, 60 percent of the structures used during the games were pre-existing buildings.

RESULTS

The positive environmental impact of this practice is clearly linked to the reduced need of building new infrastructures and therefore reduced use of materials and waste generation.

In economic terms, this practice also prevents the white elephant phenomenon (huge economic investments in venues that remain vacant, have a big environmental impact and are too expensive to maintain) that were very common for mega sporting events especially in the past.

REPLICABILITY POTENTIAL

The replicability potential of this practice is high if the structures (both permanent or temporary) are designed with the future in mind, so that they can be easily repurposed (in the case of permanent venues) and dismantled and reused (in the case of temporary structures).



CONNACHT GAA CENTRE OF EXCELLENCE

Connacht GAA Centre of Excellence is one of Ireland's leading sports facilities, catering to sports and recreational needs from community to elite level. The focal point of the sports campus is the world's largest sports air dome – an indoor playing facility with an area of 15,000 m².

The Connacht GAA Centre of Excellence (CoE) is located in a rural area in Co Mayo, in the West of Ireland, and has a total site area of 85 acres. The site includes the main building, which has a floor area of 1200 m² and houses changing rooms, offices, a canteen, meeting & conference rooms and a healthcare centre, as well as the Air Dome, which contains a full-size indoor GAA field, a running track, a gym and a portable stand. The CoE site has five grass pitches and one astroturf pitch, with a 2.5 km floodlit walkway around the site.

The Centre of Excellence was officially opened in 2012 and the Air Dome was installed 2020; however, sustainability planning for the site began several years early – with the planting of a native tree plot and the securing of a historical heritage area of site in 2008. Objectives for the Centre's development included ensuring that environmental and financial sustainability be embedded into facility and management design from the very earliest stages and the Centre's development and operations would contribute positively to the local community.

CHALLENGE

The challenge for the Connacht GAA was to develop a new centre that would serve the needs of the local and GAA community and would showcase innovation and best practice in sports facility design while minimising any harmful impact on the natural environment. The planning for the Centre of Excellence was based on the three pillars of financial, social and environmental sustainability and the big challenge for Connacht GAA was to ensure objectives across all three pillars were included in all stages of planning and management of the Centre of Excellence.

These objectives were set internally by the Connacht GAA team, with the aim not only of futureproofing the facility and the organisation both financially and against physical and transitional climate challenges but also to reflect the values of Connacht GAA. While the project was initiated and developed by Connacht GAA, over time relationships were developed with the GAA's national Green Club Programme and with local authorities in the region, allowing for mutual supports and exchange of learning, knowledge, skills, and experiences.

GENERAL DESCRIPTION OF THE PRACTICE

Connacht GAA sought to ensure that sustainability goals were embedded in both structures and practices at the Centre of Excellence through the development of a Sustainability Roadmap for the site. Energy management was identified as a priority for the Centre from the very start – focussing on good energy management would save money, would reduce the Centre’s carbon footprint and would ensure that the Centre was safe, warm and welcoming for visiting teams and for members of the community all year round. To ensure that this commitment to energy sustainability was engrained into the culture and management of the facility, the Centre’s team held week Energy and Sustainability briefings, which later evolved into the Connacht GAA Biodiversity and Sustainability Committee.

The main building was designed for energy efficiency, ensuring that energy losses are kept to a minimum, and a building management system measures energy use in real time and displays this on screens throughout the building. Connacht GAA set up an SEAI Sustainability Energy Community (SEC) to support energy awareness and planning in the local and GAA community, with the Centre of Excellence at its heart. There is a 150kW solar PV installation on the CoE roof – even on a poor autumn day the CoE electricity demand is covered by this on-site generation, while a second solar PV ground array has been installed from which electricity is supplied to the national grid, supporting grid stability and earning revenue for the Centre. There are two 22kW EV car chargers on site that are powered by site solar panels when solar power is available. All internal building lighting and external lighting in the car park and on the walkways is LED and is controlled by sensors, timers and photocells to ensure that lighting is in use only when needed.

Rainwater is harvested from the main CoE building. There is 72,000l rainwater storage on site and all toilets are fed by harvested water while low-flow valves, solenoids and sensors are installed on all tanks and toilets. The site is managed for biodiversity, in collaboration with local and national expert bodies as well as local schools and community groups. There are 25,000 native trees planted on site – 17,000 of these have been planted since 2021. The site is home to a number of beehives and to habitats for wild bees and other insects as well as to extensive biodiversity areas and there is 2.5km of community walkway around the site, with pollinator-friendly wildflowers and shrubs planted along many of its stretches.

RESULTS

Significant financial savings have been made through the energy management systems, where energy use is monitored in real time and where unexpected or unnecessary energy use can be immediately identified as well as through the upgrading to LED of interior and exterior lighting and the installation of sensors and timers.

The electricity generated from the solar PV arrays means that on sunny days most of the site’s electricity comes from renewable sources while the new ground array generates revenue for the site and contribute to the national supply of renewable energy

The Centre’s biodiversity projects were a great opportunity for collaboration in the community – local volunteers came out to plant the trees on site and hugely enjoyed the participation, engagement and sense of involvement at a time when the ban on indoor gatherings was having a serious impact on the health and well-being on many members of the community, while the Centre’s walkways are used by members of the local community, in an area where road walking can be quite dangerous, especially in the darker winter months

LESSONS LEARNT

Measuring and Monitoring: Measuring energy and water use at the site was crucial to the Centre of Excellence’s sustainability projects – understanding energy and water use enabled the team to identify where they could make savings and where to make worthwhile investment in longer-term projects.

Small Steps to Success: The sustainability achievements at the Centre of Excellence came about after careful planning and in small steps. Connacht GAA set out a long-term roadmap and started with small

and simple actions like energy efficiencies and biodiversity planting and built up to more ambitious projects over time.

Partnerships: All of Connacht GAA's projects and initiatives were developed and delivered in partnership with local authorities, specialist bodies, consultant engineer and independent experts and members of the local and GAA community – without this network of partners the project would have been considerably more difficult to advance and would not have been the success it is today.

REPLICABILITY POTENTIAL

While the particular elements of the Centre's development were specific to Connacht GAA and the site, the principles and provisions are applicable to sports developments of all shapes and sizes. These include resource efficiency, water harvesting/recycling, energy monitoring and management as the basis for longer term energy investment and planning, biodiversity planning and waste management. Elements central to the success of the project that could be replicated by clubs and grounds include having sustainability as a standing item on management agendas, linking larger sustainability investment to robust business cases, planning for and involving the local community, and forging partnerships to ensure planning and development benefit from up-to-date expert advice and innovative thinking.

The sustainability projects at the Connacht GAA Centre of Excellence have also inspired clubs and county boards to develop their own sustainability approaches. Following the experiences in the Centre of Excellence, clubs around Co. Mayo have come together to set up a Mayo GAA Sustainable Energy Community (SEC), while one of the county's largest clubs, Castlebar Mitchels, along with the Mayo County Board have launched a climate action and sustainability strategy for the county's main stadium, MacHale Park. Mayo County Board have also organised a series of sustainability workshops for clubs and volunteers, delivered by expert partners in the Connacht GAA Centre of Excellence.

"In the same way we want to be best in class for the teams that come here to train and for the coaching education programmes that we run, we also want to be best in class when it comes to energy, biodiversity, and sustainability"

– Kurt Reinhardt, Facilities Manager, Connacht GAA Centre of Excellence.





ENHANCING NATURAL HABITATS IN URBAN ENVIRONMENTS

CHALLENGE

Urban areas often suffer from a lack of green spaces and biodiversity, leading to reduced air quality, increased heat island effect, and limited opportunities for nature appreciation.

By actively participating in the creation and restoration of natural habitats, sports can help mitigate these challenges. Enhancing urban green spaces not only provides ecological benefits but also improves the well-being and quality of life for residents. It creates opportunities for recreation, promotes biodiversity, supports pollinators, and contributes to a more sustainable and resilient urban ecosystem. Additionally, it fosters community engagement, education, and awareness about the importance of preserving and restoring nature in urban environments.

GENERAL DESCRIPTION OF THE PRACTICE

The case of Manchester City Football Academy is a perfect example of this practice.

MCFA is an 80-acre estate and home to City Group's global headquarters. The world-leading training campus hosts 16.5 training pitches (the half pitch is for goalkeeper training), a hotel for the first team and visitors, as well as a 7,000-seater academy stadium.

Manchester City Club started its biodiversity improvements in 2014 by planting over 2500 mature trees, hedgerow and many acres of wildflower and wild grass meadows and established a series of swale and ponds across the City Football Academy site. These practices have contributed to local area regeneration in east Manchester and to reaching the city's ambitions for cleaner air.

The Club has been working with idverde, the landscape team and contractor which has been maintaining the estate landscape including the maintenance of trees, grass, wildflower meadow, shrub beds and hedging. As part of ongoing improvements to the estate, idverde has been working with MCFC to make the site more attractive and suitable for local wildlife.

Staff from the Club has been engaged in creating new wildflower meadows within the Academy grounds and around the roadside boundaries. Idverde has developed a three-year improvement plan to create a range of different habitats to encourage biodiversity. They have also installed biodiversity conservation infrastructure, including solitary bee and wasp nesting boxes: beetle banks and bug hotels were introduced to protect species on site year-round (see figures) .

Grass cuttings from all sites are included in the new (2021) anaerobic digestion facility – which returns composts and fresh produce from the receiving farm. A living plant wall adorns CFA's new TV studio.

The Club is also working with local schools and community groups to promote and develop opportunities in horticulture and greens space development.

As a result of this engagement, the football team received the IOG Ransomes Environmental/Ecology Project of the Year Award in recognition of the work they are doing to improve biodiversity by increasing areas of habitat, along with introducing a sustainable maintenance programme and raising awareness of local ecology in the local community.

RESULTS

The results of these actions are processes and will be collected over time. Today's results are mostly linked to the environmental awareness generated from these initiatives, that poses greater attention to the natural context in urban environments. This especially applies to sporting events that take place outdoors in urban contexts.

“The Academy sits on reclaimed land used previously as a chemical treatment works and heavily built-up industrial area. What we have achieved here shows what can be done to align first class footballing facilities with ecology and diversity.”

Daniel Lewis, Manchester City Football Academy's Landscape Contract Manager

“We have come a long way in the four years since we started our contract on the City Football Academy. From vacant amenity lawns to introducing wildflower meadows, habitats, lots of high nectar pollinating plants, wildlife surveys, and in many cases making the CFA a greener and more hospitable place for wildlife. [...] We have shown what can be achieved with little investment but still produce such dramatic changes for the good of the environment.”

– Daniel Cranmer, idverde's Head Landscape Gardener at MCFA



MOBILITY AND ACCOMMODATION

In an era characterized by mounting environmental concerns and the imperative to curb carbon emissions, the concept of green mobility has emerged as a beacon of sustainable progress. As cities grapple with traffic congestion, air pollution, and the escalating impacts of climate change, the need for innovative and eco-friendly transportation solutions has never been more pressing. Surprisingly, the world of sports, often revered for its athletic prowess and competition, has positioned itself as a surprising advocate for green mobility.

Transportation has long been a significant contributor to global carbon emissions and air pollution. Traditional modes of transportation, reliant on fossil fuels, have fuelled urban congestion, deteriorated air quality, and exacerbated climate change. However, with the advent of technological advancements and a growing commitment to sustainability, the notion of green mobility – characterized by low emissions, energy efficiency, and reduced environmental impact – has gained traction worldwide. In this context, the sports industry, replete with travel demands and event logistics, presents a unique opportunity to showcase the potential of green mobility solutions. The environmental footprint of sports transportation is often underestimated and overlooked – yet these processes and indispensable for a successful staging of an event!

According to a study published in the journal "Nature Climate Change," the international sports travel industry generates a staggering 10 million tonnes of CO₂ emissions annually. Frequent and long-haul flights, road trips, and logistical operations associated with sporting events significantly contribute to this footprint. This realization has galvanized stakeholders within the sports industry to reevaluate their transportation practices and adopt green mobility alternatives.

Furthermore, the ecological footprint of sports-related accommodation is more substantial than commonly perceived. Research conducted by the Green Sports Alliance reveals that sports events can generate enormous quantities of waste and energy consumption, both of which are exacerbated by suboptimal accommodation practices. The influx of attendees, coupled with the temporary nature of many sporting events, often leads to an overreliance on single-use items and energy-intensive setups. As fans flock to stadiums and event venues, the collective environmental impact of their accommodation choices becomes apparent.

IMPLEMENTATION OF ADDITIONAL PUBLIC TRANSPORT

This operational practice aims at reducing the environmental impact linked to the mobility of supporters, staff, volunteers, and athletes to and from the sport venue, which is widely recognized as the main environmental impact in sporting events, especially caused by individual mobility of participants.

Very large events over a longer period (tournaments, cups) generate crowds of more than 250.000 spectators a day or 5 to 10 million ticketed spectators. Encouraging the use of public transport by increasing the quality and the frequency of public transport services to and from the event venue, especially during big events, helps mitigate the environmental impacts linked to mobility, thus reducing the overall environmental footprint of the sporting event.

CHALLENGE

Large events require a timely, responsible and smooth management of displacing the visitors from point A to point B, avoiding solutions which would involve private vehicles and thus, avoiding increased traffic and pollution.

GENERAL DESCRIPTION OF THE PRACTICE

The sport industry is increasingly attentive to the impact of mobility on the overall environmental footprint of sporting events and is implementing practices for facilitating sustainable mobility in the organization of sporting events. Below we describe some cases of sporting events in which the local public transportation system was specifically reinforced for the duration of the event to encourage spectators to leave their cars at home and use public transport:

During the 2022 Men's World Floorball Championships held in Zurich, during the whole period of the event four extra trains from Bern to Zurich Altstetten were arranged with a strongly discounted ticket price, to facilitate the visit of Zurich from Bern by public transport. Moreover, travel to the event within the ZVV public transport area (Canton of Zürich) was included in every Men's World Floorball Championships 2022 ticket.

To encourage the use of local public transport and as part of the broader initiative to make the 2022 European Championships climate-neutral, ticketholders of sporting competitions held as part of the 2022 European Championships in Munich could use public transport for free during the event. The frequency of trips by public transport was increased and the public transport timeline was adapted to coincide with the competitions schedule. The Organizing Committee worked together with Münchner Verkehrs- und Tarifverbund (MVV) - the transit authority for the city of Munich. Participants could show their paper tickets just like a regular transport ticket, while e-tickets outlined the free service in a confirmation email after purchase.

RESULTS

Encouraging the use of public transport by increasing the frequency of public transport trips to and from the event venue, sometimes even free of charge for the event participants, reduces the environmental footprint of the sporting event by lowering its GHG emissions.

In collaboration with ClimatePartner, the organizers of the 2022 European Championships in Munich calculated the CO₂ emissions of the event: from travel and overnight stays to event technology and energy to food and beverages. The sector of "transport and mobility" accounted for the largest share of the CO₂ footprint; however, the short distances between the individual sports venues and the efficient public transport system contributed greatly to reducing CO₂ emissions.



SC FREIBURG: PUTTING CYCLING IN THE SPOTLIGHT WITH THE CITY OF FREIBURG

The German football club SC Freiburg has recently moved to a new stadium in 2021 after leaving its previous one which no longer meets certain requirements of a modern stadium.

The club wanted to develop actions and concrete steps for implementing their Sustainability Strategy and keep their image of an environmentally friendly club up to date by addressing all the emerging challenges. Alongside energy consumption, resource management and natural environment protection, mobility plays an important role and the club wanted to exploit alternative mobility patterns and make it easier for its supporters to use them. It required extensive cooperation with the city, who was a part of the joint venture.

CHALLENGE

Reaching the venues of major sporting events usually produce a lot of traffic. An attractive infrastructure and services for cyclists and other soft mobility users can help here. Some of the previous surveys and initiatives, such as the LIFE TACKLE project in 2019, showed that supporters think football clubs should do more to reduce the carbon footprint of football matches by improving and diversifying access to the stadium and games. 39,6% of the surveyed supporters strongly agree about this, while 41.3% agree to some extent.

As reported by the club, an average German Bundesliga match day creates up to 7.000 tonnes of CO₂. That's the amount of CO₂ that a forest area the size of 48 football pitches with about 60.000 mature trees can store. Around two thirds of the CO₂ emissions on the day of the match are caused by the arrival and departure of fans and teams.

Furthermore, as Freiburg is considered as "Green City" in Germany, they mainly pursued to find a stadium location, that is integrated in the geographic context of their urban area and that can be reached not only by car, but by an efficient system of public transport – as well as by bicycle.

Beyond the investment in the infrastructure of its stadium, the club involved the fans in its environmentally conscious actions in a variety of ways, with many small and large campaigns, which were aimed at raising awareness of environmental problems and encouraging them to deal with them responsibly.

As Johan Saier, the club's sports director said, the club is located in a wonderful region that is very bicycle friendly. Freiburg is a bicycle city per se. When the club played at the Dreisam stadium, many visitors were coming to the games by bicycle. With the move to the new Europa-Park stadium with almost 3,700 bicycle parking spaces, almost twice as many spaces as car parking spaces, the club created good conditions that have been very well received. While on matchday more than 30.000 people still drive to the stadium, permanent gridlocks are inevitable, therefore the club needs to promote and allow supporters to arrive to the stadium by bike.

GENERAL DESCRIPTION OF THE PRACTICE

The decision to pursue the objective of becoming cycling-friendly and boost cycling and other types of soft mobility in the city was made during the 2020/21 season, as a part of the build-up phase to moving to the new stadium. One of the club's first commitments was participating in the 2021 edition of "City Cycling" campaign ("Stadtradler"). Stadtradler is a nationwide competition and an initiative by Climate Alliance in which individuals and teams compete in doing as many everyday trips as possible for 21 days by bike. The club's team collected 17.351 km which equals a distance to Thailand and back. That corresponded to 2,5 tonnes of avoided CO₂ emissions. 82 people cycled for the club, including fans and staff members. In the city of Freiburg itself, 355 teams took part, with over 6.500 cyclists over the three weeks, avoiding 185 tons of CO₂.

Cycling and sustainable mobility in general then received a prominent part in the club's new Sustainability Strategy, as an objective under the "Acting ecologically" pillar, as one of the four included in the Strategy. As one of the operational measures was the "Climate Protection Action Matchday", the year 2023 was marked under motto "Sustainable Mobility". The aim was to have a matchday that is as environmentally friendly as possible and to encourage fans, employees, and partners to travel climate-friendly on the long term. Many communication campaigns were organised prior to the matchday itself. The home game against Schalke 04 on 23 April 2023, was chosen as the occasion for this test.

The following activities accompanied the day:

- ⚙️ Supporters would have their bikes repaired (chains, tires and other minor repairs) at the bike service station of the club's mobility partner JobRad.
- ⚙️ Everyone who would come by bike was contributing to a good cause, as the mobility partner JobRad would donate €1 per supporter who comes by bike on every match day to an environmental cause. In addition, the club itself would calculate the total CO₂ emissions avoided on the day of the campaign and increase the amount donated accordingly.
- ⚙️ Every fan who comes by bike would have the chance to win prizes from mobility partner JobRad and SC Freiburg.
- ⚙️ The Freiburg city's bike sharing platform by the city's transport company, Freiburger Verkehrs, would be free for 30 minutes on the matchday when traveling to the stadium.
- ⚙️ A regional energy and environmental partner of SC Freiburg, badenova, would surprise the supporters who cycle to the stadium with a present, too. Furthermore, the club involved the local public transportation provider to complement previously mentioned actions with:
 - The Regional Transport Network would extend the period of validity of its "KombiTicket" (a ticket allowing supporters to use public transport to arrive to the stadium) for the promotional game day from three to five hours before the game, which was an explicit wish of many fans (result of a mobility analysis).
 - German Railways (Deutsche Bahn) would lower the price of the SportBus ticket, which collect supporters from the region and drives them to the stadium from €8 to €5.

In order to make it easier for all supporters to leave, live data on the current public transport departure times would be displayed on the screens around the stadium and in the business areas.

This pilot test, in a way, required a major outreach campaign, partnerships, sponsorships and support from local and regional authorities and agencies, as well as services.

RESULTS

During the “Climate Protection Action Matchday”, 5.669 supporters came to the Europa-Park stadium for the home game against Schalke 04 by bike – that is 16% of all stadium visitors and more than ever before at a Bundesliga game of SC Freiburg. In addition, more than a third of the supporters travelled to the stadium by public transport (tram, S-Bahn, coaches provided by the club). In total, well over half of all spectators in the stadium opted for a climate-friendly journey (bicycle, public transport, on foot) that day. At the time of writing this publication, carbon footprint calculations were still ongoing and would be published as soon as the results are available.

Furthermore, the club’s mobility partner JobRad donated €1 per supporter who came to the game by bike to a good cause. €5.669 were donated to the Black Forest biosphere reserve.

At the JobRad bicycle service station, for which a parking space was blocked off, almost 250 supporters had their bikes repaired. The Frelor offer from Freiburger Verkehrs AG was free for 30 minutes on Sunday when traveling to the home game. 175 stadium visitors used this service.

The use of public transport was also considerably successful as 500 people used to SportBus service and many more the regular public transport services.

As for the opponents that days, Schalke 04, they launched their own campaign "Schalke 04 equalizes" which saw the club 500 km away from Freiburg compensating for their CO2 emissions caused by the travel of guest fans and their own team.

Many of the actions and activities that were set up during the special days are now considered to become permanent.

"As a sports club, we wanted to send a clear signal for climate protection with the campaign match day - and we succeeded."

Hanno Franke, Head of Marketing and Social Commitment at SC Freiburg

All those efforts resulted in SC Freiburg winning the award for “the most bicycle-friendly personality” at the 8th National Cycling Congress in Frankfurt am Main in 2023 on 20 June. In fact, this was the first time a football club was honoured as the most bicycle-friendly personality. Hanno Franke, Head of Marketing and Social Commitment at SC Freiburg, accepted the award on the club’s behalf.

Freiburg's mayor for construction and mobility, Martin Haag, who was present at the award ceremony, added:

"A great confirmation of the SC's mobility concept. As the city of Freiburg, we also feel a bit flattered by the award, because with the infrastructure we have created around the Europa Park stadium, we offer cyclists excellent access and parking options."

The German Bicycle Prize is an initiative of the Federal Ministry for Digital Affairs and Transport and the working group for pedestrian and bicycle-friendly cities, communities, and districts in North Rhine-Westphalia.

And as if these results weren't exemplary enough, in the summer of 2023, it was announced that the new main and shirt sponsor from the 2023/24 season would be the Freiburg-based company Jobrad, which is significantly expanding its commitment to SC Freiburg and is succeeding the British online used car dealer Cazoo. JobRad is the service bicycle concept in Germany. Similar to the well-known company car leasing, JobRad works with bicycles and e-bikes. SC Freiburg was thus the first club in the Bundesliga to choose a main sponsor from the bicycle industry and made Jobrad the company bike possible for the first time.

LESSONS LEARNT

As reported by the City of Freiburg, if cycling and other types of soft mobility wants to be boosted, one has to offer rather attractive conditions. Work hard on this - and make arriving by private cars discouraged and redundant. This practice wanted to apply the following:

- ⚙️ Daring to reduce the number of car park spaces on a reasonable scope – and keep them not to cheap to rent
- ⚙️ If possible, use existing parking lots and connect them to the stadium
- ⚙️ For a new stadium, don't take into account any site, that does not have a rail traffic connection
- ⚙️ Offer an ambitious number of bicycle parking spaces in priority position around the stadium
- ⚙️ Provide bicycle ways in good quality and with sufficient signage leading to the stadium

REPLICABILITY POTENTIAL

While major football clubs playing at megastructures in large cities with populations of above million or more attract hundreds of thousands of supporters every month from all over the country and abroad, many local and regional teams play football at a much more modest scale. These clubs often attract local and regional supporters, living in the vicinity of the stadium. Therefore, setting up a reasonable and efficient soft mobility plan is easier in those cases. Often, the supporters and gamegoers belong to the same local and regional community, like the club itself and improving their well-being would be a great added value. Either through improving soft mobility and necessary infrastructure, awareness raising or providing certain subsidies or advantages, these initiatives can greatly change the behaviour of the local community and allow them to take advantage of good mobility infrastructure on a daily basis, too.

Speaking of smaller local and regional communities, setting up a necessary framework, identifying potential stakeholders, sponsors and other contributors to the case is certainly easier than in large capitals and stadiums who receive more than 75.000 supporters from all over the country and abroad. It is necessary for each stakeholder to be able to understand all the benefits and added values of such interviews in order to secure their participation.

For understanding savings and calculating them, many tools exist. The club used MyClimate, a Swiss non-profit.

Doing a mobility analysis, appropriate and responsible to a stadium with a capacity of 35.000 seats (or any other capacity for the matter of fact) is a must-do, as the initial step. Main success factors in this case were a wide agreement and unity, existing on the level of the responsible persons of the City of Freiburg and SC Freiburg. Furthermore, all stakeholders knew, that the project's success was simply without alternative, regarding the club's future in professional football business. Over and beyond that, the circumstances of stadium projects are quite specific at every city and club.

"We do not see this promotional game day as a one-off marketing campaign, rather it is part of our sustainability strategy, in which we have defined sustainable mobility as one of our main topics, along with many other tasks."

Hanno Franke, Head of Marketing and Social Commitment at SC Freiburg.

INTEGRATION OF FREE PUBLIC TRANSPORT WITH TICKETS THROUGH COOPERATION AND SYNERGIES WITH THE CITY

This operational practice aims at reducing the environmental impact linked to the mobility of supporters, staff, volunteers and athletes to and from the sport venue, developing and strengthening the synergies between the city and local public transport bodies.

CHALLENGE

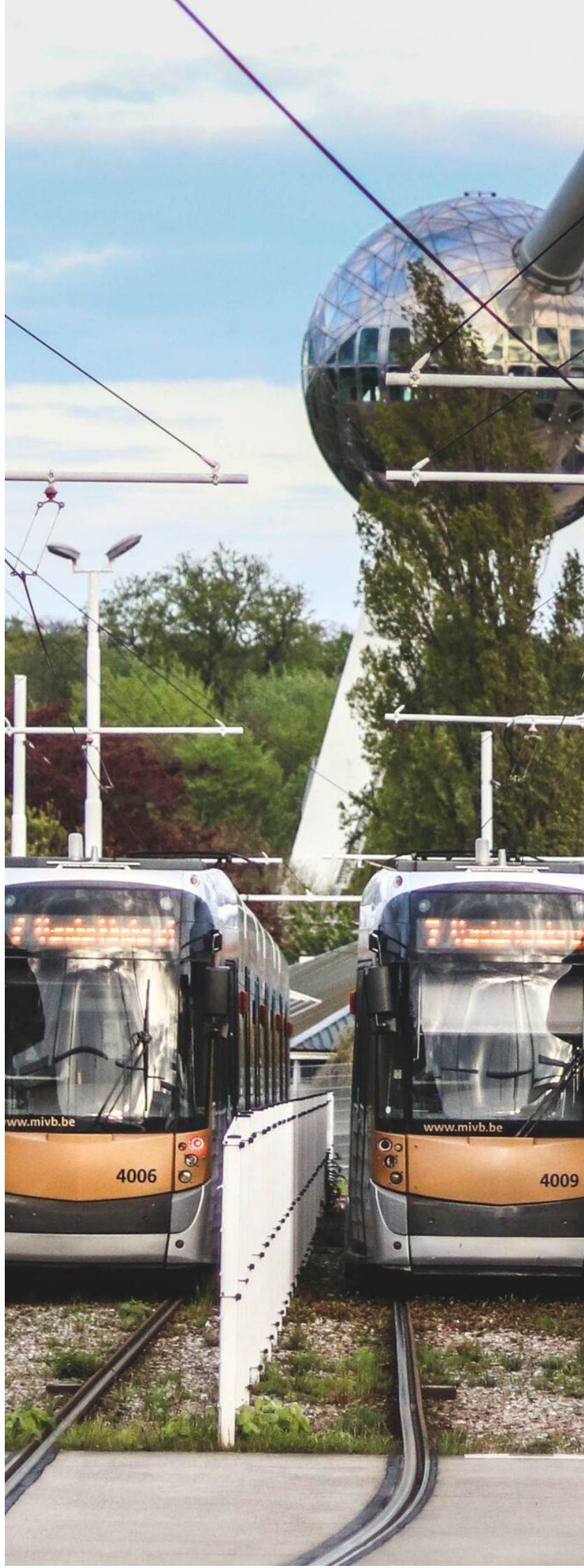
The transport sector causes substantial negative impacts on the environment and human health, as it is responsible for about a quarter of the EU's total greenhouse gas (GHG) emissions, and causes air pollution, noise pollution and habitat fragmentation.

Compared with driving alone, taking public transportation reduces CO₂ emissions by 45%, decreasing pollutants in the atmosphere and improving air quality. It is estimated that public transportation in the U.S. saves 37 million metric tons of carbon dioxide annually.

Very large events generate crowds of more than 250.000 spectators a day or 5 to 10 million ticketed spectators. Encouraging the use of public transport by increasing the quality and the frequency of public transport services to and from the event venue, especially during big events, helps mitigate the environmental impacts linked to mobility, thus reducing the overall environmental footprint of the sporting event.

GENERAL DESCRIPTION OF THE PRACTICE

Through the creation of synergies between the transport agency and the city, it is possible to encourage and direct the mobility choices of fans.



According to the Italian CAM (minimal environmental criteria), the activation of collaborations and sponsorships with public transport companies, as well as with bike sharing, car sharing moto-sharing and micromobility services for discounts on transport tickets or sharing mobility services (shared mobility) should be applied, also the provision of discounts on the entrance ticket or other discounts for those who prove to have reached the event by public transport (train, bus, sharing mobility).

During the Men's World Floorball Championships 2022, the ticket for public transport was integrated in the WFC event ticket. This meant that spectators were able to take all public transports for free within the canton of Zurich (see figure). This initiative aimed at incentivizing and facilitating the use of public transport and was designed after a survey of 2,500 people aimed at understanding the expected mobility behaviours.

During the IBU BMW World Cup in Oberhof, moving by public transport and shuttles was free of charge and included in the entrance tickets for spectators within a 50 km radius of Oberhof. Spectators arriving by car were shuttled for free from several Park & Ride lots some 10-15 km outside the town of Oberhof to the event, replacing individual journeys and reducing the volume of vehicles.

During the FIS Nordic World Ski Championship, held in Oberstdorf Allgäu in 2021, over 55% of the spectators arrived with public transport. The existing transportation concept was enhanced, with a preference for trains and buses and the creation of a corresponding "Kombi-Ticket" that combined the games ticket with the public transport ticket. A tailor-made traffic concept with large-scale bus shuttle system, which is consistently controlled across a large geographical area via a traffic management system, provided transport to and from the event area.

Another example came from Australia, where the Richmond Football Club worked with the Australian Football League (AFL) and the City of Melbourne to introduce free public transport for Richmond fans when travelling to the match games, accessible by presenting their match day tickets.

RESULTS

This practice allows the event organisers to greatly incentivize the use of public transport and lower the environmental footprint of the event regarding CO₂ emissions from transport. Mobility was recognized by the federations of Biathlon and Floorball, and by the sport industry in general, as the top category that influences environmental impact of sporting events.

In addition, this practice can also benefit crowd-building by incentivizing more fans to attend games in person.

USE OF LOCAL CYCLING INFRASTRUCTURE AND IMPLEMENTATION OF BYCICLE-FRIENDLY FACILITIES

This practice aims at reducing the environmental impacts linked to the mobility of supporters, staff, and athletes to reach sporting venues by providing greener alternatives to conventional transport modes.

CHALLENGE

Transport is a vital sector, but our current mobility system is not sustainable. Transport connects people, cultures, cities, countries, and continents, and it is one of the main pillars of modern societies and economies. Transport networks also ensure access to public services, such as education, health, sports, thus contributing to a better quality of life.

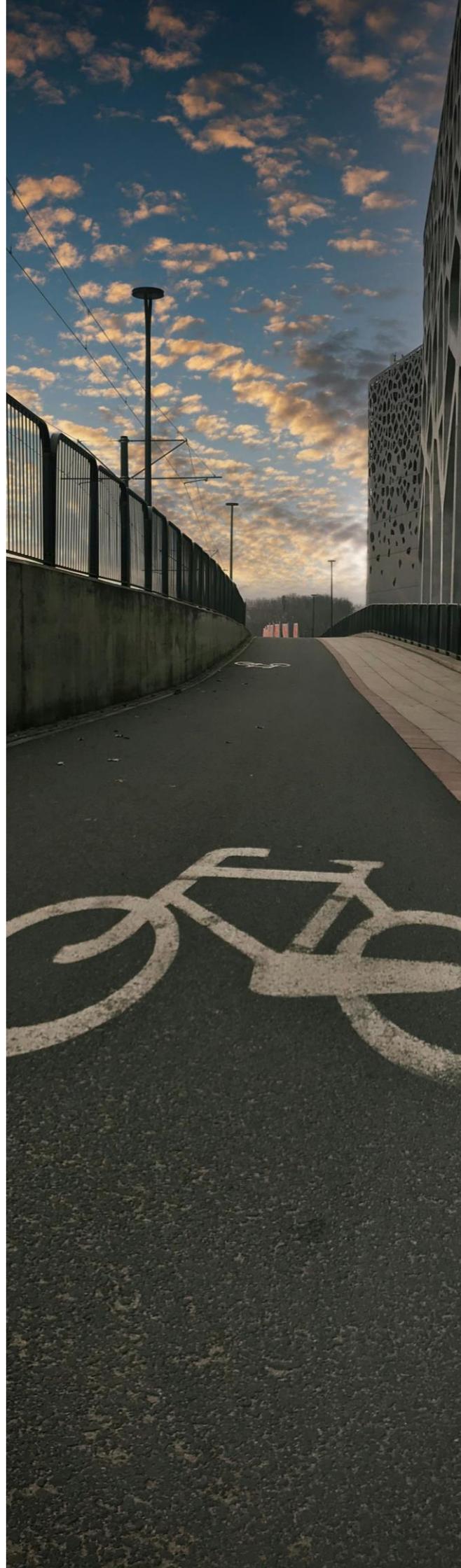
However, the transport sector also causes substantial negative impacts on the environment and human health, as it is responsible for about a quarter of the EU's total greenhouse gas (GHG) emissions, and causes air pollution, noise pollution and habitat fragmentation.

Urban planning is key to reduce the environmental footprint of sporting events linked to mobility: in this context, the sustainable urban development of cities should not only foresee the promotion of public transportation, but it should also reinforce or implement cycling infrastructures and facilitate access to the events through "soft" mobility (i.e. the transport of people or goods through non-motorized means, based around human physical activity). Moreover, the creation of bicycle lanes and possibly also electric bicycle systems available to citizens should also be coupled with adequate parking infrastructures near the major sporting venues.

This would result in a win-win-win solution for the city (by increasing its liveability), the sport systems (by reducing the environmental footprint of sporting events), and the community in general (by promoting healthier lifestyles).

GENERAL DESCRIPTION OF THE PRACTICE

The sport industry is increasingly attentive to the impact of mobility on the overall environmental footprint of sporting events; therefore, managers of sport venues and event organisers are increasingly promoting active ("soft") mobility as part of their matchday transportation strategy. The external areas of sport facilities are increasingly equipped with bicycle lanes and sometimes electric bicycle systems to promote soft mobility of fans, staff, athletes, and volunteers.



The Ghelamco Arena in Belgium (20,000 capacity) is one of the pioneers of this practice. The football club KAA Gent has developed a major mobility programme for supporters. As part of their project, called “Cycling Buffalo’s”, which started in 2013, the following actions were implemented: 2838 permanent cycle locking stalls and 600 mobile stalls were installed; car parking facilities near to stadium are no longer provided; separate routes for walkers and bikers within vicinity of the stadium were created; measures were implemented to prevent cars using cycling routes for illegal parking; various communication channels were used to raise awareness on alternative transport options to the stadium.

RESULTS

Promoting active (“soft”) mobility to sports stadia (i.e. travelling from one place to another by physically active means) provides a combination of health, environmental and logistical benefits to sports stadia and stadium users, whilst also helping to support environmental sustainability by preventing GHG emissions.

In the example of the Ghelamco Arena presented above, the practice resulted in an average of 2000 KAA Gent supporters using bicycles each match over the course of the season, with an average of +15% of KAA Gent supporters coming to the Arena by bicycle and resulting in an almost congestion-free football stadium.

As already mentioned, this practice provides win-win-win results for the city (by increasing its liveability), the sport systems (by reducing the environmental footprint of sporting events), and the community in general (by promoting healthier lifestyles).

LESSONS LEARNT

The example mentioned above shows how this practice is more effective when coupled with a sustained communication campaign aimed at informing supporters on travel options and routes and at raising awareness on the environmental and health benefits of soft transport.

In addition, two aspects are also important for the success of this practice: monitoring (e.g. to prevent cars from using cycling routes for illegal parking in the proximity of sporting venues) and safety (development of safety measures around the stadium to protect cyclists; installation of cameras to prevent theft).

REPLICABILITY POTENTIAL

The replicability potential of this practice depends on the motivation and financial resources of the owners of the sport venue and of the local authorities and infrastructure departments. The replicability is also higher when the sporting venue is under construction instead of already existent, as soft mobility infrastructures can be included from the very beginning of the planning and designing process.

Substantial financial resources may be needed to create cycle lines that connect the city centre to the sport venue, while more limited resources are needed to install bicycling infrastructures around the stadium such as bike racks. However, as already mentioned, the mere installation of cycle racks is not enough if it is not coupled with investments in communication campaigns aimed at promoting active mobility and in the development of measures aimed at ensuring the safety of cyclists.



SUSTAINABILITY-RATED ACCOMMODATION FOR FANS, STAFF AND ATHLETES LOCATED CLOSE TO THE EVENT VENUE AND TO PUBLIC TRANSPORT FACILITIES

There are different aspects that can contribute to define an accommodation as environmentally sustainable: first of all, since mobility is one of the most impactful environmental aspects of sporting events, the proximity of the hotel to the event venue is an aspect to prioritise in the selection of the accommodation.

More in general, one of the easiest ways to select sustainable accommodations are those that are certified – i.e. have already proven to comply with a set sustainability criterion and have been verified by a third-party verification scheme.

CHALLENGE

This practice addresses the environmental impact linked to two aspects: the GHG emissions linked to the mobility of supporters, staff, volunteers, and athletes to and from the sporting venue and the consumption of energy and resources and the production of waste by the hotels and accommodations selected by these actors to attend the sporting event.

For instance, the hotel industry not only produces large amounts of waste and carbon dioxide, which contribute to climate change, but also consumes a lot of energy and water. The ecosystem and biodiversity suffer greatly because of pollution and poor hotel waste management.

As stated by the UNEP, in a 'business-as-usual' scenario, tourism would generate through 2050 an increase of 154% in energy consumption, 131% in greenhouse gas emissions, 152% in water consumption and 251% in solid waste disposal.

Therefore, the practice of promoting hotels that are near the event venue and that comply with sustainability criteria and implement sustainable practices to reduce environmental pollution should be included in the event organisation.

GENERAL DESCRIPTION OF THE PRACTICE

Locating accommodation close to the venues was a major objective of the Special Olympics Canada 2014 Summer Games, to enhance the experience of the participants, and to reduce the environmental and cost impacts of travel.

Except for the bowling venue, all competition, accommodation, and operational venues were located within a 1 km radius — a first for a Special Olympics Canada Games. Having the ability to walk or bike from accommodations to venues was a great achievement, significantly enhancing the event experience, operational, and sustainability goals. All 1.800 athletes, coaches, and staff stayed in UBC accommodations for an average of 6 nights. The approximately 1.900 friends and family members stayed at a mix of downtown Vancouver and UBC accommodation options.

Moreover, all official and affiliated Games' hotels were Green Key certified. Participants were encouraged to select accommodations certified by recognized third-party assessment schemes for social and environmental responsibility. The selected UBC accommodation venues implemented practices such as: "Throw in the Towel" initiatives, new efficient lighting installations and extensive recycling programs, the use of green certified cleaning chemicals and the reduction of the overall use of chemicals, the use non-volatile organic compound (VOC) paints, the ongoing installation of low flush toilets in all suites and a large geothermal field for hot water and heating in the Marine.

Accommodation for players and staff of the teams was an important aspect of the 2022 World Floorball Championship in Zurich. Hotels were needed for around 16 teams, 11 nights per team with around 30 people per team: a total of 5.280 overnight stays (without considering the overnight stays of the supporters). The organiser drafted a list of possible hotels to communicate to the participating teams according to some criteria including price and distance in km from the event. In drafting this list green labels and certifications of the hotels were not fully considered; nonetheless, a hotel operator was selected as a sponsor also for its sustainability characteristics and it was communicated as a possible hotel to the travel agencies that arranged travel packages for the visitors that participated to the event. All IFF staff and officials (referees, referee observers, jury, commentators) stayed at that hotel. The hotel offered its guests to participate to its initiative "Plant for the Planet", offering the possibility to avoid room cleaning in benefit of the environment by choosing a benefit reward. Among the rewards, hotel guests could choose to waive any additional benefits and ask that the hotel invests CHF 5 for the "Plant for the Planet" initiative (see figure).

RESULTS

The selection of accommodations located near the sporting venue not only reduces the environmental impact and economic cost of travel, but it also enhances the overall experience of the participants.

By choosing eco-friendly hotels, the sporting event lowers its environmental footprint in terms of GHG emissions, energy and water consumption and waste disposal, and contributes to preserve the environment by using local products and by avoiding the use materials that harm local ecosystems.

In turn, the practices implemented by eco-friendly hotels help them raise their public visibility and appeal, with consequent possible economic returns.

REPLICABILITY POTENTIAL

The replicability potential of this practice is limited, as it is limited especially in those cities that have a stronger sustainability culture and thus can offer more sustainable accommodation options and soft mobility infrastructures that connect the accommodations to the main local attractions, including sporting venues.

CROSS-SECTORAL COOPERATION FOR CLIMATE AND ENVIRONMENT

Climate change stands as one of the most critical challenges of our time, posing unprecedented threats to the planet's ecosystems, economies, and societies. As the world witnesses the alarming consequences of rising temperatures, extreme weather events, and environmental degradation, a global call to action has emerged. Amidst this backdrop, the world of sports, renowned for its fervour, competition, and unifying power, has taken on a new role – that of a champion in the fight against climate change. Climate change, driven primarily by human activities such as burning fossil fuels and deforestation, has dire implications for the environment and humanity at large. According to the Intergovernmental Panel on Climate Change (IPCC), global temperatures have already risen by approximately 1.2°C above pre-industrial levels, leading to devastating impacts including sea-level rise, disrupted ecosystems, and heightened climate-related risks. The urgency to curb carbon emissions and transition to sustainable practices has never been more pronounced. Amidst this urgency, the world of sports has emerged as an unexpected yet impactful avenue for climate action.

The sports industry's environmental impact often goes unnoticed amidst the excitement of competitions and events. However, a study published in the journal "Nature Climate Change" highlights that sports contribute to a

significant portion of global carbon emissions – up to 0.7% of worldwide emissions. The extensive travel of athletes and fans, energy consumption in stadiums, and the production of equipment all contribute to this footprint. The realization of the industry's carbon contribution has galvanized sports organizations and stakeholders to acknowledge their role and drive change.

Launched in 2018, The United Nations Framework Convention on Climate Change (UNFCCC) Sports for Climate Action Initiative brings together sports organizations committed to combating climate change. Signatories commit to measure, reduce, and offset their carbon emissions and promote sustainable practices to their stakeholders. Notable signatories include the International Olympic Committee (IOC), FIFA, and numerous international sports federations.

But, even though international and sport specific initiatives exist for enabling or raising awareness on climate change and environmental impacts among sport organisations, there is a need for an enhanced cooperation between sport organisations and their local and regional authorities. By doing so, sport organisations could score considerable added values in terms of contributing to their local communities' objectives and targets, too.





PORTO CLIMATE PACT

Porto has been developing a strong environmental commitment. At the same time, the city was selected to be part of the EU Mission: Climate-Neutral and Smart Cities, a group of 100 Mission Cities to be carbon neutral by 2030. Porto has the ambition to be a leader, at national and European level, in climate action, achieving carbon neutrality by 2030.

The Municipality of Porto believes that a shared common vision and goal for decarbonization can help all stakeholders to move in the same direction to fulfil this common purpose. In this regard, Porto Climate Pact was created to gather citizens and engage public and private organizations for action and create a large community of learning, sharing and mutual support.

Porto's climate neutrality can only be achieved with concrete actions carried out by all stakeholders in the city, regardless of their size or previous actions.

The Pact allows its signatories to demonstrate leadership and commitment to the city's economic and social development. By collaborating in a network of ambitious stakeholders with shared goals, they can capitalize on opportunities. This also provides them with recognition in the fields of sustainability and climate action and allows them to evaluate the outcomes of the proposed decarbonization measures.

CHALLENGE

The stability of the global climate system is at risk due to the high concentration of greenhouse gases (GHG) in the global atmosphere. Mitigating these emissions is urgent and necessary to avoid unpredictable consequences on natural, economic, and social systems. The European Union has led the way: European Member States must set a reduction target of 55% by 2030 and neutrality by 2050, aiming to be the first carbon-neutral continent.

The Municipality of Porto raises the bar by assuming a more ambitious goal that seeks environmental, economic, and social sustainability through carbon neutrality by 2030.

The Porto Climate Pact was established to consolidate the endeavours of every stakeholder in the city. This includes both entities with robust environmental measures and those just beginning their journey towards sustainability. The Pact fosters collaboration among the Municipality, various organizations, and citizens, ensuring a unified commitment to a shared goal.

Porto's journey towards carbon neutrality demands collective action from organizations and citizens alike, and this Pact serves as a catalyst, facilitating, supporting, and encouraging behavioural change.

GENERAL DESCRIPTION OF THE PRACTICE

Since 2008, Porto, through the Porto Energy Agency, has tracked Greenhouse Gas (GHG) emissions and aims to reduce them by 2030. By cutting emissions and sequestering the residual carbon, the city strives for carbon neutrality.

The Municipality of Porto has consistently worked towards decarbonizing the city, though its direct influence is limited since municipal assets account for just 6% of total GHG emissions. This underscores the importance of involving all stakeholders in this shared objective. Most of the city's GHG emissions stem from buildings, residential and service sectors (around 50%), and transportation (about 40%). Significant changes in these areas can only be achieved through the collective efforts that the Porto Climate Pact aims to accelerate.

By signing this Pact, the signatory commits to use all its means to:

- ⚙️ Set and communicate clear targets and strategies, both existing and forthcoming, to reduce GHG emissions and progress towards carbon neutrality;
- ⚙️ Engage the extensive stakeholder network in Porto's GHG reduction efforts;
- ⚙️ Cooperate with local and national government to create an enabling environment for decarbonization;
- ⚙️ Work in partnership with the European network seeking to achieve similar goals;
- ⚙️ Monitor and report on the progress and impact of implemented actions in reducing GHG emissions;
- ⚙️ Disseminate the progress achieved in meeting the targets and actions taken, contributing to greater public awareness.

To guarantee the realization of the city's set objectives, the Municipality established a local transition team. This team that includes several organizations acts as a bridge, fostering interactions among a diverse range of stakeholders, including public and private companies from various sectors, academic institutions, NGOs, and entities from the realms of sports, culture, and education.

One of the goals currently in progress is the clear formulation of a roadmap for carbon neutrality by 2030, also known as the Climate City Contract. This roadmap aims to engage all partners and pinpoint governmental, public, and private funding sources to address challenges and implement tangible measures.

Despite this, progress is already being made. In Porto, there is a strong commitment to leading by example, with assertive and consistent actions in decarbonization efforts. The enhancement of green spaces, the promotion of energy sharing, the advancement of sustainable mobility, the improvement of building efficiency, the emphasis on energy conservation, the investment in smart LED lighting, and the focus on a more circular approach stand out as key strategic initiatives.

RESULTS

Several interesting and innovative measures can be highlighted: 100% of the energy consumed by the Municipality of Porto comes from renewable sources; public transportation is free for children and youths up to 18 years old; the shift to LED public lighting is advancing at a steady pace, and an initiative to

expand organic waste collection in the homes of Porto residents is gaining traction, underscoring its importance.

Porto aims to be recognized as a producer of clean, solar-based energy. The Porto Energy Hub is in operation, providing guidance and assisting both citizens and businesses in energy efficiency and production endeavours. An incentive plan has been introduced, valued at approximately 8 million euros, to promote the installation of photovoltaic panels on private properties. There's also an investment in energy production for social housing, a 6-million-euro project that aims to decrease energy costs and address energy poverty for an estimated 30.000 residents.

The Porto Climate Pact is actively fostering a culture of collaboration and sharing among its citizens. This community was developed inviting various organizations and engaging with residents at numerous events. As a result, the Pact has already gathered the commitment of over 200 entities and hundreds of individuals.

LESSONS LEARNT

Moving forward with this project has been extremely rewarding due to its positive and important impact at a time in which the climate crisis continues to intensify. Throughout, there's been evident political dedication and active participation and involvement from all entities. Our efforts are anchored in robust local political support further supported by the high patronage of the President of the Portuguese Republic.

Despite increasing public concern, there's a noticeable resistance among citizens to change their daily behaviours and perspectives. This highlights the crucial need to elevate public awareness and strongly promote and incentivize behavioural change.

As this is a recent initiative (less than 2 year old), there is still space for improvement and to explore new projects and challenges. Nonetheless, the outcomes achieved to date are quite promising.

REPLICABILITY POTENTIAL

The creation of a Pact like the one established in Porto will be advantageous in most cases where cities wish to make this demanding transition. This dynamic allows the creation of synergies between the various stakeholders of the city and the increase of their level of awareness and commitment.

In Porto, political dedication and determination played a crucial role. The lack of this support and willingness can be a constraint in other places/cities/regions.

Another benefit realized in Porto was the establishment of a dedicated local transition team, named the "carbon neutrality team". Comprising three full-time members focused on the city's climate objectives, this team also collaborates with members from various partner entities.

Thus, the measure implemented in Porto is deemed replicable in other Portuguese or international cities. However, its success is closely tied to the commitment level of the respective city.

"This is a commitment intended to engage everyone. This includes all the public and private institutions in the city, as well as its citizens. It's a city-wide goal that should motivate us all, as only with everyone's participation can we achieve these targets."

- Filipe Araújo, Vice-Mayor of Porto Municipality.

GAA GREEN CLUB PROGRAMME

The GAA Green Club Programme was established to support Gaelic Games clubs on the island of Ireland in managing their operations, grounds, and games more sustainably.

The Green Club Programme has been developed with support from and in accordance with the objectives of the Irish Government's National Implementation Plan for the Sustainable Development Goals (SDGs) and is implemented in partnership with local authorities across Ireland, with Programme actions designed to support the targets of Ireland's Climate Action Plan

CHALLENGE

The GAA Green Club Programme was developed in response to a demand from Gaelic Games clubs for leadership and guidance in identifying and implementing impactful sustainability actions. The impetus came both from clubs who had already developed their own environmental and sustainability projects and were looking for opportunities to share their experiences and learnings through the GAA club network and from clubs seeking to get involved in sustainability action but unsure of how or where to start.

As the GAA began to develop plans for a sustainability programme to respond to this club demand, the Association was nominated by Ireland's Department of Environment, Climate and Communications as a national Sustainable Development Goal (SDG) champion. Through the SDG Champions Programme the GAA formed a partnership with local government and consequently developed an expert network of sustainability agencies and bodies to contribute to the content and activities of the Green Club Programme.

While the Green Club Programme is the GAA's first national sustainability programme, it builds upon the experiences and learnings of earlier GAA initiatives. The structure and administration of the Green Club programme has been strongly influenced by the GAA's Healthy Club Project, which was established to support the holistic health and well-being of GAA members and their communities, and which has steadily expanded its reach and its activities since it was launched in 2013.



GENERAL DESCRIPTION OF THE PRACTICE

The Green Club programme was designed around the five environmental themes of Energy, Waste, Water, Biodiversity and Travel & Transport with the aim of supporting clubs to engage in sustainability actions and in raising awareness among their members and in their communities.

Consultation with clubs, in person and via survey, in the very early days of the project indicated that two of the main barriers to club sustainability engagement were a lack of knowledge and a lack of time – Gaelic Games are volunteer-run, and the over-burdening and over-extension of volunteers is an issue of concern at both local and national level for the GAA. Therefore, a primary driver of the Green Club Programme was to develop both a structure and content that would make it simpler and more time-efficient for clubs and volunteers to identify and implement sustainability actions, that would facilitate peer-learning, that would be designed for the sporting and community context of Gaelic Games clubs and that would promote cyclical rather than one-off engagement.

A Green Club Steering Group was established to manage the development of the Programme, which was composed of GAA staff members, club volunteers, local government representatives and members of Ireland's leading expert bodies across the Programme areas of Energy, Waste, Water, Biodiversity and Transport. In the pilot phase of the Programme, which ran for 18 months from January 2021, the Steering Group worked with an initial cohort of 40 clubs – through webinars, workshops, site visits and one-to-one engagements – to establish in more detail the needs of clubs, their recurring challenges and their greatest impacts as well as to initiate pilot projects and initiatives from which the Programme could learn and from which it could develop case studies for wider dissemination.

The outcomes of the first phase of the Programme led to the development of a Green Club Toolkit and of a formal club engagement structure, formed around seven key milestones including the establishment of a green team, the implementation of an action plan and the adoption and communication of a Green Club charter. The Green Club Toolkit was launched in December 2023 and contains practical guidance, templates, checklists and case studies across the five Programme areas – designed especially for the club context and with the needs of volunteers in mind. The Toolkit is published online at <https://gaa.ie/greenclub> and is available to all clubs in an open access format while through the formal programme the 200 clubs enrolled in Phase 2 avail of specialised webinars, workshops and access to local authority advice. In return, these clubs taking part in the formal Green Club programmes document and report on their actions and experiences to facilitate the monitoring, evaluation and further development of the programme.

RESULTS

The number of clubs enrolled in the Green Club Programme has increased from 40 in Phase 1 to 200 in Phase 2 and each of these clubs is undertaking at least two sustainability actions. These actions are being recorded through the Green Club portal. The portal has been developed for Phase 2 and was not in operation for the pilot phase; however, individual club learnings from the pilot phase were captured in case studies which have been published in our open-access toolkit.

The most significant result of the pilot phase was the development of the Green Club Toolkit, which was based not only on the expert input of the programme's national partners but also on the experiences and feedback of the initial cohort of 40 pilot clubs. The Toolkit now forms the basis of both the formal, monitored club programme and the GAA's national sustainability awareness campaigns.

The pilot phase of the programme and the planning period that preceded it resulted in the formation of a formal collaboration structure between the GAA, local authorities and expert bodies in the areas of Energy, Waste, Water, Biodiversity and Travel & Transport. This formal collaboration is crucial not only to the maintenance and development of the club-based programme but is also supporting the GAA in regional and national sustainability impact assessment and strategic planning.

The objective of the current (Phase 2) and of future phases of the programme is to gather a greater amount of quantitative data from clubs – e.g., on energy and resource use, on emissions, on land use and on number of club and community members engaged in actions and events – and to use this data to inform future actions and policy, to measure change and to set targets at regional and national level.

LESSONS LEARNT

Protecting the well-being of volunteers and respecting their time and engagement is central to the success and sustainability of any grassroots club project. The Green Club project team has worked with clubs and partners to strike a balance between centralised coordination and local ownership of project actions, in order to reduce the burden on club volunteers as much as possible while realistically reflecting resource restrictions at central level. Early learnings from this approach were (i) that it was crucial to have club representatives involved at all levels and stages of programme planning and design and (ii) that longer-term awareness, commitment and impact is likely to result from empowering club-level ownership and confidence through support for clear and simple early engagement rather than through central over-prescription of actions or approaches.

The pilot phase of the Green Club programme was very much a learning phase – open minds and flexible structures were essential in ensuring that the findings that would influence the future structure and content of the Programme and Toolkit were not predetermined but could emerge honestly from club and programme team experiences. The programme team also took the space during and after the pilot phase to assess what worked and what didn't and from this developed a Toolkit and structure for Phase 2 that reflected the learnings of the pilot phase.

One challenge of the early programme phases has been in data gathering, including in determining what information, and what level of information, can be most usefully gathered from clubs without over-burdening club volunteers and in identifying, gathering, and using data from a limited number of clubs to usefully extrapolate to the national level.

REPLICABILITY POTENTIAL

The Green Club Toolkit was developed especially for the context of volunteer-led Gaelic Games clubs on the island of Ireland, where most clubs own and/or manage their own grounds and facilities. However, the principles that underpin and the actions included in the Green Club Toolkit were developed to reflect national and international standards and best practice and are therefore applicable and adaptable to a wide range of sports and community contexts. Indeed, the Toolkit has already been held up as a standard for sports club climate and sustainability engagement across the island of Ireland.

While the Toolkit has been designed for club-led action – and includes not only suggested actions along with relevant guidelines and templates but also a structure for management and engagement at club level – any sports sustainability programme will work best when club engagement is supporting by resourcing and structure at national, federation and/or regional level. This ensures that volunteer time is respected, and positive impact is maximised by best practice guidance being issued and updated centrally and by having links to expert supports, guidance and funding opportunities communicated efficiently clubs. Having central management of a programme also facilitates better monitoring and measurement and leads to more effective planning and also encourages strategic decision-making at central level than can have impact at scale at local level.

“The GAA Green Club Programme is an excellent example of a programme developed in line with the values of our organisation and designed to support community action in a way that responds to the needs of the specific community and the needs of the environment they inhabit. In that sense the programme reflects the best of the GAA’s values of Community Identity and taking pride in the places we come from, Respect – not only for the people in our communities and those we compete against but also for the environment around us – and Teamwork, on and off the field, to make those communities better places to live.”

– Jimmy D’Arcy GAA Youth Leadership & Sustainability Manager.



WELFARE ALLIANCE

CHALLENGE

With the ambition to exploit and benefit from the many possibilities for partnerships with Danish municipalities, the concept of 'welfare alliances' was created back in 2014. The term suggests that by working closely together, the involving parties can help each other to achieve their goals.

GENERAL DESCRIPTION OF THE PRACTICE

Since 2014, DBU has collaborated with Danish municipalities. These collaborations have developed over time and later they have been established as a program between the football community and municipalities, called 'Welfare Alliance'. The current program period is 2022-2026.

The DBU Welfare Alliance is a collaboration between the Danish FA (Dansk Boldspil-Union), the regional FA and a municipality. The overall ambition of the collaboration is to create value for the citizens and football clubs of the municipality. Based on its ambitions and political agenda, the municipality has the possibility to adjust the frame and ambition for the alliance, whether its within health, school & day care, education, employment, green transition, events, national team matches, or something else.

Many things have highlighted the importance of the programme since its start in 2014. The results of a survey carried out in 2017 showed that football clubs appreciate the support from the Danish FA and regional FA's when collaborating with municipalities. On top of this, an external evaluation was carried out in 2018, which clearly indicated that both municipalities and clubs finds the programme valuable.

Furthermore, DBU has recently approved a new policy and action plan on Football Social Responsibility (FSR) that raises the ambitions of what football can achieve and do to improve health, social responsibility, and promote green sustainability. It is not possible for DBU and football to do this alone and will among other things rely on welfare alliances and strong partnerships with municipalities going forward. Fields of actions for the 2022 – 2026 period include six action areas: health, social efforts, education and employment, school and daycare, club development and events and national matches.

RESULTS

40 municipalities have entered a welfare alliance with DBU, and it is a priority to interact with even more municipalities through alliances.

Potentials that were identified included:

- ⚙ Sports (football) can create social value
- ⚙ More and more cross-sector ownership in municipalities
- ⚙ Greater knowledge and effect monitoring
- ⚙ Stronger bridging
- ⚙ Foundation (co)financed efforts are good measures
- ⚙ Events as inspiration
- ⚙ Stronger collaboration across clubs

Limitations were equally identified:

- ⚙ Organization & collaborative culture
- ⚙ No infinite resources
- ⚙ Volunteering can be fragile and must be supported
- ⚙ Football is big and a wide area

All this resulted in attention points, specifically paying attention to the balance between visions and concrete initiatives, football's intrinsic value and good agreements in co-creation (clubs and municipal actors) rather than quick agreements.

REPLICABILITY POTENTIAL

A clear strategy is essential but cannot stand alone. It is necessary to have concrete activities that highlights the collaborations themselves and emphasises on potential and positive effects.

It is important to have dedicated and allocated resources, especially employees. Liquid funds can also be necessary, which is the case in a Danish context. The size of the investment depends on the level of ambition.

“Football is part of something bigger and is more than just a game. This is proven in several ways and through the Danish Welfare Alliance program as well. We are very satisfied with a focus on the positive public benefits of football, e.g., within health, inclusion, and football's ability to gather and excite.”

– Andreas Høj, Head of Governance & Strategy, DBU



PARTNERSHIPS ACTIVATION TO VEHICLE ENVIRONMENTAL ATTITUDES IN FANS' DAILY LIVES

The Sustainable Development Goal (SDG) 17 of the Agenda 2030 of the United Nations is about creating partnerships for sustainability. Sustainability partnerships involve 2 or more organizations/companies teaming up for mutual benefits related to sustainability goals. Partnerships are a valuable tool to drive change toward sustainability and decarbonisation, as they bring together diverse perspectives, resources, and expertise from multiple stakeholders.

CHALLENGES

This practice addresses the importance of promoting pro-environmental behaviours among sport fans and the sport community in general to reduce climate change and promote sustainability. There are various ways to do so; in this specific case we analyse the importance of partnerships in encouraging pro-environmental sustainability initiatives in sport that involve fans and influence their environmental attitude.

Organizations are increasingly expected to join forces with other organizations and companies, both public and private, to address social and environmental problems. The sustainable sponsorship market is set to grow in sport since young generations are responsive to initiatives taken by the brands, clubs, and athletes they follow. Thus, more and more brands are seeking “purpose-driven partnerships”. Building partnerships amplifies the environmental messages that the sport industry directs to supporters and more effectively influence fans’ environmental behaviour.

GENERAL DESCRIPTION OF THE PRACTICE

Below we describe two cases of successful partnerships that promote pro-environmental attitudes among fans in the sport sector:

- 1) The University of Colorado Boulder Athletic Department is increasing its leadership in sports sustainability through several new projects that encourage environmentally friendly behaviours among fans. In partnership with PepsiCo, the Colorado Buffaloes launched the “Bring Your Bottle Back to Life” campaign. As part of the program, free T-shirts made from recycled plastic fibers (rPET) are distributed to the crowd at the Folsom Field stadium in Boulder, Colorado, after every Buffaloes touchdown or three-pointer the Buffs score. A communication campaign runs in parallel asking fans to bring their empty bottles to the specific recycling station located at the stadium, instead of throwing it away in the garbage bin, so that new T-shirts can be created from recycled bottles. This partnership activation was made possible by Pepsi Recycling, whose mission is to increase recycling rates of its beverage containers.

The choice of distributing T-shirts made of recycled plastic originated from the observation that fans are more inclined to recycle at games and in their daily lives if they can clearly see the results: therefore, instead of simply telling fans which materials are recyclable and where to recycle them, PepsiCo and the Buffs show them that through recycling, new life can be given to waste materials (in this case in the form of T-shirts). Their goal was not only to increase recycling rates, but to create a connection in fans' minds between the act of recycling and the result of recycling, in order to more effectively influence their environmental behavior.

2) Since 2015 the Swedish Floorball Federation has worked together with the Swedish recycling company Pantamera (which literally means "recycle more"). The aim of the cooperation is to influence the environmental attitude and behaviours of children and young people in order to increase the recycling rate of beverage packaging (metal cans and PET bottles) in Sweden. Returpack Ltd, the company behind the Pantamera brand, manages a return system and is responsible for collecting all deposit packaging from collection points and transporting them to their sorting facility. To pay for the collection, the company collects a packaging fee from the producers per package.

Floorball was chosen as partner because of the target group profile: a large proportion of the over 120,000 licensed players are children and young people. Furthermore, it is the "first sport" for many children. Advertising and fun activities and a competition to get floorball clubs to join the deposit system were created.

Since 2015 Sweden's floorball clubs have collected 3,5 million cans and bottles and 242 floorball teams are connected to the developed refund concept. The average annual increase since 2015 is 18% more packaging and 19% collection points.

RESULTS

Sustainable sponsorship in sport can be a powerful combination. Partnership for sustainability create a positive environmental impact as not only it promotes the sustainability efforts of the organization/company, but it also encourages behavioural change among sport supporters.

At the same time, sustainable sponsorship increases brand awareness, engagement and return on investment for the sponsors, that exploit the sport's popularity and reach.

REPLICABILITY POTENTIAL

Considering that sustainability is becoming a 'top priority' for many partnership and sponsorship activations also in the sport sector, and that the sustainable sponsorship market is growing in sport since young generations are increasingly responsive to initiatives taken by the brands, clubs, and athletes they follow, the replicability of this practice is high.

ENERGY COMMUNITIES

Energy communities aim to achieve several goals related to sustainable energy transition and environmental impact reduction, namely:

- ⚙️ Renewable Energy Adoption;
- ⚙️ Energy Independence;
- ⚙️ Decentralization and Local Control;
- ⚙️ Community Engagement;
- ⚙️ Economic Benefits;
- ⚙️ Carbon Emissions Reduction;
- ⚙️ Innovation and Technological Advancement;

Energy communities can align with local or regional strategies and plans for sustainable development, energy transition, and climate action. They can complement existing policies and initiatives and contribute to achieving broader sustainability goals set by governments and local authorities.

Measurable targets within energy communities can include carbon emissions reduction, amount of energy shared, grid independence. These measurable targets provide a way to track the impact and success of the energy community initiatives over time.

CHALLENGE

The motivation behind the emergence of energy communities stems from a confluence of factors: growing concerns about climate change, the desire for energy security, and a shift towards more participatory and decentralized approaches to energy production and consumption. The inspiration comes from a vision of a more sustainable and locally controlled energy system, coupled with the recognition of the limitations of traditional centralized energy models.

The practice typically addresses both internal challenges, such as achieving local energy goals, and broader needs within the wider community. By providing cleaner energy options, economic benefits, and participatory decision-making, energy communities contribute to the overall well-being of the community while aligning with broader sustainability targets.

GENERAL DESCRIPTION OF THE PRACTICE

FC Porto selected Greenvolt Communities for the creation of an innovative project in terms of sports clubs, which combines the creation of two integrated Energy Communities with an electric vehicle charging solution, contributing significantly to the energy transition objectives of the Club and the Cities of Porto and Vila Nova de Gaia.

- ⚙️ "Estádio do Dragão Community"

More than 1000 photovoltaic solar panels will be installed in an area of about 7,200 m². These panels will have a total capacity of more than 568 kW, being able to generate 778 MWh/year and reduce 206 tonne CO₂/year, the equivalent of planting 9.141 trees.



In the first phase, this will be an "intra community", in that everything produced is shared among the producers and consumers of the club itself, thus highlighting the involvement of the various points / facilities of the club, which reinforces once again the values of "community" previously described.

In a second phase, Greenvolt Communities will bring more producers and consumers into the Community, allowing them to share clean and cheaper energy with the Club and its neighbours. FC Porto can aim to reach 100% local renewable energy in the next 5 years.

This Community also reconciles the electric mobility solution with 22 chargers, which makes the project even more special given its innovation. With the possibility of charging electric vehicles on the company's premises, it will allow the decarbonisation of the fleet through the Community's solar energy.

☀️ FC Porto Olival Training Centre Community

The initial Producer Member of this Community is the FC Porto Olival Training Centre, which will also be a consumer and will share the surplus with the families and companies that are in the vicinity of the Centre.

More than 1000 photovoltaic solar panels will be installed in an area of about 7,200 m². These panels will have a total capacity of more than 600 kW, being able to generate 802 MWh/year and reduce 213 tonnes CO₂/year, the equivalent of planting 9.426 trees.

From the beginning, this Community will generate surplus, which will be shared with about 580 families in Vila Nova de Gaia. This sharing will help these families to reduce their electricity bill, creating a better quality of life for the inhabitants of this city.

In a second phase, Greenvolt Communities will gather more producers and consumers for the Community, allowing to share clean and cheaper energy with the Club and its neighbours. FC Porto can aim to reach 100% local renewable energy in the next 5 years.

It should be noted that all CAPEX investment was on Greenvolt's side, which allows FC Porto to focus their own financial resources in the core business.

RESULTS

The following table shows the results:

	"FC Porto Olival Training Centre Community"	"Estádio do Dragão Community"	Total
Panels installed	1101	1043	2144
Area (m ²)	5405	7200	12605
Total production (kWp)	600	568	1168
Estimated annual production (MWh)	802	778	1580
Emission reduction (tonCO ₂)	213	206	419
Grid independence	47%	14%	18%
Energy shared with community (kWh)	578	0	578

REPLICABILITY POTENTIAL

Certainly, this approach is promising to be replicated among different clubs or entities, provided that there is a suitable space with favourable solar orientation on their premises, and that proximity to any building, no matter the usage, that can use the excess energy is ensured.

However, it is essential to recognise that the legislative context of each country can impact on the implementation of community energy projects. Hiring an expert may prove critical to navigating the complexities of licensing.

“Self-production has always had a huge regulatory constraint, which prevented producers from using their areas to produce electricity decentralised. With the legislative change, these barriers have fallen, so that available and unused roofs and flat areas can be transformed into decentralized, community-based production areas, independent of external political or economic factors.”

– Ricardo Carvalho, FC Porto Sports Facilities & Asset Manager

CONCLUSIONS

Football, like many other industries, contributes to greenhouse gas emissions through activities such as travel, energy consumption, and stadium operations. By adopting eco-friendly practices, the football world can reduce its carbon footprint, contribute to global efforts to mitigate climate change, and help limit the rise in global temperatures.

Moreover, football has a massive global following, and its influence extends far beyond the field. By embracing environmentally friendly practices, the football community can set a positive example for fans, sponsors, and other industries. This can encourage a broader shift toward sustainability and environmental stewardship.

Adopting environmentally friendly practices in the football world is, thus, crucial for several reasons. Football events require substantial resources, including water for maintaining fields, energy for lighting and cooling stadiums, and materials for equipment and infrastructure. By adopting sustainable practices, the sport can minimize resource consumption and promote responsible management of these valuable resources. Stadiums often generate air and water pollution due to energy usage, waste production, and transportation of fans and players. By implementing sustainable strategies, such as using renewable energy sources, reducing waste, and promoting public transportation to matches, the football world can improve local air and water quality in host communities.

The effects of climate change, resource scarcity, and environmental degradation could eventually impact the ability to host matches and events. By taking proactive steps to reduce their environmental impact, football organizations can contribute to the long-term viability of the sport and ensure its continuation for future generations. Green practices can also have positive impacts on the health and well-being of athletes, fans, and surrounding communities. Improved air quality, reduced noise pollution, and access to green spaces can enhance the overall experience of attending or participating in football events. Moreover, adopting environmentally friendly practices can lead to cost savings over the long term. For example, energy-efficient stadium designs, reduced waste disposal costs, and streamlined operations can all contribute to financial benefits. Embracing sustainability often drives innovation and the development of new technologies. The football industry can be a catalyst for advancements in areas such as renewable energy, waste reduction, and sustainable transportation solutions.

Lastly, the football community has a moral and ethical responsibility to contribute positively to society and the environment. By adopting sustainable practices, the sport demonstrates its commitment to being a responsible global citizen. Football is a global sport, and its adoption of eco-friendly practices can foster collaboration among nations, cultures, and organizations. This collaboration is crucial for addressing environmental challenges that transcend borders.

Overall, embracing environmentally friendly practices in the football world is not only a matter of environmental responsibility but also an opportunity to leverage the sport's influence for positive change and a sustainable future.

IMAGE CREDITS:

Anders Kjærbye (DBU), GAA, Croke Park, Football Association of Wales, FC Porto, Defense Visual Information, Distribution Service, PxHere, Event Cup Solutions, Royal Union Saint Gilloise, STIB/MIVB Brussels, PickPic, WikiCommons, Clara Goubault (Le Dauphine Libere), Carsten Riedl (SC Freiburg), Slawek Falbo, Pexel, idverde.



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